

Promote RMI

Integration Manual

Thank you for choosing Profoto

Thank you for giving us your confidence by investing in the Profoto Promote RMI. For more than three decades we have sought after the perfect light. What drives us is our conviction that we can offer even better tools for the most demanding photographers. Before our products are shipped we have them pass an extensive and strict testing program. We make sure that each individual product meets our high demands on performance, quality, and safety. For this reason our flash equipment is widely used in rental studios in Paris, London, New York, and Tokyo and is also the most rented flash all over the world.

Some photographers can tell just from seeing a picture, if Profoto equipment has been used

Professional photographers around the world have come to value Profoto's expertise in lighting and light-shaping. Our extensive range of Light Shaping Tools offers photographers unlimited possibilities for creating and adjusting their own light.

Every single reflector and accessory creates its special light and the unique Profoto focusing system offers you the possibility to create your own light with only a few different reflectors.

Enjoy your Profoto product!

Safety instructions



NOTE ABOUT RF!

This equipment makes use of the radio spectrum and emits radio frequency energy. Proper care should be taken when the device is integrated in systems. Make sure that all specifications within this document are followed, especially those concerning operating temperature and supply voltage range. Make sure the device is operated according to local regulations. The frequency spectrum this device is using is shared with other users. Interference can not be ruled out.

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SAFETY PRECAUTIONS!

Do not attempt to operate the equipment before studying the instruction manual and the accompanying safety instructions. Failure to do so may result in serious injuries.

Make sure that Profoto Safety Instructions is always accompanied the equipment!

Profoto products are intended for professional use!

Do not place or use the equipment where it can be exposed to moisture, extreme electromagnetic fields, or in areas with flammable gases or dust!

Do not expose the equipment to rapid temperature changes in humidity conditions as this could lead to water condensation in the unit.

Equipment must only be serviced by authorized and competent service personnel!

Any modifications will break the modular certification and require the module to be re-certified.



FINAL DISPOSAL

This equipment contains electrical and electronic components that could be harmful to the environment.

Equipment may be returned to Profoto distributors free of charge for recycling according to WEEE.

Follow local legal requirements for separate disposal of waste, for instance WEEE directive for electrical and electronic equipment on the European market, when the product's life has ended!

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Introduction

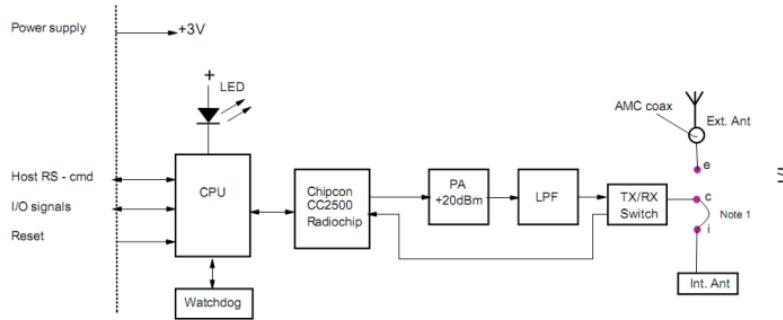
Promote RMI is the base for Profoto's versatile modular communication platform, used in products such as the flash generator Pro-8a 1200 Air. It utilizes communication in the 2.4GHz ISM- band and has an impressive performance with a range of up to 300 meters.

General Description

The Promote RMI module is powered by an 8-bit micro processor with a radio transceiver from Chipcon and features a complete feature set for wireless interaction with the Profoto Air range of professional studio equipment. The module has a 3V UART for interaction with a wide range of devices including computers and other microcontrollers.

