IT Controller (used 4G/ 3G/ GSM Communication) JRN-340K User Manual

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### Introduction

The IT controller for 4G communication is a location information communication terminal device with packet data communication function of 4G/3G/GSM system (see table below) and GPS rec eiving function (L1 1.5GHz band). It uses TCP/IP/PPP as the communication protocol.

#### Overview

Supported frequency bands

Items	Specification
Band	GSM/GPRS/EDGE: Quad band、 850/900/1800/1900MHz UMTS/HSPA+: Eight band、 850(BdXIX) / 850(BdVI) / 850(BdV) / 900 (BdVIII) / 1700(BdIII) / 1900(BdII) / 2100(BdIV) / 2100MHz (BdI) LTE : Twelve band、700 (Bd12,Bd28) 800 (Bd20) 850 (Bd18,Bd19,Bd5) / 900 (Bd8) / 1800 (Bd3) / 1900 (Bd2) / 2100(Bd1,Bd4) / 2600 (Bd7)
Output Power	(according to release 99) Class 4 (+33dBm $\pm 2dB$ ) for GSM850 Class 4 (+33dBm $\pm 2dB$ ) for GSM900 Class 1 (+30dBm $\pm 2dB$ ) for GSM1800 Class 1 (+30dBm $\pm 2dB$ ) for GSM1900 Class E2 (+27dBm $\pm 3dB$ ) for GSM 850 8-PSK Class E2 (+27dBm $\pm 3dB$ ) for GSM 900 8-PSK Class E2 (+26dBm $\pm 3$ /-4dB) for GSM 1800 8-PSK Class E2 (+26dBm $\pm 3$ /-4dB) for GSM 1900 8-PSK
	(according to release 99) Class 3 (+24dBm +1/-3dB) for UMTS 850, WCDMA FDD BdXIX Class 3 (+24dBm +1/-3dB) for UMTS 850, WCDMA FDD BdVI Class 3 (+24dBm +1/-3dB) for UMTS 850, WCDMA FDD BdV Class 3 (+24dBm +1/-3dB) for UMTS 900, WCDMA FDD BdVIII Class 3 (+24dBm +1/-3dB) for UMTS 1700, WCDMA FDD BdIII Class 3 (+24dBm +1/-3dB) for UMTS 1900, WCDMA FDD BdIII Class 3 (+24dBm +1/-3dB) for UMTS 2100, WCDMA FDD BdII Class 3 (+24dBm +1/-3dB) for UMTS 2100, WCDMA FDD BdII
	(according to release 8) Class 3 (+23dBm $\pm$ 2dB) for LTE 700, LTE FDD Bd12 Class 3 (+23dBm $\pm$ 2dB) for LTE 700, LTE FDD Bd28 Class 3 (+23dBm $\pm$ 2dB) for LTE 800, LTE FDD Bd20 Class 3 (+23dBm $\pm$ 2dB) for LTE 850, LTE FDD Bd18 Class 3 (+23dBm $\pm$ 2dB) for LTE 850, LTE FDD Bd19 Class 3 (+23dBm $\pm$ 2dB) for LTE 850, LTE FDD Bd5 Class 3 (+23dBm $\pm$ 2dB) for LTE 900, LTE FDD Bd5 Class 3 (+23dBm $\pm$ 2dB) for LTE 1800, LTE FDD Bd8 Class 3 (+23dBm $\pm$ 2dB) for LTE 1800, LTE FDD Bd8 Class 3 (+23dBm $\pm$ 2dB) for LTE 1900, LTE FDD Bd8 Class 3 (+23dBm $\pm$ 2dB) for LTE 1900, LTE FDD Bd3 Class 3 (+23dBm $\pm$ 2dB) for LTE 2100, LTE FDD Bd4 Class 3 (+23dBm $\pm$ 2dB) for LTE 2100, LTE FDD Bd4 Class 3 (+23dBm $\pm$ 2dB) for LTE 2100, LTE FDD Bd1

