



# **TMS3.0 Type A GLOBAL**

**(Vehicle Control Terminal)**

**Installation Manual**

**version 4.0**

This manual describes how to install the product. Read carefully this manual before using this product and install the product according to guideline. And after reading this manual, keep it well and, if the person in charge is changed, be sure to hand over this manual to the successor and let he/she use the product correctly.

The content and image in this manual can be changed without notice by reason of product's function improvement or etc.

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DASAN Networks

## Revision history of document

Version	Date	Description
V1.0	2019-02-19	Initial release
V2.0	2019-07-01	2 <sup>nd</sup> release - Type A removed LTE Connector
V3.0	2020-09-14	3 <sup>rd</sup> release - Add FCC/CE/IC requirement - Iridium/GPS/WiFi Connector changed - LED Specification changed
V3.1	2020-09-16	4 <sup>th</sup> release - Changed PMN
V3.2	2020-10-20	5 <sup>th</sup> release - Inserted information about Cell limited Temperature
V3.3	2020-10-23	6 <sup>th</sup> release - Inserted information about Battery Information
V3.4	2020-12-28	7 <sup>th</sup> release - Inserted Frequency information.
V4.0	2021-01-13	8 <sup>th</sup> release - Separated by type

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## 1. Precautions in Product Handling

Read carefully the following contents before handling this product and use this product correctly according to guidelines. And after understanding precautions well, keep this manual well and let manager or user use this manual before and after installing product or before handling product. If the person in charge is changed, be sure to hand over this manual to the successor and let he/she use product correctly.

### Caution & Warning

#### **Installation Qualifying Condition**

Only the person who is qualified for handling designated installation equipment or only skilled technician can install this product.

#### **Prohibition of Product Disassembly**

Disassembly of this product can cause loss of life and property by electric shock, breakdown, malfunction, static electricity, etc. Do not disassemble, repair, remodel this product recklessly. If repair is needed, call Helpdesk (+82-1588-7080).

#### **Strict Observance of Operation Condition**

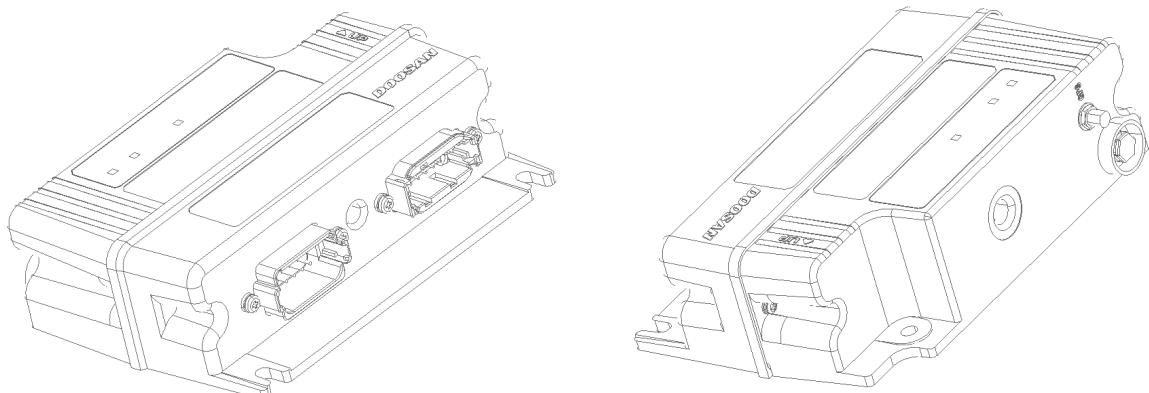
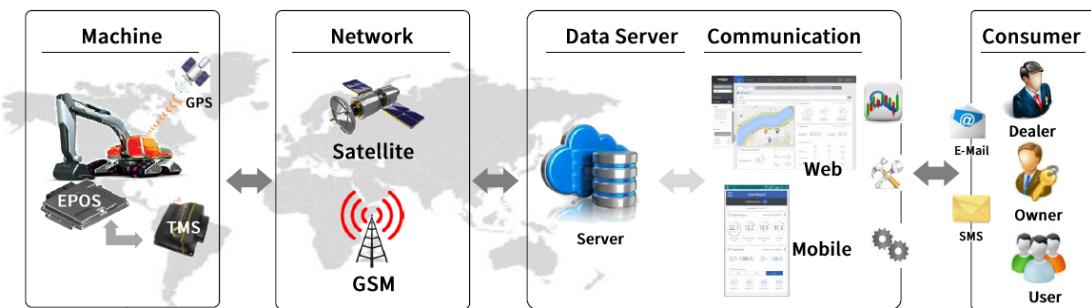
This product normally operates in the condition described in product specification. However, if the product keeps operating in condition that it is close to the minimum or maximum value, a probability of loss of life and property increases. Therefore, be sure to predict/check environmental change that each condition range may not approach the minimum or maximum value, and manage that the equipment may operate in median value of operation condition range.

