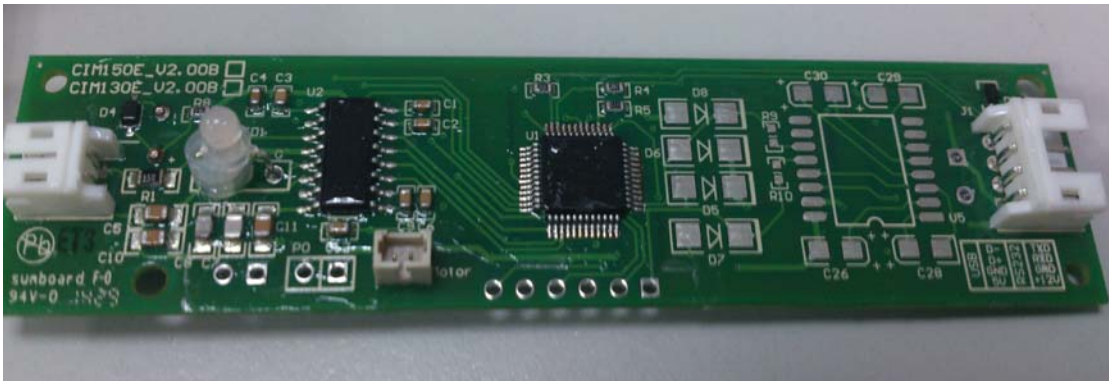
RF Reader

CIM150E



User Manual

V1.2
2014/10/13

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— Table of contains —

NOTE

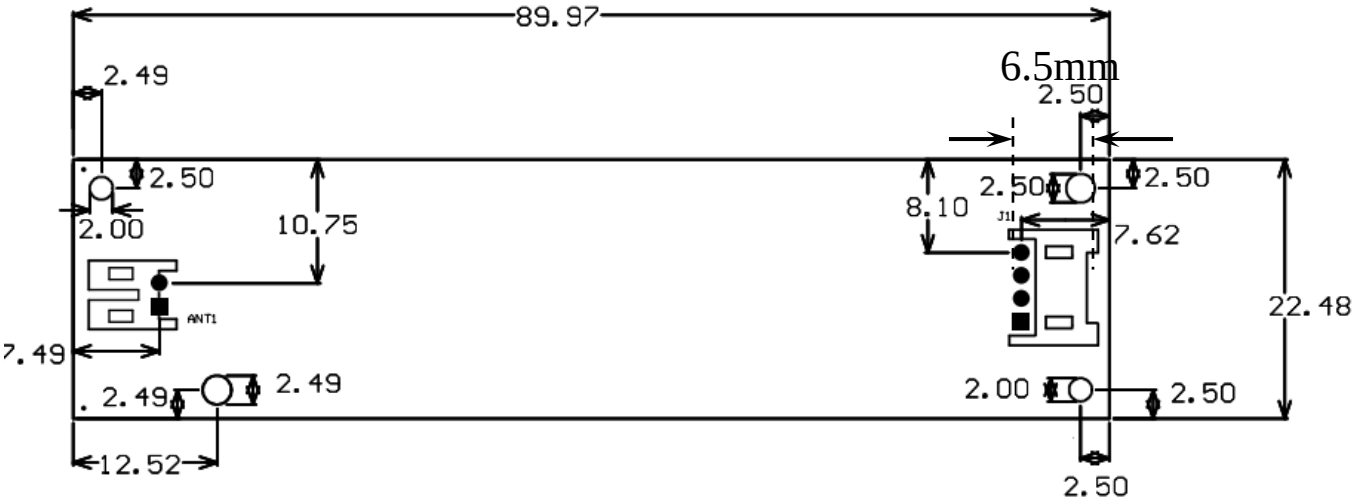
1 CIM150E Specification

1-1 Specification

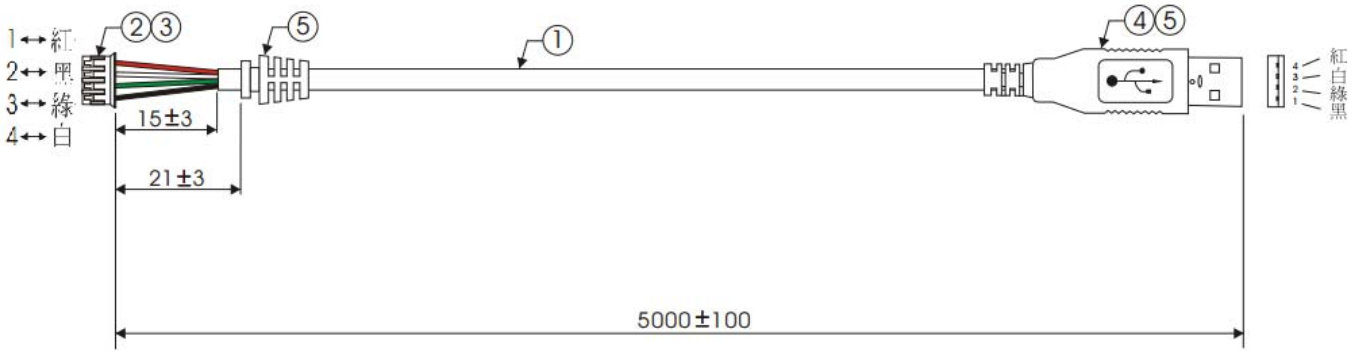
Parts	CIM150E_V2.00B
Transmit Frequency	125KHZ+/-5KHZ
Support Standard	EM400X,C4050,EM4150,EM4070,EM4170,EM4069
Power Supply	DC 5V
Power Consumption(Max)	Operating: 130mA Stand By: 20mA
Operating Temperature	-25˚C ~ 85˚C
Storage Temperature	-25˚C ~ 85˚C
Storage Humidity	5 ~ 97% non-condensing
Dimensions (Unit : mm)	L:90mm x W:22.5mm x H:17mm
Weight	10g±1%
Communication Interface	USB

*Antenna specifications according to the Antenna Accessories.
*Reading distance according to different antennas, Tag depending on different frequencies.

