

Billion Electric Co., Ltd.

AAZWMNIIN7858MNX00

User Manual

Introduction

● **Scope**

This document describes the IN-7858Mn 802.11b/g/n INIC card hardware and software specifications.

● **Product Features**

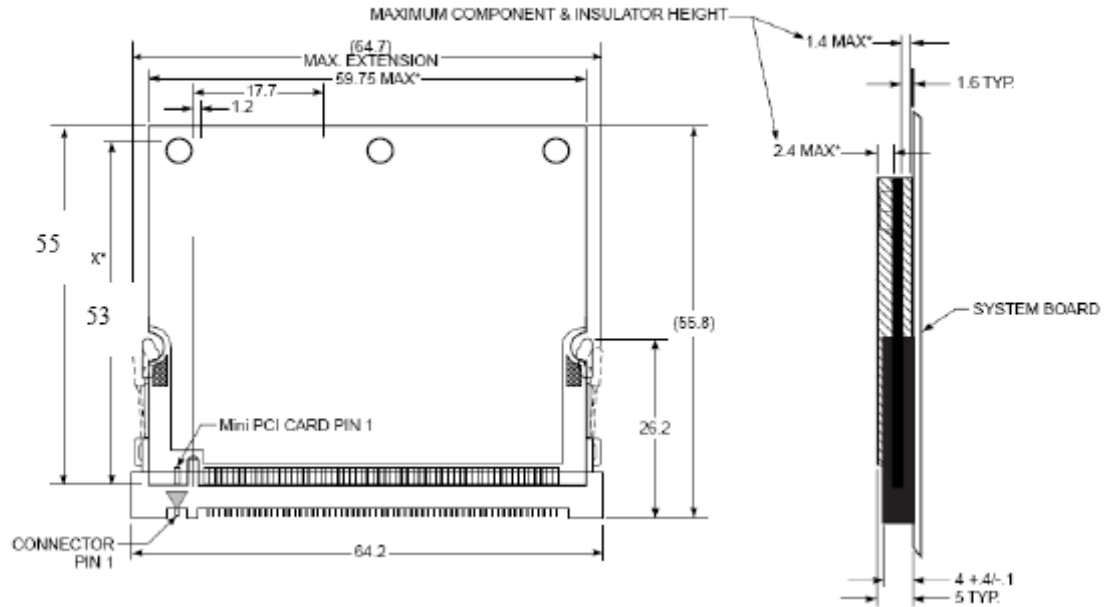
- Comply with 802.11n draft and 802.11b/g standards.
- High data transfer rate - up to 300Mbps.
- Supports farther coverage, less dead spaces and higher throughput with MIMO technology.
- Supports 11n Router, 11n ADSL Router, 11n IAD Router, etc. applications.
- Supports WPS (WiFi Protected Setup) interface.
- Supports Linux kernel 2.4/2.6.
- Support Mini-PCI/RGMII/MII interface.

Product Specification

Standard	IEEE 802.11 b/g and IEEE 802.11n Draft 2.0
Interface Type	Mini-PCI/RGMII/MII
Frequency Band	2.4000~2.4835GHz (Industrial Scientific Medical Band)
Modulation	OFDM with BPSK, QPSK, 16QAM, 64QAM (11n) OFDM with BPSK, QPSK, 16QAM, 64QAM (11g) BPSK, QPSK, CCK (11b)
Data Rate	11n (20MHz): MCS0-15, 32 with Half Guard Interval Support (up to 144Mbps) 11n (40MHz): MCS0-15, 32 with Half Guard Interval Support (up to 300Mbps) 11g: 54/48/36/24/18/12/9/6 Mbps 11b: 11/5.5/2/1Mbps auto fallback
Number of Channels	802.11b/g/n HT20: CH 1 ~ 11 (11channels) 802.11n HT40: CH 3 ~ 9 (7channels)
Antenna	I-PEX Connector x 3 Dipole antenna / antenna gain: 2dBi
OS	Linux Kernel 2.4/2.6
Transmit Power	2.4GHz 802.11b: 18.39 dBm; 802.11g: 16.51 dBm; 802.11n: 17.24 dBm
Receive Sensitivity	2.4GHz -300Mbps OFDM, 10% PER, -65dBm -54Mbps OFDM, 10% PER, -74.5dBm -11Mbps CCK, 8% PER, -89dBm
Dimension	59.75(W) x 54.73(D) x 1.0(H) mm
Temperature	32~122°F (0~50°C)
Humidity	Max.95% (NonCondensing)