#### Configuration

NO.	Equipment	Model	Quantity
1	IT Controller	JRN-340K	1
2	Communication Module	Cinterion PLS63-W (Telit) (Note 1)	1
3	Battery pack	NBB-3400 (TOCAD ENERGY) (Note 2)(Note 3)	1
4	eSIM	7DZLE0001 (docomo)	1

(Note 1)

The scope of our quality assurance for the communication module is limited to the isolation of whether problem s caused by the communication module or not. The quality assurance of the communication module is to be p erformed by Telit. Therefore, we will ask Telit to conduct a detailed analysis of the cause of the problem and t o confirm the spread of the defective lot.

(Note 2)

The built-in battery pack is warranted for 1 year for function and 3 months for performance. Please replace the battery pack on a regular basis.

If periodic replacement is difficult, the performance of the battery itself may deteriorate or the battery may malf unction, which may cause the emergency call function not to operate when the heavy equipment battery is rem oved.

In addition, do not use metal products (tools, etc.) when removing and installing the battery connector.

The battery may short-circuit, resulting in excessive current flow, which may cause the battery to overheat, rupt ure, leak, or damage the equipment.

(Note 3)

The built-in battery pack must be restored to a fully charged state by replenishing (charging) power to the built -in battery pack when external power is supplied. If no power replenishment continues, the remaining capacity of the built-in battery pack may decrease or become empty.



Configuration Diagram

- Note1 Please prepare mechatronic I/F cables by customer.
- Note2 A fuse (recommended current rating: 2[A]) is required for the mechatronic I/F cable to pr otect against overcurrent.
  - Fuses should be inserted at two locations: battery and GND.
- Note3 Do not take main power from a DC cigar. Poor contact may cause malfunction.

#### Functions

(1) Operation during key OFF performs the following.

- ① Periodic batches are performed at the specified time.
- ② The server responds to the call from the server side.
- ③ Acquire current location information by GPS and generate out-of-area alerts.

- (2) Standby (power saving) control function
  - Return from standby (power saving) is as follows
  - \*Set to allow return by the following interrupt when shifting to standby.
  - ① CAN1\_EN/CAN2\_EN (Engine Key) ON from mechatronics
  - ② Detect ACC ON⇔OFF change
  - ③ Interrupt by RING0 signal from communication module
  - ④ Date and time notification return by date and time setting
  - 5 UART (serial data) receiving from PC
  - 6 Charge signal (HOUR\_METER) ON

When the device is restored from standby, the application is notified of the restoration. Shift to standby follows the instruction from the application.

- (3) Storing operating data Enables storage of operating data.
- (4) Clock

Enables the current time to be determined by information from GPS satellites. Maintains and counts the date and time even when the main power is disconnected.

(5) Backup

It retains the IT controller's operation mode and communication settings even when the ma in power is disconnected. Also, when fully charged, within one hour (typ), at least one set of mail can be sent and received to and from the server.

(6) External communication function

It has 3 channels: mechatronics (CAN2), mechatronics 2 (CAN1), and monitor (RS-232C). The communication protocol for CAN1/2 is SAE J1939, and baud rates of 250k/500k are s upported.

(7) GPS

Both during key ON and key OFF, coordinates are acquired every 30 minutes or so. Rollover is described separately.

(8) 4G/3G/GSM communications

Built-in communication module enables data communication using 4G/3G/GSM communicati on.

The mobile communication network will be compatible with NTTdocomo line.

(9) Software rewriting

It also enables software rewriting using WiFi and monitor (RS-232C) port.

#### (10) LED indication

The following LED indications are provided.