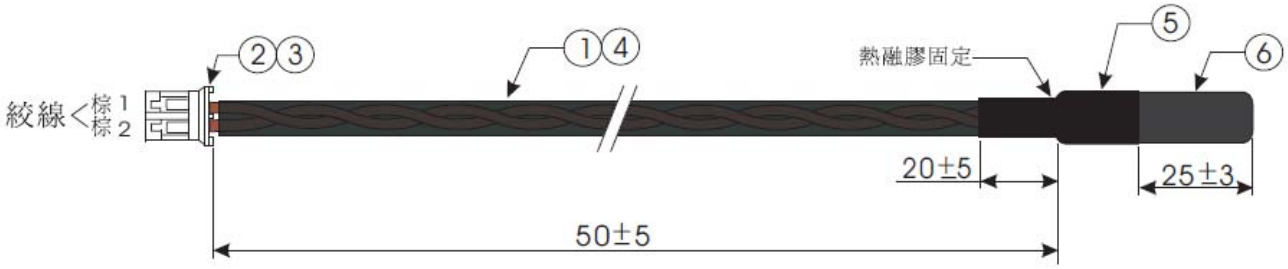
1-2 Dimension Shown



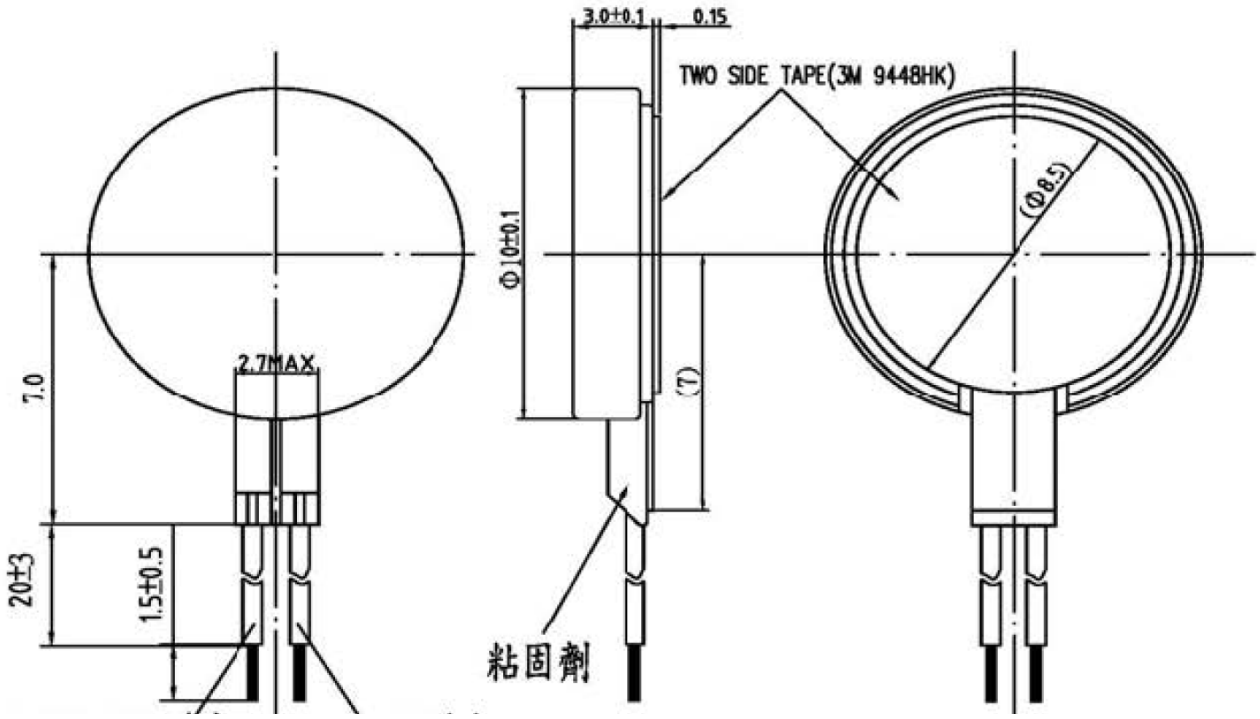
Main board



USB connect



ANT


3.0±0.1
0.15
TWO SIDE TAPE(3M 9448HK)
(Φ8.5)
Φ10±0.1
(7)
2.7MAX
1.0
20±3
1.5±0.5
粘固劑

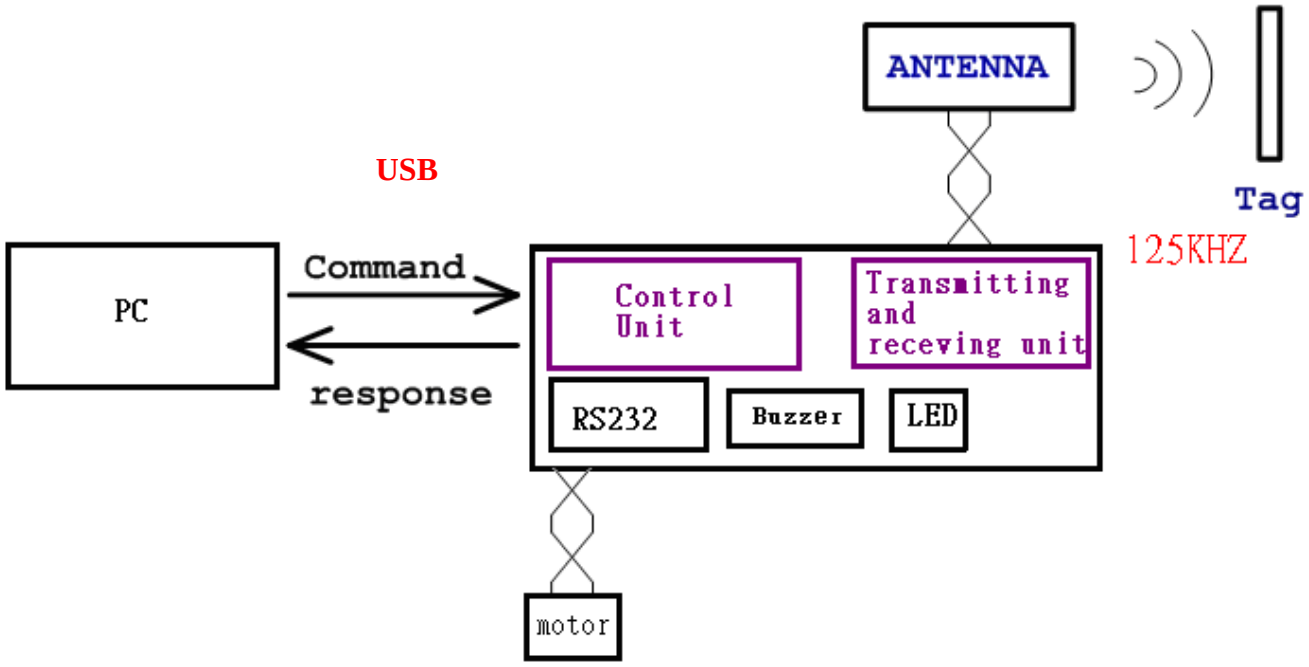
motor

1-3 Specification

Pin No.		Symbol	Description
J1	1	VDD	Supply voltage
	2	GND	Ground reference
	3	D+	Serial input
	4	D-	Serial output
ANT1	1	ANT	RF output
	2	ANT	RF output

1-4 Typical application

CIM150E and MCU circuit examples



2 Communication protocol

CIM150E is using the international Standard **UART** communication format, and with communication parameters set to **9600.N.8.1.**

DATA format are as follows:

HEADER						DATA			CHECK
SOH	PT	ID1	ID2	FC1	FC2	STX	DATA	ETX	BCC
01	Identify	01		Function Code		02	Data	03	Check sum

Description:

1. SOH, STX and ETX are all contained with one byte and used for control byte, the definition is:

   SOH=01H, STX=02H, ETX=03H
   Note: The “SOH” is the start byte for current command set
   The “STX” is the start byte for “Data”
   The “ETX” is the end byte for “Data”

2. PT (Packet Type) is used to identify where is the message comes from; “S” means it comes from PC and “s” means from the CIM150E.

3. ID1, ID2 are the ID codes of reader, the value is always “01”.

4. FC1 and FC2 are function codes, and related to the DATA, the relative data please refers to the next page.

5. BCC is checksum，from SOH to ETX one byte do “xor”，then do “or” 20H.

6. Returned data is first sent by the Low Byte.

Ex. CIM150E responds:

SOH	“S”	“01”	“A1”	STX	“010”	ETX	BCC

BCC = ***01H*** xor 53H xor 30H xor 31H xor 41H xor 31H xor ***02H***
Xor 30H xor 31H xor 30H xor ***03H*** or 20H =33H

3 Command list

No.	Code	Description	Page
1	"A1"	Read card and acquire card ID	9
2	“B0”	Buzzer off	10
3	“B1”	Buzzer on	11
4	"C0"	Turn off Green LED	12
5	"C1"	Turn on Green LED	13
6	"D0"	Turn off Yellow LED	14
7	"D1"	Turn on Yellow LED	15
8	"E1"	Acquire model name and firmware version	16
9	"E2"	Reset	17
10	"E8"	Switch off the vibration motor	18
11	"E9"	Switch on the vibration motor	19

- The Power lamp is Red LED.

4 Command description

1. “A1”: Read card and acquire card ID

Controller send：

SOH	**“S”**	ID1	ID2	**“A”**	**“1”**	STX	ETX	BCC

CIM150E responds：

SOH	**“s”**	ID1	ID2	**“A”**	**“1”**	STX	**data**	ETX	BCC

Data description:

1. The format of “data” will be: Card type (1 byte) + Card ID (16 byte).
2. Card number is “0” ～ “9”， “A” ～ “F”。 ex. "00000000003EA88F".

Function description:

1. Use this function to acquire card ID number through reader.
2. The “data” will be “N” if no card presented or failed reading. Such as: STX + “N” + ETX.
3. CIM150E remove data and close “read function” after it responded.
4. Returned data is first sent by the Low Byte.

Example：

Controller send：

SOH + "S01A1" + STX + ETX + BCC

CIM150E responds：

Read success:

SOH + "s01A1" + STX + "M0000000000123456" + ETX + BCC

Read failure:

SOH + "s01A1" + STX + " **N** " + ETX + BCC

2. “B0”: Buzzer off

Controller send：

SOH	**“S”**	ID1	ID2	**“B”**	**“0”**	STX	ETX	BCC

CIM150E responds：

SOH	**“s”**	ID1	ID2	**“B”**	**“0”**	STX	**data**	ETX	BCC

Function description：

1. Use the function to switch off Buzzer on immediately.
2. The data response for **“Y”** means setting **successful, “N”** means failure.

Example：

Controller send：

SOH + "S08B0" + STX + ETX + BCC

CIM150E responds：

SOH + "s08B0" + STX + **“Y”**+ ETX + BCC (Successful)

3. “B1”: Buzzer on

Controller send：

SOH	**“S”**	ID1	ID2	**“B”**	**“1”**	STX	ETX	BCC

CIM150E responds：

SOH	**“s”**	ID1	ID2	**“B”**	**“1”**	STX	**data**	ETX	BCC

Function description：

1. Use the function to switch on Buzzer on immediately.
2. The data response for **“Y”** means setting **successful, “N”** means failure.

Example：

Controller send：

SOH + "S08B1" + STX + ETX + BCC

CIM150E responds：

SOH + "s08B1" + STX + **“Y”**+ ETX + BCC (Successful)

4. “C0”: Turn off Green LED

Controller send：

SOH	**“S”**	ID1	ID2	**“C”**	**“0”**	STX	ETX	BCC

CIM150E responds：

SOH	**“s”**	ID1	ID2	**“C”**	**“0”**	STX	**data**	ETX	BCC

Function description：

1. Use the function to turn off Green LED on immediately.
2. The data response for **“Y”** means setting **successful,** **“N”** means failure.

Example：

Controller send：

SOH + "S07C0" + STX + ETX + BCC

CIM150E responds：

SOH + "s07C0" + STX + **“Y”**+ ETX + BCC (Successful)

5. “C1”: Turn on Green LED

Controller send：

SOH	**“S”**	ID1	ID2	**“C”**	**“1”**	STX	ETX	BCC

CIM150E responds：

SOH	**“s”**	ID1	ID2	**“C”**	**“1”**	STX	**data**	ETX	BCC

Function description：

1. Use the function to turn on Green LED on immediately.
2. The data response for **“Y”** means setting **successful, “N”** means failure.