#### **Maintaining Cleanliness of Installation Place**

Be sure to tidy up product installation place before and after installation, and do not leave working tools or components alone on the moving path to prevent accident.

## 2. System Overview

Enables real time monitoring of equipment operating information and state information in a remote place through mobile communication or satellite communication, and, through the real time monitoring, user, dealer, customer can raise efficiency of equipment management.



**Fig. 2.1** Front/Rear View

### 3. Product Interface & Specification

This page describes product interface and specification.

#### 3.1 Classification by Product

	Type-A	Type-B	Type-C	Type-D
Satellite		O		O
LTE(2G/3G/LTE)	O	O	O	O
GPS	O	O	O	O
Wi-Fi/BT			O	O
100BASE-T1 (BroadR-Reach)			O	O

Tab. 3.1 TMS3.0 Classification by Product

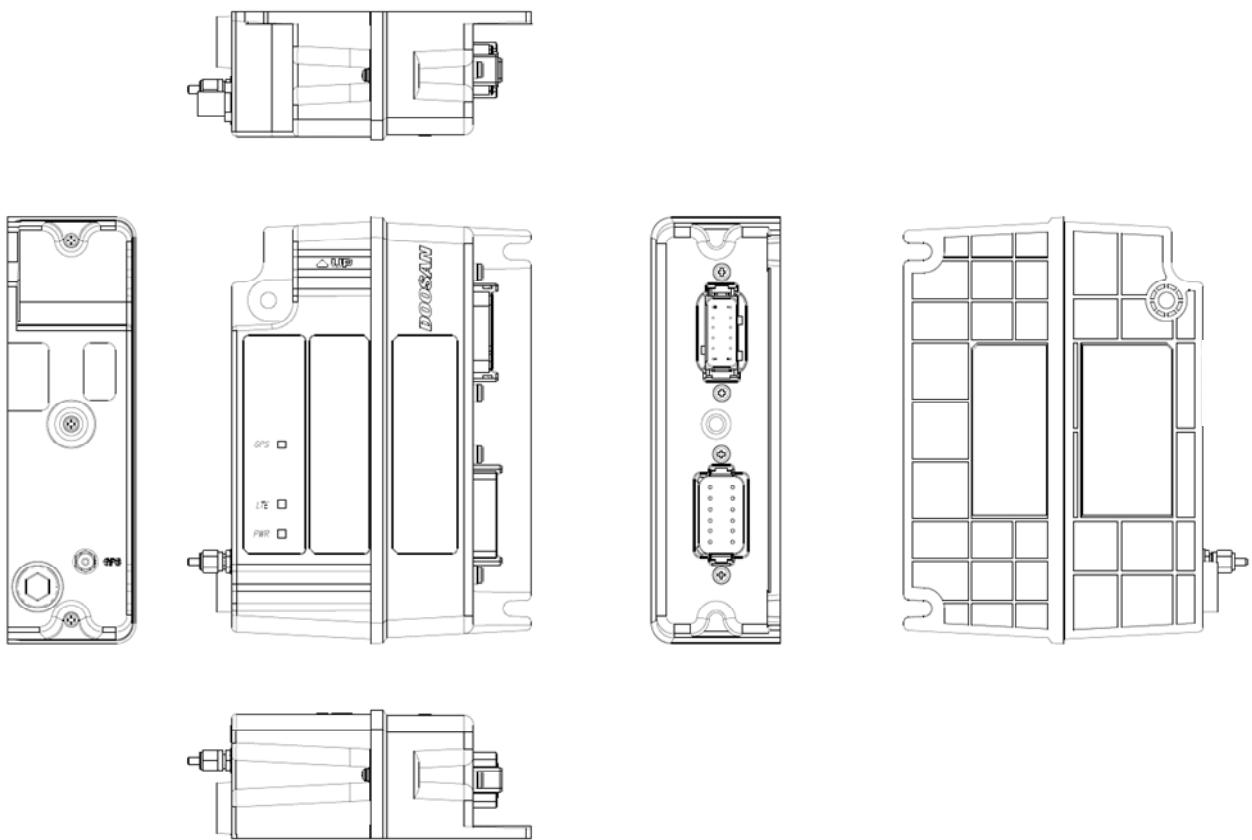


Fig. 3.1 Overall Shape of TMS3.0 Type-A

### 3.2 Product Specification

Item	Detail Function	Remarks
● Interface	1 x Mandatory Connector	
	1 x Secondary Connector	
	1 x GPS Antenna Connector	
● LED Indicator	LEDs	Type A : Power, LTE, GPS
● Power	DC Input Voltage	12/24VDC
	Consumption Power	Max 10.18W