- ① Power source
- ② In/out of range of cellular phone netwok
- (11) Mechatronics commands [supported by user application] The following command exchanges information with the mechatronics via CAN communicati on.
  - ① Key ON
  - 2 Engine ON
  - ③ Key OFF

- ④ Alarm
- 5 Fuel level
- 6 Engine water level
- ① Engine oil level
- 8 Fluid level
- 9 Engine oil pressure
- In Engine water temperature
- 1) Air cleaner
- 12 Charge
- IB DS (forced key OFF)
- (1) RT (status inquiry)
- (15 HS (hour meter change)
- 16 CTO (command)
- 1 Automatic key OFF judgment processing
- 18 HD (Health Diagnostic command)HD
- 19 FD (Failure Diagnosis command)FD
- (12) Communication protocols in cell phone networks

Send in e-mail format to a mail server using the TCP/IP protocol.

- (13)時差設定
  - Operates at UTC+αh.
  - $\alpha$  h can be rewritten from outside. (Server input and console input)
- (14) WLAN

WLAN that enables communication at 2.4GHz using IEEE802.11g/n is supported in AP mo de.

WLAN Alliance certification (device certification) is not obtained.

- (15) Abnormality detection function
  - It has a function to detect the following abnormalities and notify the VCU.
  - ① Built-in battery pack removal
  - 2 CAN1/2 communication line disconnection

## Specifications

1.1 Mechatronic interface specifications

(1) Med	chatronic CAN2 (standard)	
NO.	Item	Specification
1	Data transmission method	SAE J1939
2	Data transmission speed	250k/500kbps
		Depends on software configuration
3	Communication format	Extension 29bit

#### (2) Mechatronic CAN1 (Second)

NO.	Item	Specification
1	Data transmission method	SAE J1939
2	Data transmission speed	250k/500kbps
		Depends on software configuration
3	Communication format	Extension 29bit

#### (3) Monitor port (maintenance connector)

NO.	Item	Specification
1	Data transmission method	Half-duplex start-stop synchronization
2	Signal level	RS-232C
3	Data transmission speed	115,200bps
4	Frame length	Variable length
5	Data length	8bit
6	Start bit	1bit
7	Parity bit	None
8	Stop bit	1bit
9	Character code	EUC

1.2	2 General Specifications		
NO.	Item	Specification	
1	Supply voltage	Voltage range DC +10 to +16V (max. 32V)	
2	Built-in battery	Secondary battery Nickel-metal hydride battery (Ni-MH)	
	Раск	NBB-3400 (500mAn/4.8V)	
3	SIM interface	1.8V/3.0V仕様	
4	Current consu	During communication: Average current 400mA or less/12V (+25°C)	
	mption	During standby: 23mAtyp./12V (when not charged, +25°C, within range)	
	(Target value)	(Note 1)	
5	Surrounding e	Operating temperature: -30 to +70°C	
	nvironment	Storage temperature: -40 to +85°C	
		Operating humidity: 0 to 95%Rh (non-condensing)	
		Communication module operation is subject to communication module s pecifications.	
		Also, when using the built-in battery pack	
		Operating temperature: -20°C to +70°C	
		Charging temperature: 0°C to +70°C	
6	Dimensions	200 x 60 x 30 (mm) (Excluding protrusions)	
7	Weght	Less than 400g	
	5		
8	Cabinet	Material : PBT 751SA	

(Note 1)

The condition for intermittent receiving operation within the range is LTE communication DRX= 256.

After the LTE communication module is set to sleep when the power-saving mode is shifted, the LTE module starts intermittent receiving operation.

The receiving interval of intermittent receiving varies according to the DRX (Discontinuous r ecciving) value specified by the communication operator as follows. (DRX is specified from 32 to 256)

Receive interval: 10 ms \* DRX value.

Every 0.32 seconds for DRX=32 Every 0.64 seconds for DRX=64 Every 1.28 seconds for DRX=128 Every 2.56 seconds for DRX=256

(\*) When out of range, the standby current increases due to carrier search.