Hardware Specification

● Mechanical Form Factor



Pin Specification

● Pin Description

Pin	Name	Pin	Name
1	NC	2	NC
3	NC	4	NC
5	NC	6	NC
7	NC	8	Wireless LED
9	AP Mode	10	Reset Default
11	LED ACT	12	LED 2.4G
13	NC	14	LED 5G
15	CHSGND	16	Soft Reset
17	INTB#	18	NC
19	3.3V	20	INTA#
21	NC	22	MA17
23	GND	24	3.3AUX
25	CLK	26	RST#
27	GND	28	3.3V
29	REQ#	30	GNT#
31	3.3V	32	GND
33	AD31	34	NC
35	AD29	36	NC
37	GND	38	AD30
39	AD27	40	3.3V

Pin	Name	Pin	Name
41	AD25	42	AD28
43	MDC	44	AD26
45	C/BE3#	46	AD24
47	AD23	48	IDSEL
49	GND	50	GND
51	AD21	52	AD22
53	AD19	54	AD20
55	GND	56	PAR
57	AD17	58	AD18
59	C/BE2#	60	AD16
61	IRDY#	62	GND
63	3.3V	64	FRAME#
65	CLKRUN#	66	TRDY#
67	SERR#	68	STOP#
69	GND	70	3.3V
71	PERR#	72	DEVSEL#
73	C/BE1#	74	GND
75	AD14	76	AD15
77	GND	78	AD13
79	AD12	80	AD11

Pin	Name	Pin	Name
81	AD10	82	GND
83	GND	84	AD9
85	AD8	86	C/BE0#
87	AD7	88	3.3V
89	3.3V	90	AD6
91	AD5	92	AD4
93	GE_RXDV	94	AD2
95	AD3	96	AD0
97	NC	98	DISABLE_RF_TX
99	AD1	100	WPS
101	GND	102	GND
103	GE_RXD1	104	MA11
105	GE_RXD2	106	GE_RXD0
107	GE_RXD3	108	GE_RXCLK
109	GE_TXEN	110	GE_TXCLK
111	GE_TXD3	112	GE_TXD0
113	GND	114	GND
115	GE_TXD1	116	GE_TXD2
117	GND	118	GND
119	GND	120	GND
121	MDIO	122	MPCIACT#
123	NC	124	3.3V

- **RGMI/MII interface**

Pin	Name	I/O	Description
22	HOST	I	MII/PCI Select. 1: RGMI/MII (Pull High) 0: PCI (Pull Low)
43	MDC	O	PHY Management Clock
93	GE_RXDV	I	RGMI/MII RX Data Valid
103	GE_RXD1	I	RGMI/MII RX Data bit #1
105	GE_RXD2	I	RGMI/MII RX Data bit #2
106	GE_RXD0	I	RGMI/MII RX Data bit #0
107	GE_RXD3	I	RGMI/MII RX Data bit #3
108	GE_RXCLK	I/O	RGMI/MII RX Clock
109	GE_TXEN	O	RGMI/MII TX Data Enable
110	GE_TXCLK	I/O	RGMI/MII TX Clock
111	GE_TXD3	O	RGMI/MII TX Data bit #3
112	GE_TXD0	O	RGMI/MII TX Data bit #0
115	GE_TXD1	O	RGMI/MII TX Data bit #1
116	GE_TXD2	O	RGMI/MII TX Data bit #2
121	MDIO	I/O	PHY Management Data (RGMI/MII Select. 1: RGMI (Pull High) 0:MII (Pull Low))

USA - Federal Communications Commission (FCC)

FCC Radiation Exposure Statement



CAUTION:

• The radiated output power of Module 802.11bgn devices is far below the FCC radio frequency exposure limits. Nevertheless, Module 802.11bgn devices should be used in such a manner that the potential for human contact during normal operation is minimized. To avoid the possibility of exceeding the FCC radio frequency exposure limits, you should keep a distance of at least 20 cm between you (or any other person in the vicinity) and the antenna that is built into the notebook.

Interference Statement

These devices comply with Part 15 of the FCC Rules. Operation of the devices is subject to the following two conditions: (1) The devices may not cause harmful interference, and (2) The devices must accept any interference that might 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. If the equipment is not installed and used in accordance with the instructions, the equipment might cause harmful interference to radio communications. There is no guarantee, however, that such 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 taking one or more of the following measures:

- Relocate this device.
- Increase the separation between the device and the receiver.
- Connect the device into an outlet on a circuit different from that of other electronics.
- Consult the dealer or an experienced radio technician for help.



NOTE:

- Module 802.11bgn must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product. Any other installation or use will violate FCC Part 15 regulations. Modifications not expressly approved by Billion could void your authority to operate the equipment.
- The devices must not be co-located or operating in conjunction with any other antenna or transmitter.