

JukeBlox Networked Media Module CR Series Datasheet



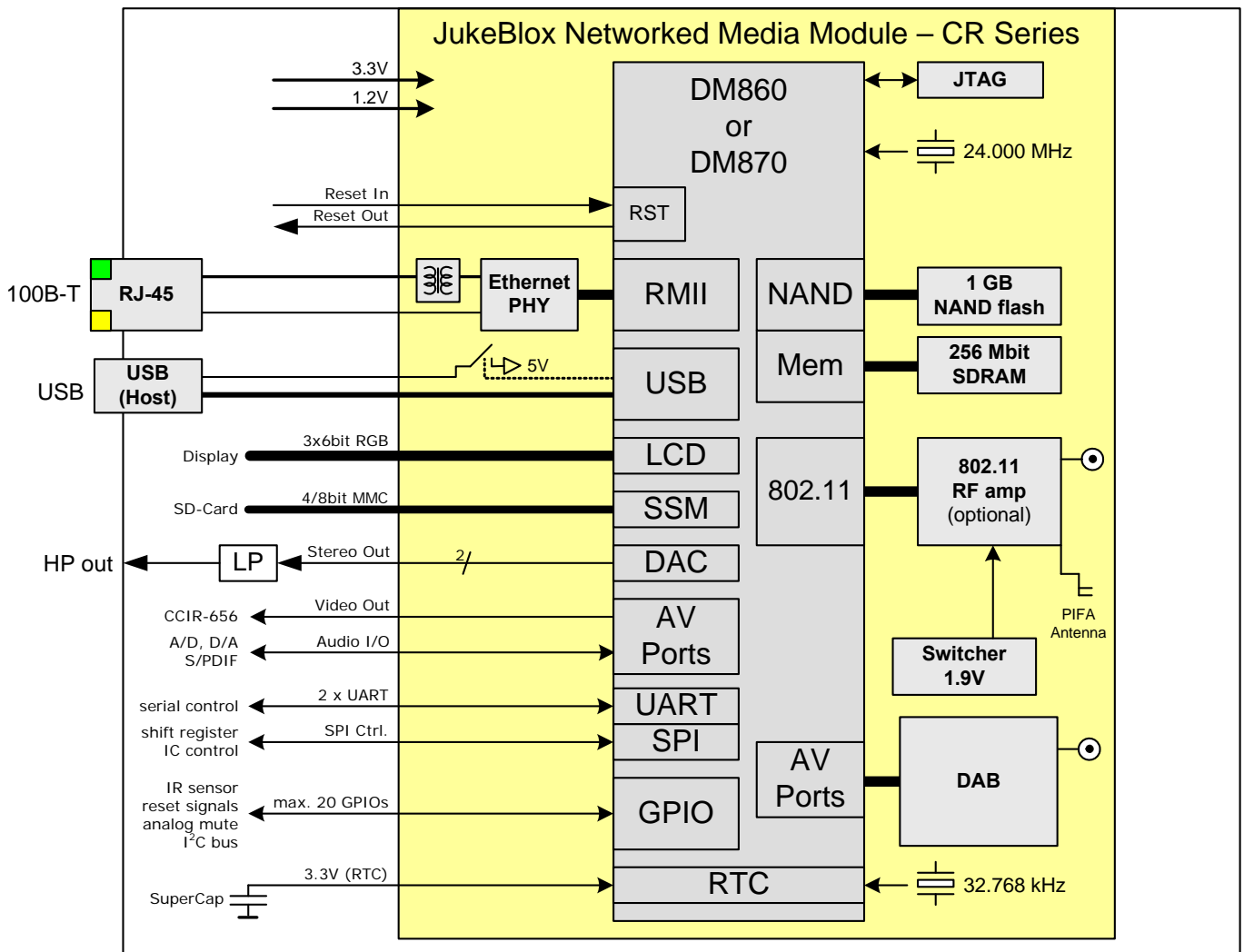
Complete audio networking system on a small module
Integrated Ethernet + USB2.0
WiFi-certified 802.11b/g (optional)
Built-in PIFA antenna
DAB radio receiver (optional)
Glueless audio, video and control ports
FCC certified