Example：

Controller send：

SOH + "S07C1" + STX + ETX + BCC

CIM150E responds：

SOH + "s07C1" + STX + **“Y”**+ ETX + BCC (Successful)

6. “D0”: Turn off Yellow LED

Controller send：

SOH	**“S”**	ID1	ID2	**“D”**	**“0”**	STX	ETX	BCC

CIM150E responds：

SOH	**“s”**	ID1	ID2	**“D”**	**“0”**	STX	**data**	ETX	BCC

Function description：

1. Use the function to turn off Yellow LED on immediately.
2. The data response for **“Y”** means setting **successful,** **“N”** means failure.

Example：

Controller send：

SOH + "S12D0" + STX + ETX + BCC

CIM150E responds：

SOH + "s12D0" + STX + **“Y”**+ ETX + BCC (Successful)

7. “D1”: Turn on Yellow LED

Controller send：

SOH	**“S”**	ID1	ID2	**“D”**	**“1”**	STX	ETX	BCC

CIM150E responds：

SOH	**“s”**	ID1	ID2	**“D”**	**“1”**	STX	**data**	ETX	BCC

Function description：

1. Use the function to turn on Yellow LED on immediately.
2. The data response for **“Y”** means setting **successful,** **“N”** means failure.

Example：

Controller send：

SOH + "S12D1" + STX + ETX + BCC

CIM150E responds：

SOH + "s12D1" + STX + **“Y”**+ ETX + BCC (Successful)

8. “E1”: Acquire model name and firmware version

Controller send：

SOH	**“S”**	ID1	ID2	**“E”**	**“1”**	STX	ETX	BCC

CIM150E responds：

SOH	**“s”**	ID1	ID2	**“E”**	**“1”**	STX	**data**	ETX	BCC

Data description：

The value of “data” will include current firmware version and model name.

Function description：

Use this function to get model name and firmware version for current CIM150E.

Example：

Controller send：

SOH + "S01E1" + STX + ETX + BCC

CIM150E responds：

SOH + "s01E1" + STX + "V1.02 CIM150E" + ETX + BCC

Description：

(1) The current firmware version is V1.02 and the model name is CIM150E.

(2) Sunion reserved the right to update firmware at any time without prior notice.

9. “E2”: Reset CIM150E

Controller send：

SOH	**“S”**	ID1	ID2	**“E”**	**“2”**	STX	ETX	BCC

CIM150E responds：

SOH	**“s”**	ID1	ID2	**“E”**	**“2”**	STX	**data**	ETX	BCC

Function description:

1. Use this function to reset CIM150E.
2. If “data” value responded is **“Y”** means the set up is successful, **“N”** means failed, repeated or no data.
3. CIM150E will respond **“Y”** first then commence reset.

Example：

Controller send：

SOH + "S01E2" + STX + ETX + BCC

CIM150E responds：

SOH + "s01E2" + STX + **“Y”** + ETX + BCC (“Y” means the set up is successful)

10. “E8”: Switch off the vibration motor

Controller send：

SOH	**“S”**	ID1	ID2	**“E”**	**“8”**	STX	**DATA**	ETX	BCC

CIM150E responds：

SOH	**“s”**	ID1	ID2	**“E”**	**“8”**	STX	**data**	ETX	BCC

Data description：

1. data response for **“Y”** means setting **successful, “N”** means failure.

Function description：

1. Use this function to switch off the vibration motor.

Example：

Controller send：

SOH + "S01E8" + STX + "12" + ETX + BCC

CIM150E responds：

SOH + "s01E8" + STX + "**Y**" + ETX + BCC (Successful)

11. “E9”: Switch on the vibration motor

Controller send：

SOH	**“S”**	ID1	ID2	**“E”**	**“9”**	STX	**DATA**	ETX	BCC

CIM150E responds：

SOH	**“s”**	ID1	ID2	**“E”**	**“9”**	STX	**data**	ETX	BCC

Data description：

1. data response for **“Y”** means setting **successful, “N”** means failure.

Function description：

1. Use this function to switch on the vibration motor.

Example：

Controller send：

SOH + "S01E9" + STX + "12" + ETX + BCC

CIM150E responds：

SOH + "s01E9" + STX + "**Y**" + ETX + BCC (Successful)

Federal Communication Commission Interference Statement

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 of the following measures:

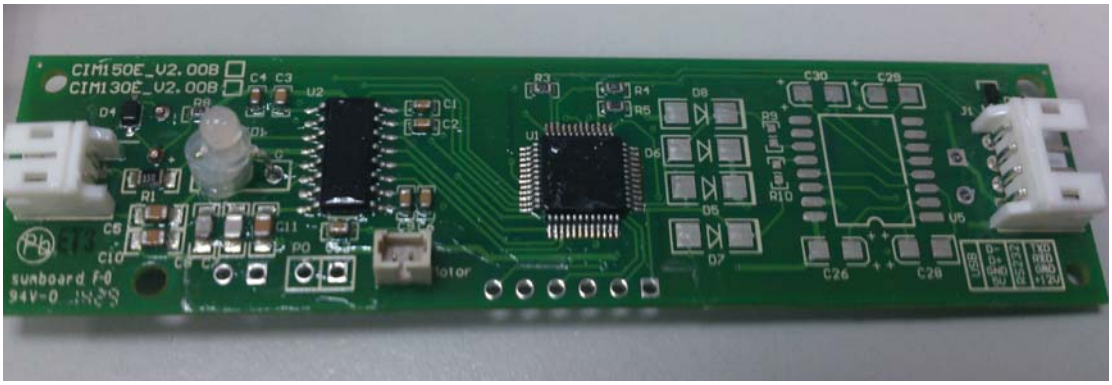
. Reorient or relocate the receiving antenna.
. Increase the separation between the equipment and receiver.
. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
. Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example - use only shielded interface cables when connecting to computer or peripheral devices).

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.