## 1.3 Communication module (GPS function) specifications

No	Item	Specifications
1	Receiving satellite	GPS, QZSS
2	Incoming signal	GPS : 1575.42MHz (L1) QZSS : 1575.42MHz (L1C)
3	Number of receiving channe ls	55ch
4	Positioning accuracy	< 2m CEP-50 (Open Sky) *The rollover of the GNSS receiver will temporarily revert t o the past date (April 28, 2013) on December 12, 2032, but will then automatically recalibrate to the correct presen t date in a few minutes.
5	Geodetic system	WGS-84 (default)
6	Time system	UTC
7	Antenna detection function	None

No.	Item	Specifications
1	Type name	Cinterion PLS63-W (Thales)
2	Radio frequency *1	GSM/GPRS/EDGE: Quad band、 850/900/1800/1900MHz UMTS/HSPA+: Eight band、850(BdXIX) / 850(BdVI) / 850(BdV) / 900(BdVIII) / 1700(BdIII) / 1900(BdII) / 2100(BdIV) / 2100MHz (BdI) LTE : Twelve band、700 (Bd12,Bd28) 800 (Bd20) 850 (Bd18,Bd 19,Bd5) / 900 (Bd8) / 1800 (Bd3) / 1900 (Bd2) / 2100(Bd1,Bd 4) / 2600 (Bd7)
3	Transmitting output (room temperature) *2	(according to release 99) Class 4 (+33dBm ±2dB) for GSM850 Class 1 (+30dBm ±2dB) for GSM1800 Class 1 (+30dBm ±2dB) for GSM 1800 Class 1 (+30dBm ±2dB) for GSM 900 8-PSK Class E2 (+27dBm ± 3dB) for GSM 900 8-PSK Class E2 (+27dBm ± 3dB) for GSM 1800 8-PSK Class E2 (+26dBm +3 /-4dB) for GSM 1900 8-PSK Class E2 (+26dBm +3 /-4dB) for GSM 1900 8-PSK (according to release 99) Class 3 (+24dBm +1/-3dB) for UMTS 850, WCDMA FDD BdXI X Class 3 (+24dBm +1/-3dB) for UMTS 850, WCDMA FDD BdVI Class 3 (+24dBm +1/-3dB) for UMTS 850, WCDMA FDD BdVI Class 3 (+24dBm +1/-3dB) for UMTS 850, WCDMA FDD BdVI Class 3 (+24dBm +1/-3dB) for UMTS 900, WCDMA FDD BdVII I Class 3 (+24dBm +1/-3dB) for UMTS 1700, WCDMA FDD BdVII I Class 3 (+24dBm +1/-3dB) for UMTS 1900, WCDMA FDD BdIII Class 3 (+24dBm +1/-3dB) for UMTS 1900, WCDMA FDD BdIII Class 3 (+24dBm +1/-3dB) for UMTS 2100, WCDMA FDD BdII Class 3 (+24dBm +1/-3dB) for UMTS 2100, WCDMA FDD BdII Class 3 (+24dBm +1/-3dB) for UMTS 2100, WCDMA FDD BdII Class 3 (+24dBm +1/-3dB) for LTE 700, LTE FDD Bd12 Class 3 (+23dBm ±2dB) for LTE 700, LTE FDD Bd12 Class 3 (+23dBm ±2dB) for LTE 800, LTE FDD Bd12 Class 3 (+23dBm ±2dB) for LTE 800, LTE FDD Bd18 Class 3 (+23dBm ±2dB) for LTE 850, LTE FDD Bd18 Class 3 (+23dBm ±2dB) for LTE 850, LTE FDD Bd18 Class 3 (+23dBm ±2dB) for LTE 850, LTE FDD Bd18 Class 3 (+23dBm ±2dB) for LTE 850, LTE FDD Bd3 Class 3 (+23dBm ±2dB) for LTE 850, LTE FDD Bd3 Class 3 (+23dBm ±2dB) for LTE 800, LTE FDD Bd3 Class 3 (+23dBm ±2dB) for LTE 800, LTE FDD Bd3 Class 3 (+23dBm ±2dB) for LTE 1900, LTE FDD Bd3 Class 3 (+23dBm ±2dB) for LTE 1900, LTE FDD Bd3 Class 3 (+23dBm ±2dB) for LTE 1900, LTE FDD Bd3 Class 3 (+23dBm ±2dB) for LTE 1900, LTE FDD Bd3 Class 3 (+23dBm ±2dB) for LTE 2100, LTE FDD Bd3 Class 3 (+23dBm ±2dB) for LTE 2100, LTE FDD Bd4 Class 3 (+23dBm ±2dB) for LTE 2100, LTE FDD Bd1 Class 3 (+23dBm ±2dB) for LTE 2100, LTE FDD Bd1 Class 3 (+23dBm ±2dB) for LTE 2000 LTE FDD Bd1 Class 3 (+23dBm ±2dB) for LTE 2000 LTE FDD Bd1 Class 3 (+23dBm