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Introduction

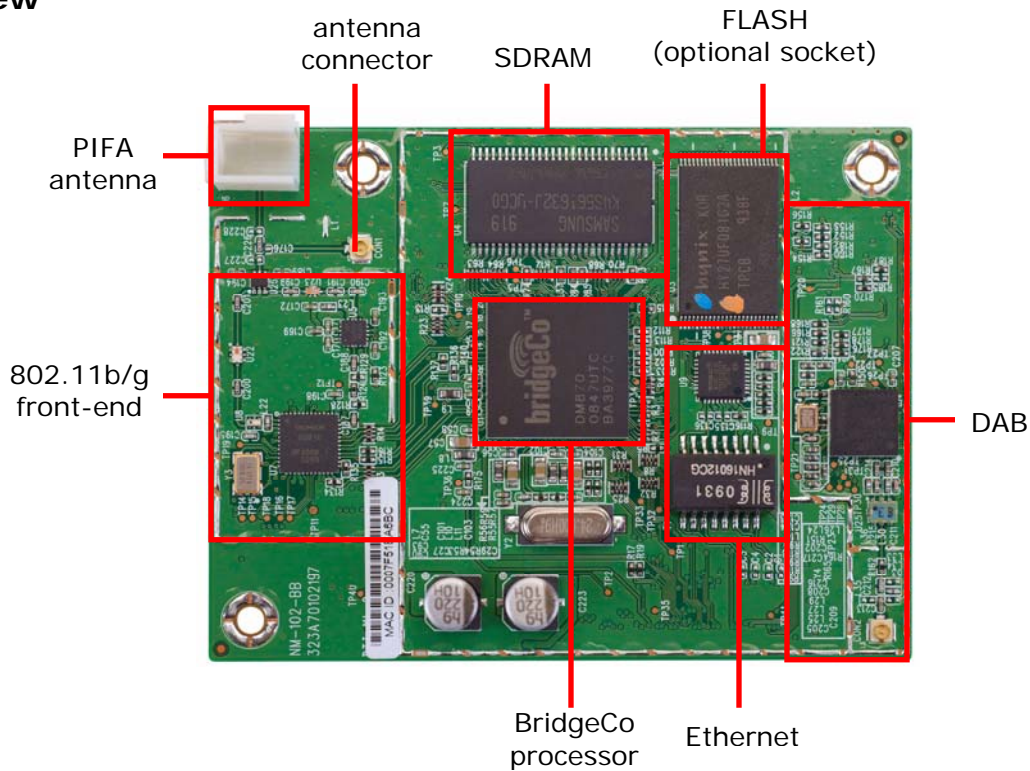
The CR-series module is a single-board networked media player module, based on BridgeCo's DM860 and DM870 media processors, and enables fast product developments with Ethernet, USB and optional WiFi and/or DAB radio connectivity. The module connects to standard legacy components in various audio, video/LCD and control formats.