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System Diagram



Hardware Description

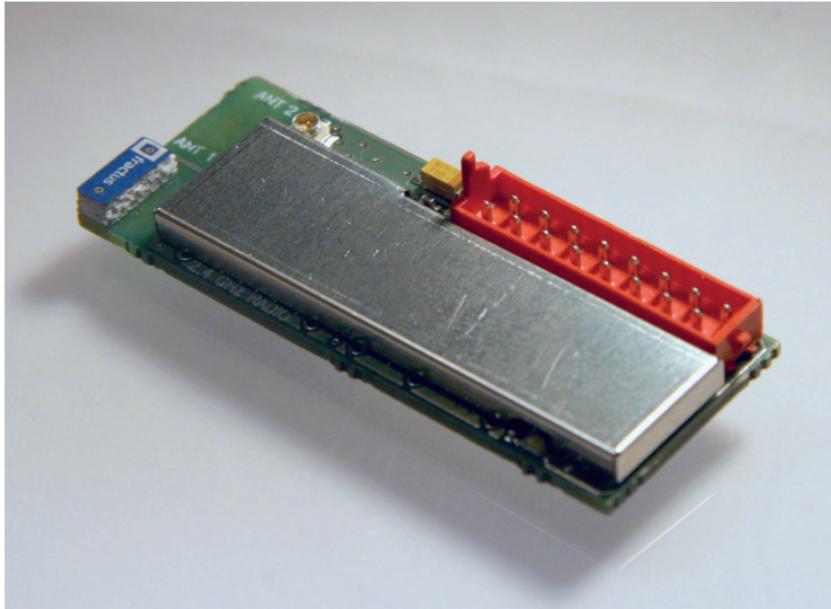
Mechanical Characteristics

Dimensions

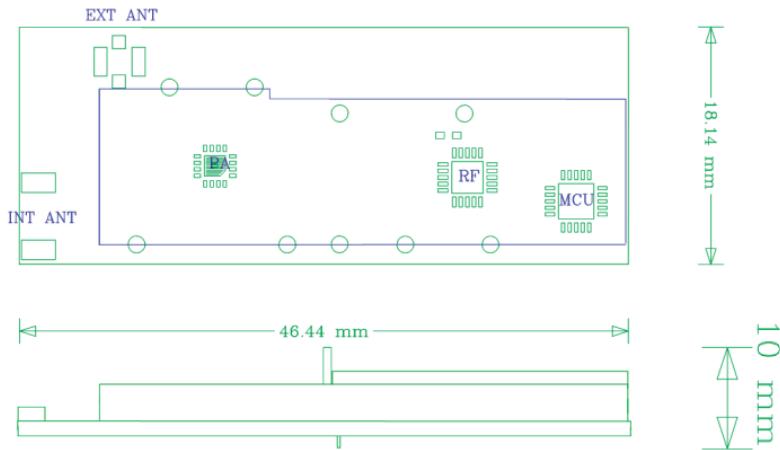
46x18 x 10 mm +/- 1mm [Length, Width, Height]

Weight: approx 10g

Product Image



Mechanical Drawing



Electrical Characteristics

PINOUT

PIN	Function
1	GND
2	VCC (Transmit)
3	Sync O.C.
4	Test_0
5	Trig
6	N.C.
7	Sync
8	COM TX
9	Reset
10	Test_2
11	Test_3
12	Test_1
13	TTL
14	RMTE
15	COM RX
16	+3V CPU

Recommended Operating Conditions

Parameter	Min	Max	Unit
DC Supply	2.7	3.5	V
Current		0.15	A
Temperature	-10	+65	°C
Humidity	0	90	% rel n.c

Interface Description

The interface to the host system is implemented as a 16 pin male connector.

The part used on the Promote RMI module is an AMP Micro-MaTch (P/N: 8-215464-6). The recommended matching female connector is P/N: 8-215079-6. It is recommended to connect the module with a female header mounted in through holes. This allows for optimum space saving and leaves the antenna connector easily accessible.

UART Serial Interface

The UART is using pins 1, 8 and 15. To connect to an RS232 line you must use a TTL level converter (a dongle from B&B Electronics is recommended) from 3.3V or use the Promote USB dongle which mates with an RMI module and provides a USB interface to a computer.

Serial characteristics: 38400.8,N,1 (no flow control)



NOTE!

Connecting the module to an RS232 line without a line level converter may damage the module.

For a list of available commands please refer to the RS Toolbox documentation.

Reset Interface

The following conditions will lead to a reset on the Promote RMI module:

- Power on reset
- Low voltage (Brown Out) detected from internal supervisory circuit
- Reset by Software
- External reset through reset pin

RF Characteristics

Parameter	Min	Typ.	Max	Unit
Frequency range	2404		2480	MHz
Frequency stability	-25		+25	kHz
Output power EU/US	13	15	17	dBm
Output power Japan	8.1	9.7	10	dBm
Antenna port impedance		50		Ohm

Channel list

Channel	Frequency	Unit
1	2403.999	MHz
2	2411.997	MHz
3	2416.995	MHz
4	2421.994	MHz
5	2426.993	MHz
6	2446.988	MHz
7	2453.987	MHz
8	2479.313	MHz

Important Integration Notes

Promote RMI has been designed to allow for easy integration with a wide range of devices. There are some key factors you need to consider when integrating the module.

Mechanical Integration

The module needs at least 10 mm clearance in order to fit. This is the maximum height with consideration to the connector pins. The module has an RF-shield made of nickel silver which protects all RF-parts (transceiver, power amplifier and VCO). On the module's backside there is a test point underneath the antenna which must be protected from user access. The module should arrive with a label with the serial number printed on it, which should cover the test point.