RF Reader

CIM130E



User Manual

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NOTE

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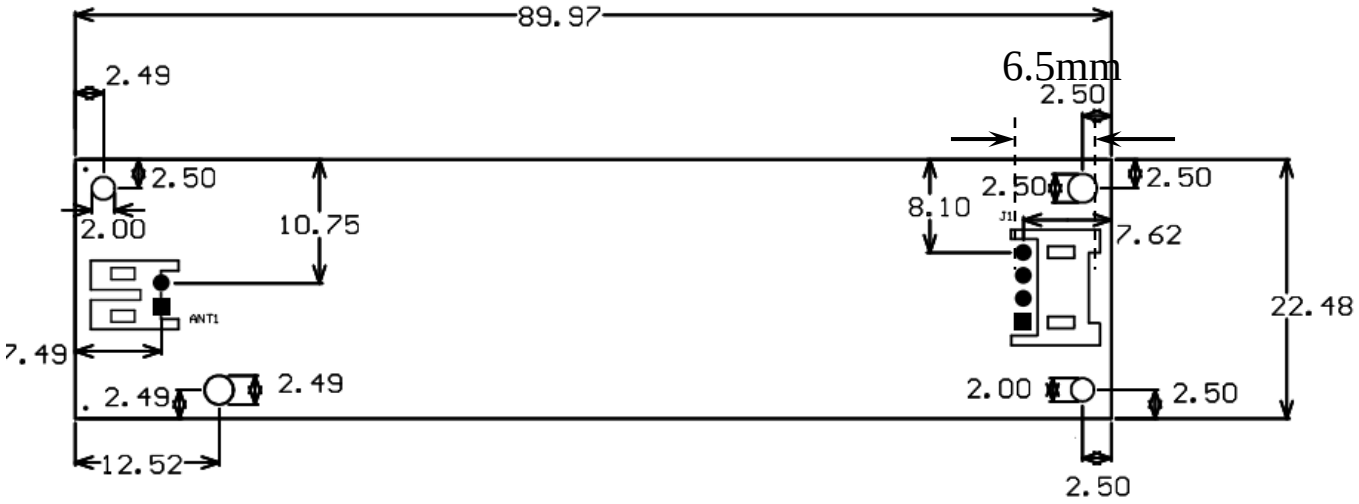
1 CIM130E Specification

1-1 Specification

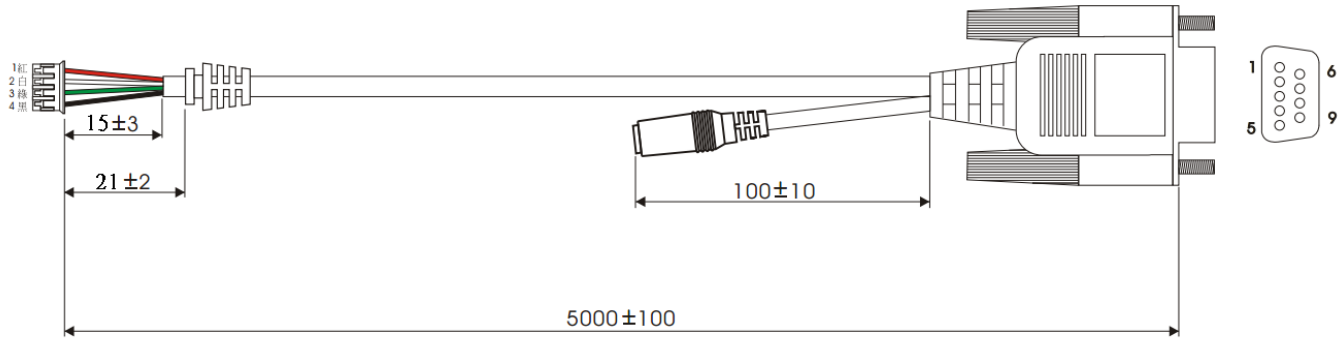
Parts	CIM130E_V2.00B
Transmit Frequency	125KHZ+/-5KHZ
Support Standard	EM400X,C4050,EM4150,EM4070,EM4170,EM4069
Power Supply	DC 12V
Power Consumption(Max)	Operating: 130mA Stand By: 20mA
Operating Temperature	-25˚C ~ 85˚C
Storage Temperature	-25˚C ~ 85˚C
Storage Humidity	5 ~ 97% non-condensing
Dimensions (Unit : mm)	L:90mm x W:22.5mm x H:17mm
Weight	10g±1%
Communication Interface	RS232

*Antenna specifications according to the Antenna Accessories.
*Reading distance according to different antennas, Tag depending on different frequencies.