Block Diagram

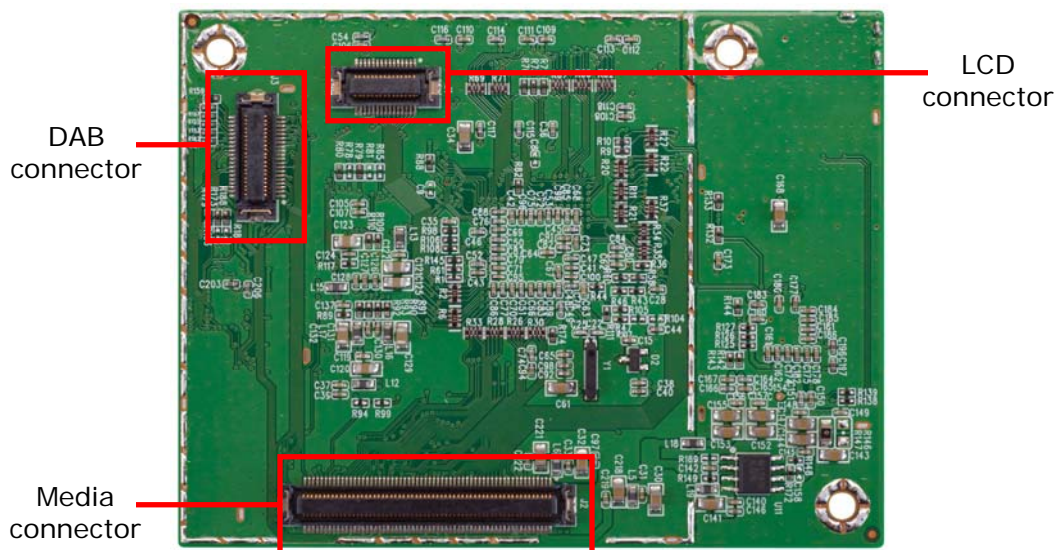


Overview

Top View



Bottom View



Ordering Guide

Part Number	BridgeCo ICs	WiFi	Ethernet	USB	Real-Time Clock	DAB / DAB+ / DMB Audio	LCD	PIFA Ant.
		Contains shield				Incl. connector	Incl. connector	
CR870-2A	DM870+T6201	X	X	X	X	X	X	X
CR870-2B	DM870+T6201	X	X	X			X	X
CR870-2C	DM870+T6201	X	X				X	X
CR870-2D	DM870+T6201	X		X	X		X	X
CR870-2F	DM870+T6201	X	X	X	X		X	X
CR860-2A	DM860	n/a	X	X				n/a
CR860-2B	DM860	n/a	X	X	X		X	n/a

Electrical Specifications

Parameter	State	Model	Component	Symbol	min.	typ.	max.	Units
Input Voltage			Main	VIN	+2.97 +1.08	+3.3 +1.2	+3.63 +1.32	V V
			DAB	VIN	+1.62 +2.97 +1.35	+1.8 +3.3 +1.5	+1.98 +3.63 +1.65	V V V
	Power Consumption	Reset State	CR870 CR860		PIN	tbd tbd	tbd tbd	tbd tbd
WLAN Operating		CR870 CR860		PIN	tbd tbd	tbd tbd	tbd tbd	W W

Operating Conditions

Parameter	min.	max.	Units
Operating Temperature	0	+70	°C
Operating Humidity	10	90 (non condensing)	%RH
Storage Temperature	-10	+75	°C
Storage Humidity	10	95 (non condensing)	%RH
Storage Temperature Cycle Test 24 hrs	-10	+75	°C

WiFi Specification (CR870 only)

Feature	Description
WLAN Standards	IEEE 802.11b IEEE 802.11g
Frequency Band	2.412 – 2.497 GHz (2.4GHz ISM Band, 14 Channels) Channel 1 - Channel 13, Channel 14 North America, Japan Telec, Europe ETSI
Modulation	802.11b mode (DS-SS: IEEE 802.11b) 802.11g mode (OFDM: IEEE 802.11g)
Transmission Speed	802.11b mode 11Mbps, 5.5Mbps, 1Mbps 802.11g mode 54Mbps, 48Mbps, 36Mbps, 24Mbps, 18Mbps, 12Mbps, 9Mbps, 6Mbps
Tx Power	802.11b mode (16.5dBm, +/-1dBm) 802.11g mode (21dBm, +/-1dBm)
Power-on Ramp	< 2us
RF Carrier Suppression	< 15dBc
TX EVM	< -5dB
Rx Sensitivity (incl. CE2 Mother board)	802.11b mode =<-88dBm @ 1Mbps, =<-85dBm @ 5.5Mbps, =<-83dBm @ 11Mbps 802.11g mode =<-86dBm @ 6Mbps, =<-75dBm @ 36Mbps, =<-69dBm @ 54Mbps
Throughput Rate (measured for each module)	See factory test specification

Regulatory compliance

Description	Country	Compliance
Electromagnetic Compatibility (Prescan)	USA Europe	FCC CFR47 Part15B EN 55022 EN 55024 EN 61000-3-2 EN 61000-3-3 EN 61000-4-2 EN 61000-4-3 EN 61000-4-4 EN 61000-4-5 EN 61000-4-6 EN 61000-4-8 EN 61000-4-11
Radio Regulations (CM870 only)	TBD	TBD

RoHS

Uses only RoHS compliant components

Environmental Test

Withstands 4 hours at 70°C, 90% RH

ESD and Transient Test (Applies to LAN and USB external connections only)

ESD: +/- 2kV operation, +/- 4kV no destruction (part of CE test)

Fast electrical transients: +/- 500V operation, +/- 1000V no destruction (part of CE test)

Magnetic Field Test

Passes EN55022 and EN55024 (part of CE test)

MTBF

>10000 hours

Mechanical Specifications

Passes drop test according to I.E.C. 68-2-32, height 100 cm, 1 corner, 6 faces.