	Internal Battery	TLI-1550 Cell X 3 (TADIRAN) Charger IC : BQ24259 Max Discharge Current: 3A Charge Voltage: 4.1V (-0.060V/+0.040V/-40°C ~ +85°C) Max Charge Current: 250mA *Charge IC Set: Limit 256mA
	* Limited Temperature for Charger and Discharge: -20°C ~ +50°C(±5°C)	
	Cell Surface Temperature when charged and discharge with Maximum current.	
● Physical Specification	Size (H x W x D)	174 x 122 x 52.4mm
	Operation Temperature	-30 ~ +75°C
	Operation Humidity	10 ~ 95% RH
	Storage Temperature	-40 ~ +85°C
	Tab. 3.2 TMS3.0 Product Specification	

### 3.3 LTE/3G/2G Frequency Range

No.	LTE Band	Duplex Mode	Uplink(MHz)	Downlink(MHz)
1	2	FDD	1850-1910	1930-1990
2	25	FDD	1850-1915	1930-1995
3	4	FDD	1710-1755	2110-2155
4	7	FDD	2500-2570	2620-2690
5	12	FDD	699-716	729-746
6	13	FDD	777-787	746-456
7	5	FDD	824-849	869-894
8	26	FDD	814-849	859-894
9	38	TDD	2570-2620	2570-2620
10	41	TDD	2496-2690	2496-2690

\* LTE Module : EG25-G

\* Modulation : UL(QPSK,16QAM) / DL(QPSK,16QAM)

**Tab. 3.3 TMS3.0 LTE Band**

No.	WCDMA Band	Tx (MHz)	Rx (MHz)
1	2	1850-1910	1930-1990
2	4	1710-1755	2110-2155
3	5	824-849	869-894

\* LTE Module : EG25-G

\* Modulation : UL/DL(QPSK,16QAM)

**Tab. 3.4 TMS3.0 WCDMA Band**

No.	GSM Band	Tx (MHz)	Rx (MHz)
1	GSM850	824.2-849.2	869.2-893.8
2	GSM1900	1850.2-1909.8	1930.2-1989.8

\* LTE Module : EG25-G

\* Modulation : GMSK(GSM/GPRS) / 8PSK(EGPRS)