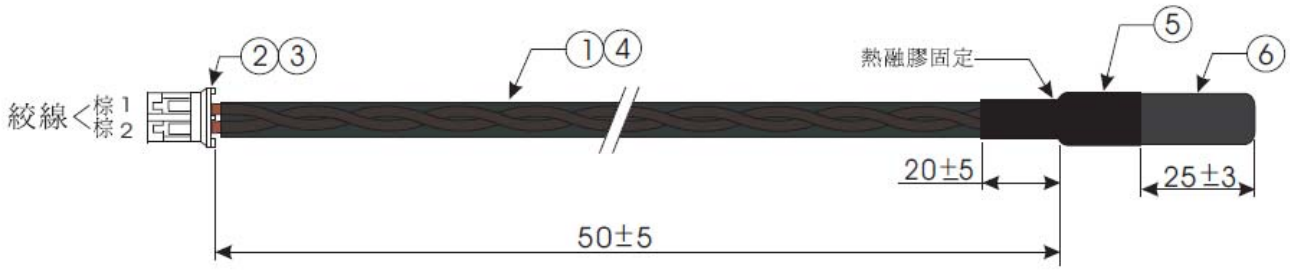
1-2 Dimension Shown



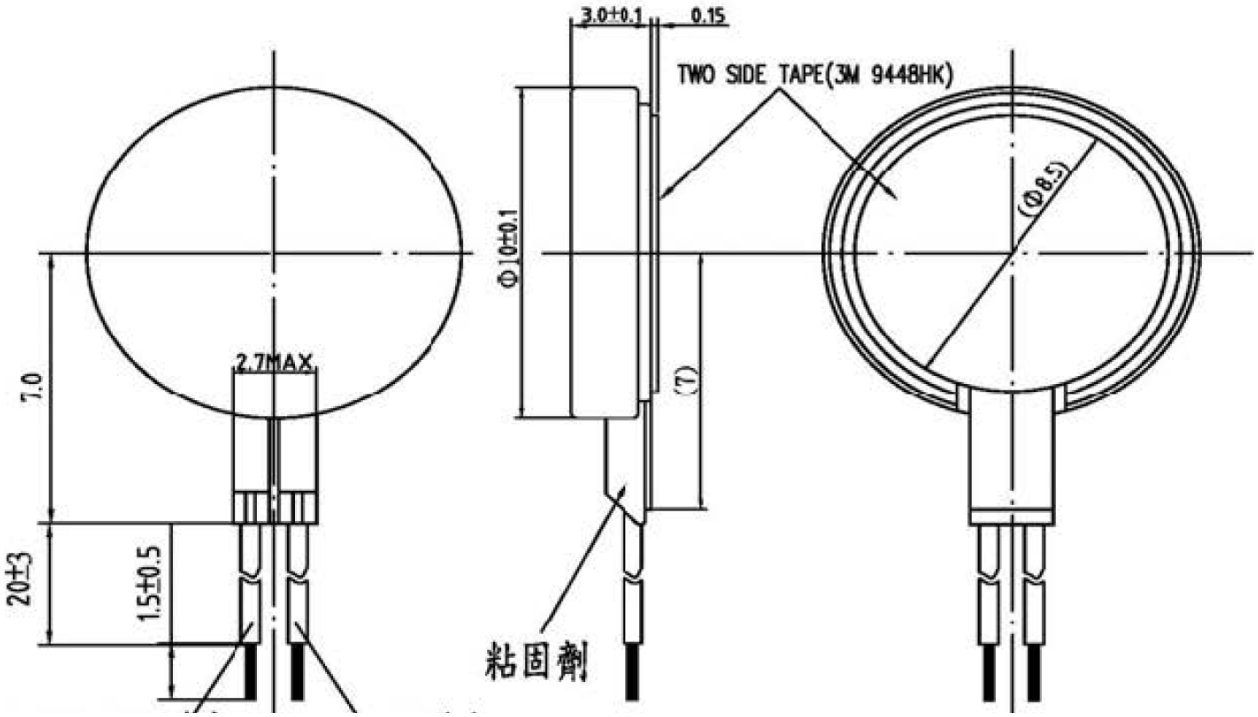
Main board



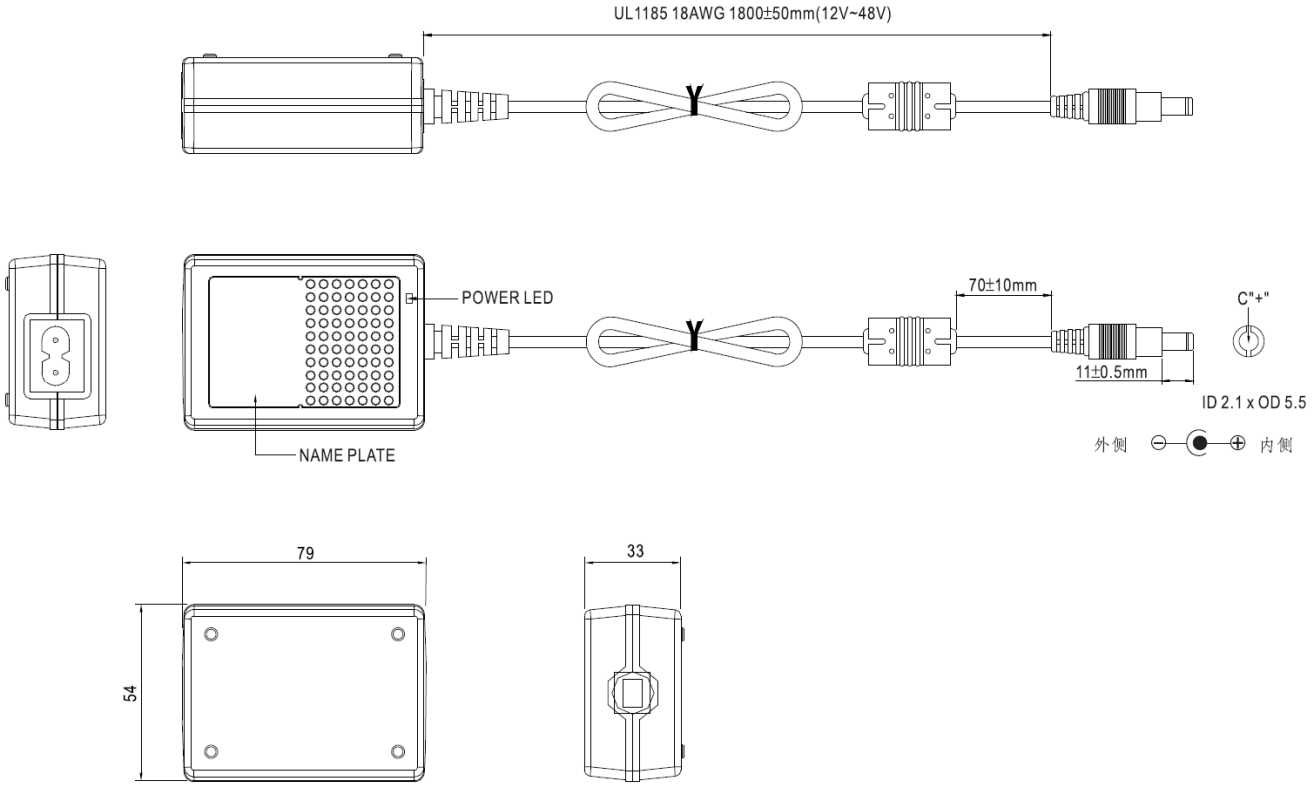
RS232 connect



ANT



MOTOR



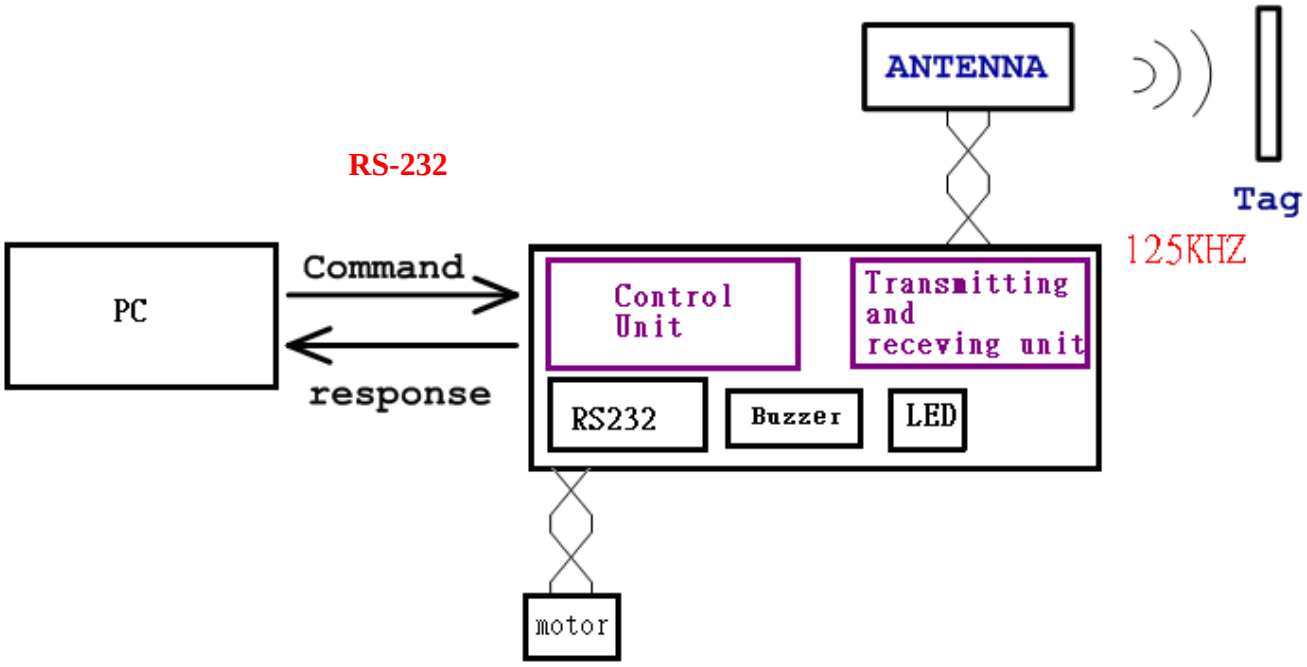
ADAPTER

1-3 Specification

Pin No.		Symbol	Description
J1	1	VDD	Supply voltage
	2	GND	Ground reference
	3	D+	Serial input
	4	D-	Serial output
ANT1	1	ANT	RF output
	2	ANT	RF output

1-4 Typical application

CIM130E and MCU circuit examples



2 Communication protocol

CIM130E is using the international Standard **UART** communication format, and with communication parameters set to **9600.N.8.1.**

DATA format are as follows:

HEADER						DATA			CHECK
SOH	PT	ID1	ID2	FC1	FC2	STX	DATA	ETX	BCC
01	Identify	01		Function Code		02	Data	03	Check sum

Description:

1. SOH, STX and ETX are all contained with one byte and used for control byte, the definition is:

   SOH=01H, STX=02H, ETX=03H
   Note: The “SOH” is the start byte for current command set
   The “STX” is the start byte for “Data”
   The “ETX” is the end byte for “Data”

2. PT (Packet Type) is used to identify where is the message comes from; “S” means it comes from PC and “s” means from the CIM130E.

3. ID1, ID2 are the ID codes of reader, the value is always “01”.

4. FC1 and FC2 are function codes, and related to the DATA, the relative data please refers to the next page.

5. BCC is checksum，from SOH to ETX one byte do “xor”，then do “or” 20H.

6. Returned data is first sent by the Low Byte.

Ex. CIM130E responds:

SOH	“S”	“01”	“A1”	STX	“010”	ETX	BCC

BCC = ***01H*** xor 53H xor 30H xor 31H xor 41H xor 31H xor ***02H***