Passes vibration test with sine, vertical, 60 minutes, 600 to 18000 cpm, 1G

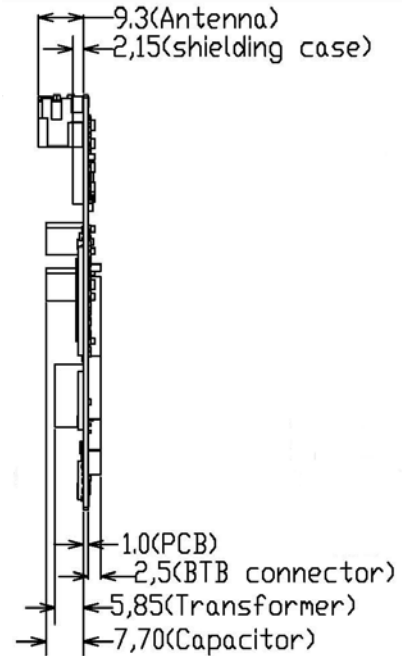
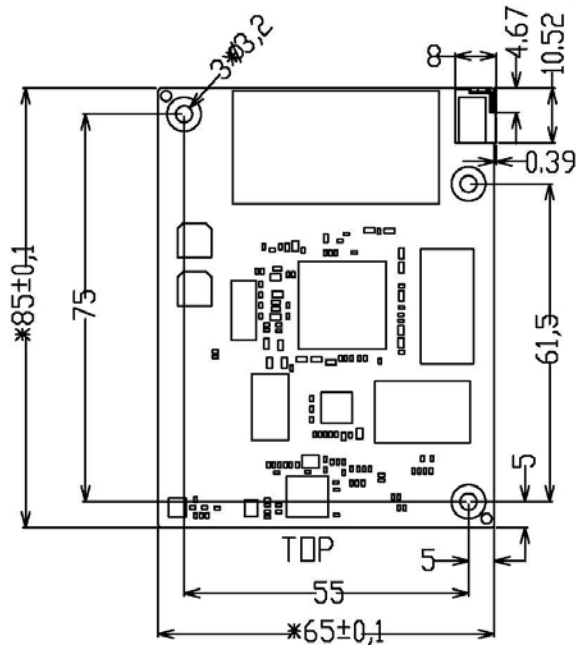
Module Quality

Defect Rate: 7 months <0.5% failures, 14 months <1% failures

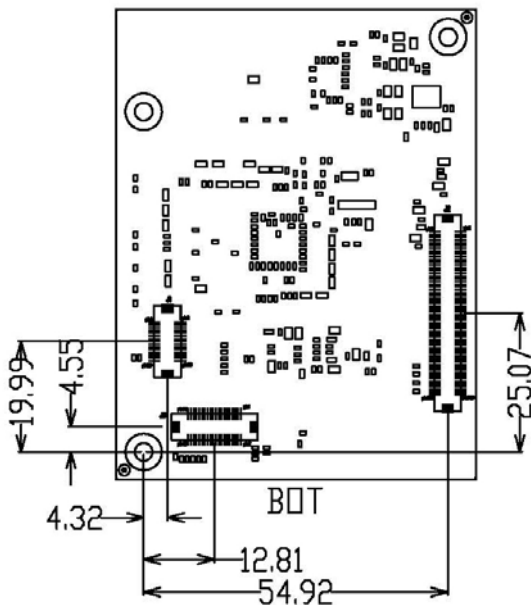
AQL CR=0, MA=0.4, MI=0.4

Board Dimensions

Top View and Side View



Bottom View (showing connector locations)



Note:

1. All dimensions are measured in **millimetres** (mm).
2. PCB's thickness: 1.00 +/- 0.10mm
3. Tolerance: +/-0.10mm
4. Outline Tolerance: +/-0.10mm
5. NPTH Hole: +/-0.05mm
6. PTH Hole: +/-0.075mm

Module weight

CR860-1: 25g
CR870-1: 25g

Connectors

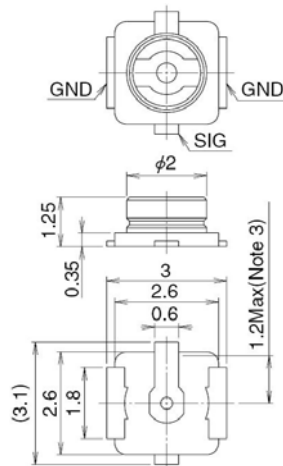
WLAN Antenna Connectors (optional)

One coaxial antenna connector is provided as an alternative to the built-in PIFA antenna. The choice between using the PIFA antenna or using the coaxial socket is a build option, determined by the position of a surface mount capacitor on the module PCB. Please see ordering guide for build option details.

