

# Microwave Module Instruction Manual

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## 10.525GHz / X-BAND

### Product introduction

Microwave motion sensor module consists of a microwave motion sensor and a sensor controller board in which the IF signal from the sensor is further processed to determine the motion events. The high sensitivity of the sensor module is due to the multi-stage amplification circuit on the controller board. Based on the detection of the backscattered Doppler signal, HP300 can detect any motion event in the effective power range. In addition, the backscattered Doppler signal can be sampled and then transmitted via UART interface to other advanced MCU or DSP boards for further processing. For example, the motion velocity can be obtained by the calculation of the Doppler frequency using FFT signal processing. The relay output of the sensor controller board can be used to drive the alarms or lamps easily.

The microwave motion sensor module offers a number of advantages over alternative technologies such as ultrasonic, optic, magnetic switch, or infrared sensors in the senses of greater range, and better penetration, etc.

## APPLICATION

Intrusion Alarms  
Automatic Door Openers  
Obstruction Warning Systems  
Non-Contact Measurement

Parameters	Min.	Typ.	Max.	Unit.	Condition
Frequency		10525 +/-12.5		MHz	Over Temp.
Power Output	10	12	14	dbm	
Operating Voltage	4.75	5	5.25	V	
Operating Current	30	50	65	mA	cw
Sensitivity (10dB S/N ratio) i		-85		dbm	3Hz to 80Hz
Noise		10		$\mu$ V	3Hz to 80Hz
Antenna Gain		8		db	
Size		51*49*11		mm	
Power/Temp. Coefficient		3		dbm	over operating
Operating Temperature Range		-20 to +55		°C	
Storage Temperature Range		-30 to +70		°C	
Pulse Operation:					
Average Current @5% Duty Cycle		2		mA	
Pulse Width		5 $\mu$ sec. Min.			
Duty Cycle		1% min.			

Note:Product specification are subjected to change without notice.

## **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:** Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this 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.

## **IMPORTANT NOTE:**

### **FCC Radiation 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 & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

**Note:** Use only within a building or to open building doors, don't use outside to detect vehicles.

**This device is intended only for OEM integrators under the following conditions:**

1. The antenna must be installed such that 20 cm is maintained between the antenna and users, and
2. The transmitter module may not be co-located with any other transmitter or antenna.

As long as 2 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed

**Manual Information To the End User:**

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as shown in this manual.

This transmitter module is authorized only for use in a device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains FCC ID: ZTYMRO8700" . The grantee's FCC ID can be used only when all FCC compliance requirements are met.