**Tab. 3.5 TMS3.0 GSM Band**

### 3.4 Product Interface

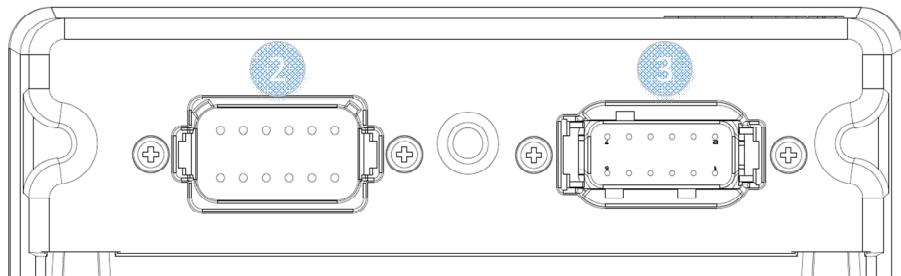


Fig. 3.2 Front Common Connector Shape of TMS3.0

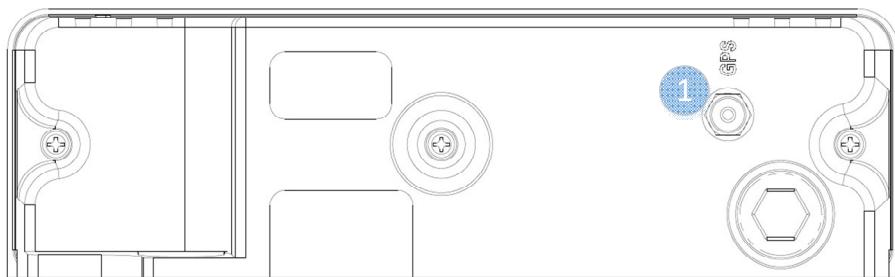


Fig. 3.3 Rear Connector Shape of TMS3.0 Type-A

No.	Item	Function	Connector Type
1	GPS	GPS Antenna Connection	S510-2573
2	Mandatory Connector	Power Alternator Key On CAN Security Serial RX/TX Cold Reset	DT13-12PA
3	Secondary Connector	CAN Solenoid Digital Input 100BASE-T1 x 2 Serial RX/TX	DTM13-12PA

Tab. 3.6 TMS3.0 Interface Specification

### 3.5 Product Antenna Specification

Item	Part No.	Connector Type	Length [mm]
GPS	HGPS-AX-0108A-04	SMA-Male	3320

**Tab. 3.7 TMS3.0 Antennal Specification**

### 3.6 LED Specification

Item	Color	State	Interval	Description
Power (Key on)	Green	Blinking	1000ms	Key On
	Green	Lighting		Engine On
	Yellow	Lighting		Internal Battery Charge & Under 50% Capacity
	Yellow	Blinking	500ms	Undefined Model
	Red	Lighting		Harness Failure
	Red	Blinking	500ms	Fault Code
Power (Key off)	Yellow	Blinking	1,000ms	Mbat Sleep (Sleep Vbat Event)
	Yellow	Blinking	1,000ms	Deep mode (Sleep Deep Event)
	Yellow	Blinking	1,000ms	Wake up (in Mbat Sleep status)
LTE	Red	Blinking	500ms	LTE Module / USIM Fault
	Yellow	Lighting		Unregistered (Roaming Failed)
	Yellow	Blinking	1,000ms	Registering
	Green	Lighting		Normal - Standby
	Green	Lighting	500ms	Data Sending / Receiving
GNSS	Yellow	Lighting		GPS Satellite is not sensed.
	Green	Lighting		Normal
	Red	Lighting		Antennal Non-Connection
	Red	Blinking	500ms	GNSS Module Fault