1.4 Communication module (communication function) specifications

4	Receiving sensitivity (room temperature)*3	-97dBm or less
-		
5	LIE specification	3GPP Release 10 UE CAT 1 supported
		DL 10Mbps, UL 5Mbps
6	HSPA specification	3GPP Release 7
		DL 7.2Mbps, UL 5.7Mbps
		HSDPA Cat.8 / HSUPA Cat.6 data rates
		Compressed mode (CM) supported according to 3GPP TS2
		5.212
7	UMTS specification	3GPP Release 4
		PS data rate – 384 kbps DL / 384 kbps UL
		CS data rate – 64 kbps DL / 64 kbps UL
8	SMS specification	Point-to-point MT and MO
	·	Cell broadcast
		Text and PDU mode
		Storage: SIM card plus SMS locations in mobile equipment

\*1 The following bands supported by PLS63-W are masked by this device as unused ba nds.

LTE: Bd13

\*2,\*3 These are the guaranteed design values of the communication module alone and do not guarantee the performance of the module when installed on construction equip ment. Communication status should be checked in the actual usage environment.



Fig. : PLS63-W Block Diagram

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1.5 Built-in battery pack specifications				
NO	Item	Specifications		
•				
1	Type name	NBB-3400		
2	Туре	Nickel-Metal Hydride battery (Ni-MH)		
3	Nominal Voltage	4.8V		
4	Nominal capacity	500mAh		
5	Battery Label	See diagram below.		

KA JRC Mobility Rechargeable Battery Pack Model / 品番: NBB-3400	AX)
Rating / 定格 : 4.8V 500mAh 4HR11/45 Lot.	Ni-MH
Made in Japan	使用後はリサイクルへ

Fig. : Internal Battery Pack Label Diagram

1.6 External Connector Specifications

	Specofications	Item	N O
Interface connector Manufacturer : IE	 Manufacturer : TE	Interface connector	1

## External Interface Specifications

1.7.1 Pin assignment table			
端子番号	端子名	備考	
1	BAT	Battery	
2	GND	GND	
3	HOUR_MET	Hour meter signal (operating/non-operating	
	ER	discrimination signal)	
4	GND	GND	
5	NC	NC	
6	NC	NC	
7	MONI_RXD	IT Controller $\rightarrow$ Monitor	
8	MONI_TXD	Monitor $\rightarrow$ IT Controller	
9	CAN0_EN	CAN0 Enable	
10	CAN0_H	CAN0 High-Level input-output	
11	CAN0_L	CAN0 Low-Level input-output	
12	GND	GND	
13	CAN1_EN	CAN1 Enable	
14	CAN1_H	CAN1 High-Level input-output	
15	CAN1_L	CAN1 Low-Level input-output	
16	GND	GND	

 $1\,.7\,\mbox{Interface}$  Connector Specifications



œ	(2)	3	۹
3	۲	$\widetilde{U}$	3
۲	Ŵ	$\widehat{w}$	$\mathbb{D}$
13	(i)	( <b>15</b> )	<b>16</b>

Connector Outline Drawing Mating surface

#### 1.8 Power Serial Interface Equivalent Circuit



Fig: Power Serial Interface Equivalent Circuit

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#### Dimensions

1.9 JRN-340K



Fig : Outline drawing of JRN340K

### About GPS Week Number Rollover

The GNSS receiver rollover will temporarily revert to the past date (April 28, 2013) on December 12, 2032, but will then automatically recalibrate to the correct present date within a few minutes.

