



# **Sub-1G Module User Manual**

**(Model: HMS101)**

# INTRODUCTION

This manual contains important instructions for HMS101 and must be read in its entirety before installing or commissioning the equipment. For safety, only qualified technician, who has received training or has demonstrated skills can install and maintain this device under the guide of this document.

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# 1. Important Safety Information

## Read this First

This manual contains important instructions to follow during installation and maintenance of the Sub-1G module.

## Safety Instructions

- Only qualified personnel can install or replace the Sub-1G module.
- Do not attempt to repair the module as it contains the parts that are not serviceable to users. If the module breaks down, please contact your distributor for maintenance. Opening the module without permission will invalidate the warranty.
- Please read all technical instructions and cautions in this manual before installing and using the module.

## Audience

This manual is only for professional installation and maintenance personnel to use.

## 2. Module Interfaces

### 2.1 HMS101 Dimensions

HMS101 dimensions: 20mm(W)\*33.2mm(L)\*3.5mm(H)

Figure 1 shows the HMS101 dimensions.

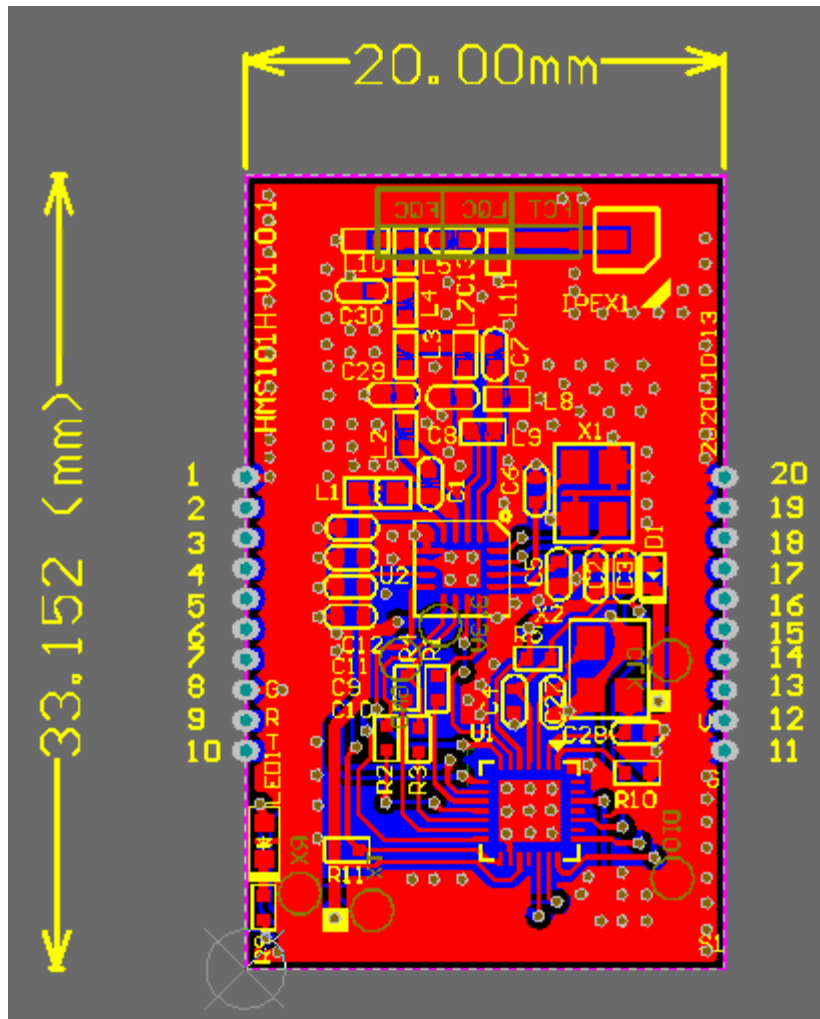


Figure 1 HMS101 dimensions

### 2.2 Pin Definition

This Table 1 describes the interface pins .

NO.	Symbol	I/O Type	Function
1	Gnd	P	Power supply reference ground pin
2	NC	I	Null pin, no internal connection
3	P1.5	I/O	RESERVED, P1.5, which is connected to P1.5 on

			the IC
4	P1.6	I/O	RESERVED, P1.6, which is connected to P1.6 on the IC
5	P0.1	I/O	RESERVED ,P0.1, which is connected to P0.1 on the IC
6	P0.6	I/O	RESERVED, P0.6, which is connected to P0.6 on the IC
7	NC	I/O	Serial peripheral interface clock pin
8	GND	P	Power supply reference ground pin
9	RXD	I/O	UART_RX, which is connected to P0.4 on the IC
10	TXD	Output	UART_TX, which is connected to P0.3 on the IC
11	GND	P	Power supply reference ground pin
12	VCC	P	Power supply pin
13	PRG	I/O	Set high to enter flash programming mode
14	SCK	I/O	Serial peripheral interface clock pin
15	RST	I/O	Hardware reset pin (active at a low level)
16	GPIO	I/O	Reserved
17	MI	I/O	Reserved
18	SCN	I/O	Reserved
19	GND	P	Power supply reference ground pin
20	GND	P	Power supply reference ground pin

Table 1 HM2401 interface pins

## 3. Integration Instructions

### 3.1 List of applicable FCC rules

This module has been tested and found to comply with part 15.247, and RSS-247 requirements for Modular Approval.