**Tab. 3.8 TMS3.0 LED Specification**

## 4. Installation Preparation

### 4.1 Installation Method

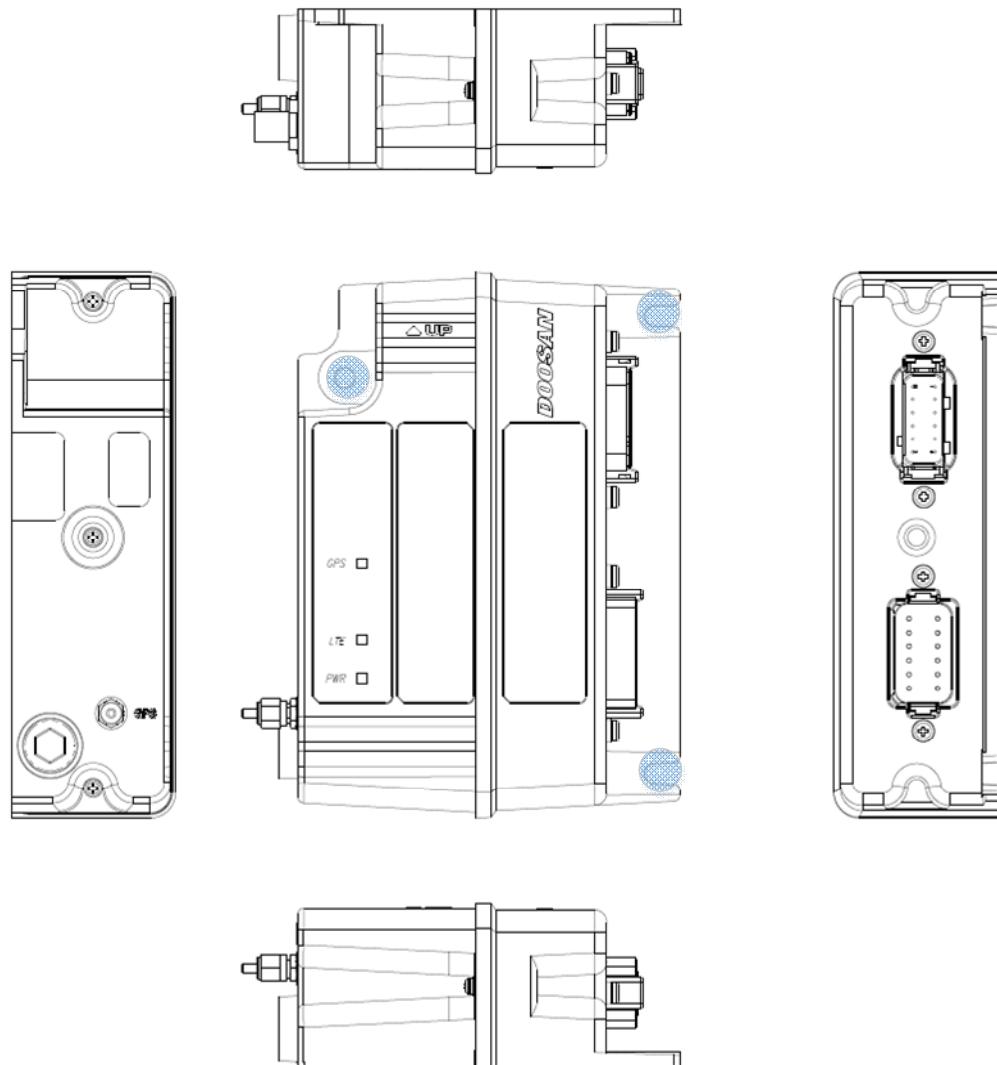


Fig. 4.1 Installation Block Diagram of TMS3.0

\* Blue Colored Location: Screw Hole Installation

\* Mounting Height: Under 2m (Wall installation in the CABIN)

\* The installation location of this equipment depends on the heavy equipment model, and the distance from the person must be at least 20cm when installing the product on the heavy equipment.