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## Handling Precautions

$\triangle$	Caution	This symbol indicates a general caution, warning, or hazard not otherwise specified.
0	Instruction	This symbol indicates a general action to the user.
<b>2</b> ₽-	Procedure for turning off the power	This symbol indicates that the user must unplug the power plug from the outlet.
$\bigcirc$	Prohibition	This symbol indicates a general prohibition notice.
$\otimes$	Disassembly Pr ohibited	This symbol indicates a prohibition against disassembling this de vice, which may cause electric shock or other problems.
$\otimes$	Don't touch	This symbol indicates a prohibition notice for touching certain par ts of the product under certain conditions that may result in injur y.
$\otimes$	No wetting	This symbol indicates a prohibition notice when the product is us ed in a place where water may be splashed, wet, soaked, applie d, or spilled, which may cause electric shock or fire due to elect rical leakage.

#### 1.10 Specification values

Be sure to observe the specification values for this device. Exceeding the specificati on values may cause malfunctions.

0	1	Power supply voltage: Main unit (input voltage) This is the maximum voltage that can be applied between the power supply terminal and the ground terminal (GND).
•	2	Operating Temperature The operating temperature is the temperature range within which the product can operate satisfying the specifications. Exceeding this temperature range may result in malfunction.
0	3	Storage Temperature This is the temperature range for storing the product without operating it, and if the temperature exceeds this range, the performance may not be satisfied. Exceeding this temperature range may result in malfunction.

#### 1.11 Precautions for use

$\triangle$	1	This product is not suitable for use in areas where children are likely to be present.
$\otimes$	2	Do not unscrew or disassemble this equipment. Doing so may cause performance degradation or malfunction.
0	3	When performing maintenance with the screws removed, be sure to take me asures against static electricity (battery replacement, reset switch operation, et c.). Failure to do so may cause performance degradation or malfunction.
$\triangle$	4	Dropping this device or leaving it outside for a long period of time may cause scratches, stains, or malfunctions.
$\wedge$	5	This equipment is not designed for use in the following special environments. Do not use the instrument in the following special environments, as it may cause