The surface-mount receptible parts:

Hirose
U.FL-R-SMT (CL No. 331-0471-0)

Coaxial antenna connector dimensions



Module Connectors

The CR860/CR870 module uses 3 male connectors as interfaces to the main board, described below.

Connector Number	Connector Purpose	Connector Type	Number of Pins	Pin Configuration	Female Mating Connector Part Numbers
J1	LCD	B2B Connector	30	2 x 15 x 0.5mm	24-5046-030-100-829 (Kyocera)
J2	Media		120	2 x 60 x 0.5mm	24-5046-120-100-829 (Kyocera)
J3	DAB		40	2 x 20 x 0.5mm	24-5046-040-100-829 (Kyocera)

The pinout and signal names are shown on the next page. The following table provides an overview for the most important control and interface signals.

Key Connections

Signal(s)	Connector ID	Pin Number(s)	Description
VIN	J2	3, 4, 5, 6	Input voltage; +3.3V
	J2	9, 10, 11, 12	Input voltage; +1.2V
	J3	4, 6	Input voltage; +1.8V
	J3	10	Input voltage; +3.3V
	J3	12	Input voltage; +1.5V
SPI_DOUT SPI_DIN SPI_CLK SPI_NCS0, 1	J2 J2 J2 J2	25 27 29 30, 32	SPI bus from DM870's SPI controller.
RXD1, TXD1	J2	35, 37	3.3V logic level UART I/Os for the debug UART. Provide external RS-232 transceiver to connect to a PC's COM port.
NRESET	J2	34	Low-active input to reset the module; internal 10K pull-up
NPD_RF	J2	119	Low-active input to shut down the power for the 802.11 Rf part; internal 10K pull-up
AOUTLP/AOUTLN AOUTRP/AOUTRN	J2 J2	63, 65 60, 58	Differential stereo output from PWM-DAC.
BIST activate	J2	48	Low-active input to invoke the production BIST; DM870-internal pull-up
Factory Reset	J2	68	High-active input to reset the configuration; DM870-internal pull-down
IR input	J2	70	Infrared sensor input. This is a Schmitt-Trigger input and can handle interrupt inputs with slow slopes.
ETH_NRESET	J2	72	Low-active reset for the on-board Ethernet phy. This output is driven by the DM870 and is not suited for other purpose.
SDA, SCL	J2	73, 75	I2C bus created by GPIO-14 and GPIO-13. No internal pull-ups; if I2C is to be used, please add the proper external pull-up resistors.
ETH_LED_ACT ETH_LED_SPEED	J2 J2	100 102	3.3V push-pull outputs (max. ±12mA) to drive the Ethernet LEDs. A low-level indicates 100Mbps mode and activity respectively.

J1 – LCD Connector

Function	GPIO	Signal	IC PIN	Power	PIN Number		Power	IC PIN	Signal	GPIO	Function
				GND	1	2	GND				
LCD Interface		LCDD0	Y7		3	4		W7	LCDD1		LCD Interface
		LCDD2	V7		5	6		Y6	LCDD3		
		LCDD4	W6		7	8		V6	LCDD5		
		LCDD6	U6		9	10		Y5	LCDD7		
		LCDD8	W5		11	12		V5	LCDD9		
		LCDD10	U5		13	14		Y4	LCDD11		
		LCDD12	W4		15	16		V4	LCDD13		
		LCDD14	U4		17	18		Y3	LCDD15		
		LCDD16	W3		19	20		V2	LCDD17		
					GND	21	22	GND			
LCD Interface		LCDCLK	Y9		23	24		W9	LCDCTRL0		LCD Interface
		LCDCTRL1	Y8		25	26		W8	LCDCTRL2		
		LCDCTRL3	V8		27	28					
				GND	29	30	GND				