Electrical Integration

The minimum connections needed for operation are:

PIN	Function	Comment
1	GND	Digital ground
2	VCC	Transmit mode
5	Trig	Active high
7	Sync	Active high

In order to update the firmware the following pins is needed in addition to the ones mentioned above:

8	COM TX	Transmit to host
9	Reset	
15	COM RX	Receive from host
16	+3V CPU	CPU power supply

Antenna Integration

The Promote RMI module is available in two configurations, one with an integrated chip antenna and one with an external antenna connector. Special care has to be taken when choosing which option to use and should be done in connection with Profoto. The module has been certified with an external antenna which is orderable as an option. The use of any other antenna is not approved and will break the modular approval.

The connector part used on the module is an Amphenol U.FL series, type U.FL SMT, reference no. A-1JB.

Ready made cable sets are available with the Amphenol connectors already mounted. Please contact Profoto for accessories. Antenna design is a crucial topic during integration and design of radio systems. The antenna must provide good omni-directional radiation. Poor antenna integration may lead to significant degradation of system performance and / or affect the reliability.

Regulatory Information

World-wide Usage of Radio Spectrum

The Promote RMI operates on the license-free 2.4GHz ISM band for SRD (Short Range Devices). This band may be used in most parts of the world. Regional restrictions may apply.



NOTE!

Refer to national regulations for the region where the Promote RMI module shall be operated and make sure that they are followed.

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Europe

Promote RMI has been tested towards ETSI EN 300 328. For each end product- it is required to perform EMC testing according to ETSI EN 300 489-3. Only limited radio tests will be required since the modules test report can be applied. Once approved and CE marked, the system may be sold and used in EU/EEC countries without the need to have country-specific approval tests. However, a notification procedure is necessary in the member states of the European Union, this has already been done by Profoto. Please contact Profoto and we will assist you with conformance testing, approval, and notification procedures.

EU Notification

The Promote RMI has been notified in the EU member states and can be used without further actions in those countries.

EU Declaration of Conformity

In accordance with the Radio and Telecommunications Terminal Equipment Act
and Directive 1999/5/EC (R&TTE Directive)

Manufacturer: Profoto AB
Address: Box 2023, 128 21 SKARPÅCK, Sweden
Product: 2.4GHz SRD communication module
Type: Promote RMI

Profoto declares that the product complies with the essential requirements of §3 and the other relevant provisions of the FTEG (Article 3 of the R&TTE Directive) when used for its intended purpose.

Harmonised standards applied:
Air Interface of the radio systems pursuant to article 3(2)
EN 300 328

Protection requirements concerning electromagnetic compatibility according to article 3(1)b:
EN 301 489-1, EN 301 489-17, EN 61000-4-3

Skarpnäck, 2009-01-20

.....
Bo Dalenius, VP Technology and QA
Profoto AB

United States and Canada

F.C.C. and Industry Canada

Compliance Statement (Part 15.19)

This device complies with Part 15 of FCC rules and RSS-210 of Industry Canada.

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.

Warning (Part 15.21)

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

Ce dispositif est conforme aux normes RSS-210 d'Industrie Canada.

L'utilisation de ce dispositif est autorisée seulement aux conditions suivantes :

- 1) il ne doit pas produire de brouillage et
- 2) l'utilisateur du dispositif doit être prêt à accepter tout brouillage radioélectrique reçu, même si ce brouillage est susceptible de compromettre le fonctionnement du dispositif.

The term 'IC' before the certification/registration number only signifies that the Industry Canada technical specifications were met.

Les lettres 'IC' n'ont aucune autre signification ni aucun autre but que d'identifier ce qui suit comme le numéro de certification/d'enregistrement d'Industrie Canada.

Profoto AB

Transmitter / Receiver

MODEL: Profoto Air RMI

PRODUCT NO: PNZ1808-0000

FCC ID: W4G-RMI

IC: 8167A-RMI

Made in Sweden

Japan

The module has been granted modular approval for sale and operation in Japan.

特定無線設備の種類

Classification of specified radio equipment:

Article 2, Clause 1, Item 19

2.4 GHz Wide Band Low Power Data Communication

上記のとおり、電波法第38条の24第1項の規定に基づく認証を行ったものであることを証する。

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This is to certify that the above-mentioned certification by type has been granted in accordance with the provisions of Article 38-24, Paragraph 1 of the Radio Law.

In order to comply with Japanese regulations the output power must be limited to 10 dBm and any user access to the RF-parts must be hindered by using:

- An enclosure that needs special tools to open
- An RF-shield that protects the transceiver, amplifier and VCO.

The product must be labelled with the following registration number:



202WW08109201

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 **Profoto**
The Light Shaping Company