		performance degradation or malfunction.
		-water, oil, chemicals, organic liuids, etc. -In dust
		-In corrosive gases such as salt air, chlorine, hydrogen sulfide, ammonia, sulfur
		oxides, hydrogen chloride, and sulfurous gases.
		-Environment with strong static electricity or electromagnetic waves
$\bigcirc$	6	Do not use for medical equipment, space, aerospace equipment, disaster prevention, security equipment, or other equivalent equipment that requires a high
0		level of safety that may affect human life.
$\bigcirc$	7	Do not use the product near people wearing medical or electrical equipment. Radio waves may cause malfunction of medical equipment, etc.
S		
Δ.	8	Depending on the car model, the antenna may affect in-vehicle electronic devices.
/!\		When installing or wiring the antenna, it should be installed and wired as far away
<u> </u>		Trom in-venicle electronic devices as possible.
		car navigation system and other antennas as possible. This may cause performance
$\sim$	9	Forcing, heating, pulling, or bending the cable with heavy objects may damag
$\odot$	-	e the cable and cause fire or electric shock.
$\bigcirc$	11	Do not operate it while driving a car or machine. Doing so may cause an ac
$\bigcirc$		cident.
	12	If water, metal, or other foreign objects enter the interior, first turn off the po
@-₽-		wer to the product, disconnect the power cable, and contact us. Using the pr
	10	oduct as it is may cause fire, electric shock, or malfunction.
2€	13	When cleaning, turn off the power and unplug the power cable for safety. Fai lure to do so may cause fire or electric shock.
A	14	When cleaning the surface, do not use organic solvents such as thinner or b
<u> </u>		enzene. They may damage the surface paint. To clean the surface, remove d ust and dirt and wipe with a clean cloth
<u> </u>	recal	When handling this equipment, he coreful to evoid static electricity. Static electricity
	1	may cause malfunctions. In particular hav attention to static electricity on the
<u> </u>		interface connector.
	2	Be sure to turn off the power circuit before inserting connectors.
ϭ-		Also, avoid collision and insert the connectors in parallel.
0	3	Be careful not to touch the terminals of the interface connector with bare or greasy
$\otimes$	-	hands.
9	A	Do not use or leave the equipment in high direct surfight or in high town and
$\square$	4	ures Doing so may cause overbeating deformation or malfunction of the or
S		uies. Doing so may cause overnealing, deformation, or manufaction of the equipment
^	5	Install the main unit and cables in such a way that they do not interfere with
∠!\	Ū	the operation or handling of airbags or other equipment.
^	6	Connect each cable securely to the product Failure to do so may cause the
∠!\	Ŭ	cables to disconnect or damage the connectors.
^	7	Do not install the device near devices that generate magnetic fields such as
	,	high-voltage power lines or transformers. The device may not operate proper
$\sim$		γ.

1 .13	Overc	current protection
0	1	This device does not have a built-in fuse for overcurrent protection. To prevent hazards, use a fuse for overcurrent protection in the power supply line.
1 . <b>14</b>	Stora	ge Precautions
Â	1	Avoid locations where corrosive gases such as salt air, chlorine, hydrogen su lfide, ammonia, sulfur oxides, hydrogen chloride, and sulfurous gases are gen erated.
Â	2	Since condensation will form on a set of equipment in places where there ar e sudden changes in temperature and humidity, avoid such environments and store the equipment in places where there are few changes in temperature.
$\bigcirc$	3	Do not place the product on an unstable surface, such as on a wobbly table or on a tilted surface. Doing so may cause the product to fall, resulting in malfunction or injury.
$\bigcirc$	4	Do not store the product in a humid or dusty place. Doing so may cause ov erheating, ignition, or malfunction.
1 .15	Trans	portation Method
$\bigcirc$	1	Do not throw or drop it. Doing so may break the device.
$\otimes$	2	Do not allow it to get wet. Please be careful not to get it wet during transpo rtation during rainfall and snowfall.
1.16	Dispo	sal
$\bigcirc$	2	Do not throw batteries into fire. It may explode and cause fire or injury.
1.17	Other	
0	1	Please note that we are not responsible for any defects or abnormalities cau sed by deviations from the specifications.
$\triangle$	2	The Company reserves the right to change to alternative components to the extent that electrical, mechanical, and environmental characteristics are not im paired with respect to the equipment described in this specification.
$\otimes$	3	If the enclosure becomes too hot to touch, avoid touching it directly, stop usi ng it immediately, and contact our sales department or the nearest branch or sales office.
$\otimes$	4	Never perform internal inspections or repairs by the customer. Inspection and repair by unprofessional maintenance personnel may result in fire or electric shock. For internal inspection and repair, contact our sales department or the nearest branch/branch office or distributor.

Compliance Notation

True Importer No subject countries

Compliance with FCC/IC Rules and Regulations (USA and Canada)

#### • FCC

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with a minimum distance of 20cm betwe en the radiator and any part of your body.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

- IC This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Scien ce and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:
  - 1. This device may not cause interference.

2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux C NR d'Innovation, Sciences et Développement

économique Canada applicables aux appareils radio exempts de licence. L'exploitation est aut orisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage;

2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susce ptible d'en compromettre le fonctionnement.

This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolle d environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and any part of your body.