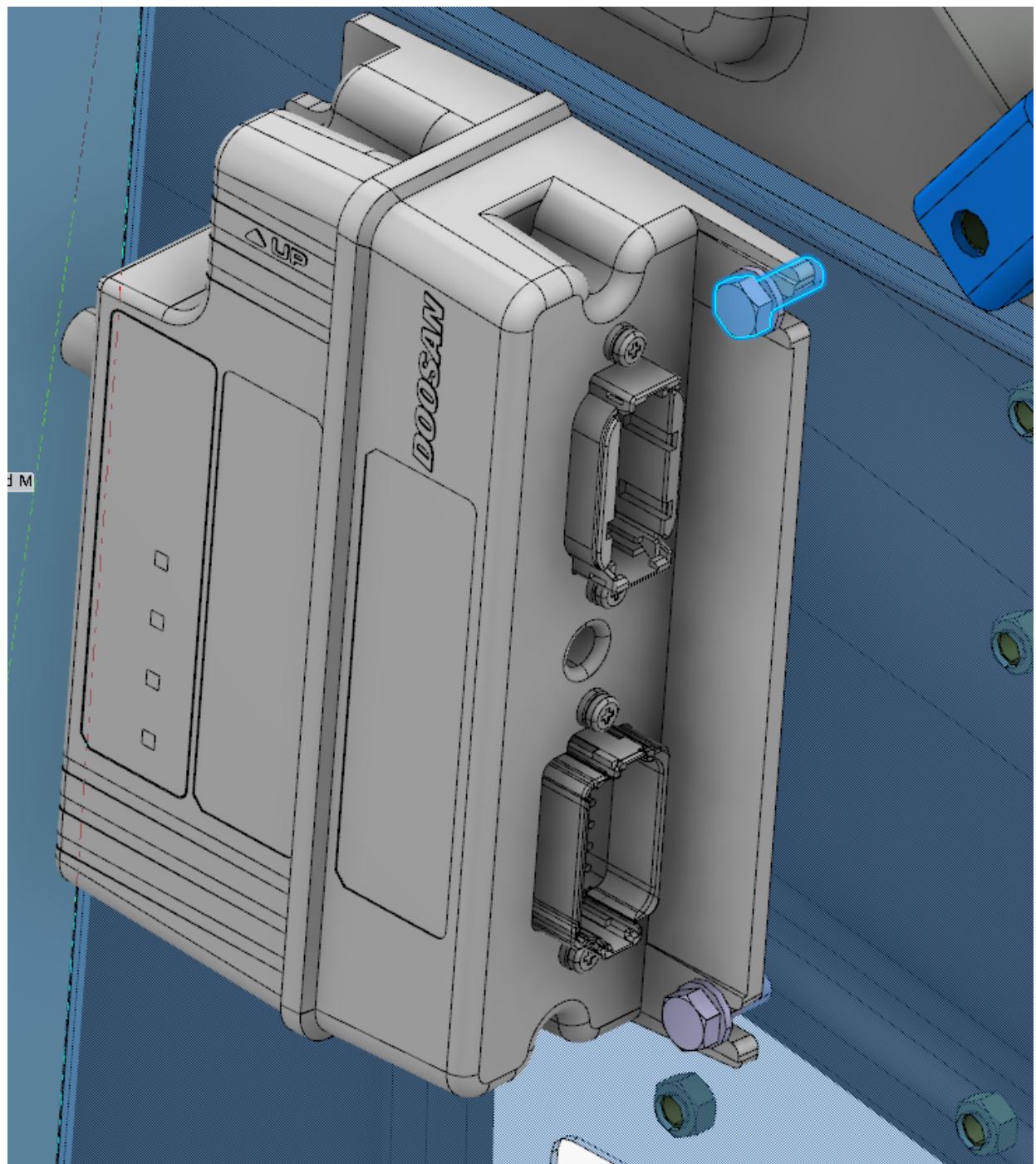
\* Screw Specification

PN: S0504653 (M6X1.0X16)

Surface treatment: Black

Strength: 8.8

Material: SM45C/SM50C



**Fig. 4.2 Mounting Example of TMS3.0**

## FCC Compliance

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.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be

determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The antenna should be installed and operated with minimum distance of 20 cm between the radiator and your body.

## IC Compliance

This device contains licence-exempt transmitter(s)/receiver that comply with Innovation, Science 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.

Cet appareil contient des émetteurs / récepteurs exempts de licence qui sont conformes aux RSS exempts de licence d'Innovation, Sciences et Développement économique Canada. Son fonctionnement est soumis aux deux conditions suivantes:(1) Cet appareil ne doit pas provoquer d'interférences.(2) Cet appareil doit accepter toute interférence, y compris les interférences qui peuvent provoquer un fonctionnement indésirable de l'appareil.

The antenna should be installed and operated with minimum distance of 20 cm between the radiator and your body.

L'antenne doit être installée de façon à garder une distance minimale de 20 centimètres entre la source de rayonnements et votre corps.