Xor 30H xor 31H xor 30H xor ***03H*** or 20H =33H

3 Command list

No.	Code	Description	Page
1	"A1"	Read card and acquire card ID	9
2	“B0”	Buzzer off	10
3	“B1”	Buzzer on	11
4	"C0"	Turn off Green LED	12
5	"C1"	Turn on Green LED	13
6	"D0"	Turn off Yellow LED	14
7	"D1"	Turn on Yellow LED	15
8	"E1"	Acquire model name and firmware version	16
9	"E2"	Reset	17
10	"E8"	Switch on the vibration motor	18
11	"E9"	Switch off the vibration motor	19

- The Power lamp is Red LED.

4 Command description

1. “A1”: Read card and acquire card ID

Controller send：

SOH	**“S”**	ID1	ID2	**“A”**	**“1”**	STX	ETX	BCC

CIM130E responds：

SOH	**“s”**	ID1	ID2	**“A”**	**“1”**	STX	**data**	ETX	BCC

Data description:

1. The format of “data” will be: Card type (1 byte) + Card ID (16 byte).
2. Card number is “0” ～ “9”， “A” ～ “F”。 ex. "00000000003EA88F".

Function description:

1. Use this function to acquire card ID number through reader.
2. The “data” will be “N” if no card presented or failed reading. Such as: STX + “N” + ETX.
3. CIM130E remove data and close “read function” after it responded.
4. Returned data is first sent by the Low Byte.

Example：

Controller send：

SOH + "S01A1" + STX + ETX + BCC

CIM130E responds：

Read success:

SOH + "s01A1" + STX + "M0000000000123456" + ETX + BCC

Read failure:

SOH + "s01A1" + STX + " **N** " + ETX + BCC

2. “B0”: Buzzer off

Controller send：

SOH	**“S”**	ID1	ID2	**“B”**	**“0”**	STX	ETX	BCC

CIM130E responds：

SOH	**“s”**	ID1	ID2	**“B”**	**“0”**	STX	**data**	ETX	BCC

Function description：

1. Use the function to switch off Buzzer on immediately.
2. The data response for **“Y”** means setting **successful, “N”** means failure.