### 3.2 Summarize the specific operational use conditions

This module can be used in DTU, micro-converter and other equipment. The input voltage to the module should be nominally 1.9~3.6 VDC ( typical 3.3VDC) . The ambient temperature of the module should not exceed 80°C .

### **3.3 Limited module procedures**

NA

### **3.4 Trace antenna designs**

NA

### **3.5 Antenna**

Antenna type :Omni Antenna; Antenna Max. Peak Gain 3 dBi

### **3.6 Label and compliance information**

An exterior label on OEM's end product can use wording such as the following:

“Contains Transmitter Module FCC ID: 2ARNB-HMS101” or “Contains FCC ID:  
2ARNB-HMS101”

### **3.5 RF exposure statement:**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body. If the device built into a host as a portable usage, the additional RF exposure evaluation may be required.

### **3.6 Information on test modes and additional testing requirements**

a) The modular transmitter has been fully tested by the module grantee on the required number of channels, modulation types, and modes, it should not be necessary for the host installer to re-test all the available transmitter modes or

settings. It is recommended that the host product manufacturer, installing the modular transmitter, perform some investigative measurements to confirm that the resulting composite system does not exceed the spurious emissions limits or band edge limits (e.g., where a different antenna may be causing additional emissions).

b) The testing should check for emissions that may occur due to the intermixing of emissions with the other transmitters, digital circuitry, or due to physical properties of the host product (enclosure). This investigation is especially important when integrating multiple modular transmitters where the certification is based on testing each of them in a stand-alone configuration. It is important to note that host product manufacturers should not assume that because the modular transmitter is certified that they do not have any responsibility for final product compliance.

c) If the investigation indicates a compliance concern the host product manufacturer is obligated to mitigate the issue. Host products using a modular transmitter are subject to all the applicable individual technical rules as well as to the general conditions of operation in Sections 15.5, 15.15, and 15.29 to not cause interference. The operator of the host product will be obligated to stop operating the device until the interference have been corrected.

### **3.7 Additional testing, Part 15 Subpart B disclaimer**

The final host/module combination need to be evaluated against the FCC Part 15B criteria for unintentional radiators in order to be properly authorized for operation as a Part 15 digital device.

The host integrator installing this module into their product must ensure that the final composite product complies with the FCC requirements by a technical assessment or evaluation to the FCC rules.



When testing the host product, all the transmitters must be operating. The transmitters can be enabled by using publicly-available drivers and turned on, so the transmitters are active. In certain conditions, it might be appropriate to use a technology-specific call box (test set) where accessory devices or drivers are not available. When testing for emissions from the unintentional radiator, the transmitter shall be placed in the receive mode or idle mode, if possible. If receive mode only is not possible then, the radio shall be passive (preferred) and/or active scanning. In these cases, this would need to enable activity on the communication BUS (i.e., PCIe, SDIO, USB) to ensure the unintentional radiator circuitry is enabled. Testing laboratories may need to add attenuation or filters depending on the signal strength of any active beacons(if applicable) from the enabled radio(s).

**FCC Warning:**

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

**ISED RSS Warning:**

This device complies with Innovation, Science and Economic Development Canada licence - exempt RSS standard(s). 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.

Le présent appareil est conforme aux CNR d'ISED applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

**ISED RF exposure statement:**

This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Le rayonnement de la classe b respecte ISED fixaient un environnement non contrôlés. Installation et mise en oeuvre de ce matériel devrait avec échangeur distance minimale entre 20 cm ton corps. Lanceurs ou ne peuvent pas coexister cette antenne ou capteurs avec d'autres.

### ISED Label Instructions:

The outside of final products that contains this module device must display a label referring to the enclosed module. This exterior label can use wording such as: “Contains Transmitter Module IC: 24490-HMS101”, or “Contains IC: 24490-HMS101”, Any similar wording that expresses the same meaning may be used.  
Instructions d'étiquetage IC: L'extérieur des produits finis contenant ce module doit afficher une étiquette faisant référence au module inclus. Cette étiquette extérieure peut utiliser des libellés tels que: "contient le module émetteur IC: 24490-HMS101" ou "contient IC: 24490-HMS101", tout libellé similaire exprimant le même sens peut être utilisé.

## 4. Basic Operation

### 4.1 NRF Channel List

Depending on the program, the module can work on 915MHz for North America and 868MHz for Europe. Unless necessary, it's forbidden to change the module program.

## 5. Troubleshooting

If the Sub-1G module can't work well, please follow this guideline:

- a) Try to repower on the device. If the LED on the module can't light, please change the module or send the whole device to us.
- b) If the LED can light, please change the antenna.
- c) After changing the antenna, if it still can't work, please change the module or send the whole device to us.

## 6. Technical Data

<b>Model</b>	<b>HMS101</b>
Type	Sub-1G
Channel List	TBD
RF Function	SRD
Power Supply	DC 3.3V
Power Consumption	40mW typical