J3 – DAB Connector

Function	GPIO	Signal	PNM3030E PIN	Power	PIN Number		Power	PNM3030E PIN	Signal	GPIO	Function
				GND	1	2	GND				
		RESETB	30		3	4	VIN (+1.8V)				
		RF_I2C_CK	39		5	6	VIN (+1.8V)				
		I2C_SDA_DAB	3		7	8		40	RF_I2C_DT		
		I2C_SCL_DAB	46		9	10	VIN (+3.3V)				
				GND	11	12	VIN (+1.5V)				
		TEST_1	79		13	14		80	TEST_2		
SPI		DAB_SPI_MOSI	19		15	16		78	TEST_0		
		DAB_SPI_CSB	17		17	18		18	DAB_SPI_CLK		SPI
				GND	19	20		16	DAB_SPI_MISO		
				GND	21	22	GND				
				GND	23	24		14	INT_0		
				GND	25	26		15	INT_1		
		MPEG_ERR	4		27	28		47	MPEG_CLK		
		MPEG_SYNC	5		29	30		48	MPEG_VAL		
		MPEG_DAT7	6		31	32		7	MPEG_DAT6		
		MPEG_DAT5	51		33	34		8	MPEG_DAT4		
		MPEG_DAT3	52		35	36		9	MPEG_DAT2		
		MPEG_DAT1	10		37	38		53	MPEG_DAT0		
				GND	39	40	GND				

Revision Control

Revision	Date / Author	Remarks
V2.5	Feb. 10, 2010 / SHs	<ul style="list-style-type: none"> Updated "Ordering Guide" table Added new coaxial text in "WLAN Antenna Connectors" section Added manufacturer name to "Module Connectors" table
V2.4	Feb. 08, 2010 / SHs	<ul style="list-style-type: none"> Updated Rx Sensitivity description in "WiFi Specification" table
V2.3	Feb. 03, 2010 / SHs	<ul style="list-style-type: none"> "Key Connectors" table title changed to "Key Connections" Updated entries in "Key Connections" table Updated pins 1, 2, 25, 27, 58 & 60 in "J2 – Media Connector" table
V2.2	Feb. 02, 2010 / SHs	<ul style="list-style-type: none"> Added new items to "WiFi Specification" table Amended Block Diagram to show input of 1.2V instead of 1.8V
V2.1	Jan. 04, 2010 / SHs	<ul style="list-style-type: none"> Updated header layout Removed "CR860/CR870" from data sheet title Left justified Key Features list on front page New Ordering Guide table Updated Module Weights
V2.0	Jan. 02, 2010 / JWs and SHs	<ul style="list-style-type: none"> New header and footer layout Fit front and back Overview images onto one page Bulletise Revision Control table
V1.1	Dec. 18, 2009 / SHs	<ul style="list-style-type: none"> Changed Core Module name to "JukeBlox Networked Media Module(CR Series)" Front page revisions: removed front and back images of board; inserted angled image of board; moved Key Features list to front page Moved Disclaimers page to end of document Replaced previous board images (front and back) in Overview section with better quality images Added box and label to BridgeCo processor in Overview images Revised Ordering Guide Reduced Board Dimension drawings to fit on one page Added mating connector part numbers to Module Connectors section.
V1.0	Dec. 9, 2009 / SHs	Initial version

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Module Revision History

To be determined.

CAUTION

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.

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

Information for the OEMs and Integrators

The following statement must be included with all versions of this document supplied to an OEM or integrator, but should not be distributed to the end user.

This device is intended for OEM integrators only.

Please See the full Grant of Equipment document for other restrictions.

This device must be operated and used with a locally approved access point.

Information To Be Supplied to the End User by the OEM or Integrator

The following regulatory and safety notices must be published in documentation supplied to the end user of the product or system incorporating an adapter in compliance with local regulations. Host system must be labeled with "Contains FCCID:PPQ-CR8702C", FCC ID displayed on label.

Warning

"Industry Canada regulatory information Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device. ""The user is cautioned that this device should be used only as specified within this manual to meet RF exposure requirements. Use of this device in a manner inconsistent with this manual could lead to excessive RF exposure conditions."

FEDERAL COMMUNICATIONS 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 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.