Example：

Controller send：

SOH + "S08B0" + STX + ETX + BCC

CIM130E responds：

SOH + "s08B0" + STX + **“Y”**+ ETX + BCC (Successful)

3. “B1”: Buzzer on

Controller send：

SOH	**“S”**	ID1	ID2	**“B”**	**“1”**	STX	ETX	BCC

CIM130E responds：

SOH	**“s”**	ID1	ID2	**“B”**	**“1”**	STX	**data**	ETX	BCC

Function description：

1. Use the function to switch on Buzzer on immediately.
2. The data response for **“Y”** means setting **successful, “N”** means failure.

Example：

Controller send：

SOH + "S08B1" + STX + ETX + BCC

CIM130E responds：

SOH + "s08B1" + STX + **“Y”**+ ETX + BCC (Successful)

4. “C0”: Turn off Green LED

Controller send：

SOH	**“S”**	ID1	ID2	**“C”**	**“0”**	STX	ETX	BCC

CIM130E responds：

SOH	**“s”**	ID1	ID2	**“C”**	**“0”**	STX	**data**	ETX	BCC

Function description：

1. Use the function to turn off Green LED on immediately.
2. The data response for **“Y”** means setting **successful, “N”** means failure.

Example：

Controller send：

SOH + "S07C0" + STX + ETX + BCC

CIM130E responds：

SOH + "s07C0" + STX + **“Y”**+ ETX + BCC (Successful)

5. “C1”: Turn on Green LED

Controller send：

SOH	**“S”**	ID1	ID2	**“C”**	**“1”**	STX	ETX	BCC

CIM130E responds：

SOH	**“s”**	ID1	ID2	**“C”**	**“1”**	STX	**data**	ETX	BCC

Function description：

1. Use the function to turn on Green LED on immediately.
2. The data response for **“Y”** means setting **successful,** **“N”** means failure.

Example：

Controller send：

SOH + "S07C1" + STX + ETX + BCC

CIM130E responds：

SOH + "s07C1" + STX + **“Y”**+ ETX + BCC (Successful)

6. “D0”: Turn off Yellow LED

Controller send：

SOH	**“S”**	ID1	ID2	**“D”**	**“0”**	STX	ETX	BCC

CIM130E responds：

SOH	**“s”**	ID1	ID2	**“D”**	**“0”**	STX	**data**	ETX	BCC

Function description：

1. Use the function to turn off Yellow LED on immediately.
2. The data response for **“Y”** means setting **successful, “N”** means failure.

Example：

Controller send：

SOH + "S12D0" + STX + ETX + BCC

CIM130E responds：

SOH + "s12D0" + STX + **“Y”**+ ETX + BCC (Successful)

7. “D1”: Turn on Yellow LED

Controller send：

SOH	**“S”**	ID1	ID2	**“D”**	**“1”**	STX	ETX	BCC

CIM130E responds：

SOH	**“s”**	ID1	ID2	**“D”**	**“1”**	STX	**data**	ETX	BCC

Function description：

1. Use the function to turn on Yellow LED on immediately.
2. The data response for **“Y”** means setting **successful,** **“N”** means failure.

Example：

Controller send：

SOH + "S12D1" + STX + ETX + BCC

CIM130E responds：

SOH + "s12D1" + STX + **“Y”**+ ETX + BCC (Successful)

8. “E1”: Acquire model name and firmware version

Controller send：

SOH	**“S”**	ID1	ID2	**“E”**	**“1”**	STX	ETX	BCC

CIM130E responds：

SOH	**“s”**	ID1	ID2	**“E”**	**“1”**	STX	**data**	ETX	BCC

Data description：

The value of “data” will include current firmware version and model name.

Function description：

Use this function to get model name and firmware version for current CIM130E.

Example：

Controller send：

SOH + "S01E1" + STX + ETX + BCC

CIM130E responds：

SOH + "s01E1" + STX + "V1.02 CIM130E" + ETX + BCC

Description：

(1) The current firmware version is V1.02 and the model name is CIM130E.

(2) Sunion reserved the right to update firmware at any time without prior notice.

9. “E2”: Reset CIM130E

Controller send：

SOH	**“S”**	ID1	ID2	**“E”**	**“2”**	STX	ETX	BCC

CIM130E responds：

SOH	**“s”**	ID1	ID2	**“E”**	**“2”**	STX	**data**	ETX	BCC

Function description:

1. Use this function to reset CIM130E.
2. If “data” value responded is **“Y”** means the set up is successful, **“N”** means failed, repeated or no data.
3. CIM130E will respond **“Y”** first then commence reset.

Example：

Controller send：

SOH + "S01E2" + STX + ETX + BCC

CIM130E responds：

SOH + "s01E2" + STX + **“Y”** + ETX + BCC (“Y” means the set up is successful)

10. “E8”: Switch off the vibration motor

Controller send：

SOH	**“S”**	ID1	ID2	**“E”**	**“8”**	STX	**DATA**	ETX	BCC

CIM130E responds：

SOH	**“s”**	ID1	ID2	**“E”**	**“8”**	STX	**data**	ETX	BCC

Data description：

1. data response for **“Y”** means setting **successful, “N”** means failure.

Function description：

1. Use this function to switch off the vibration motor.

Example：

Controller send：

SOH + "S01E8" + STX + "12" + ETX + BCC

CIM130E responds：

SOH + "s01E8" + STX + "**Y**" + ETX + BCC (Successful)

11. “E9”: Switch on the vibration motor

Controller send：

SOH	**“S”**	ID1	ID2	**“E”**	**“9”**	STX	**DATA**	ETX	BCC

CIM130E responds：

SOH	**“s”**	ID1	ID2	**“E”**	**“9”**	STX	**data**	ETX	BCC

Data description：

1. data response for **“Y”** means setting **successful, “N”** means failure.

Function description：

1. Use this function to switch on the vibration motor.

Example：

Controller send：

SOH + "S01E9" + STX + "12" + ETX + BCC

CIM130E responds：

SOH + "s01E9" + STX + "**Y**" + ETX + BCC　(Successful)

Federal Communication Commission Interference Statement

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 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.

FCC Caution: To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example - use only shielded interface cables when connecting to computer or peripheral devices).

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.