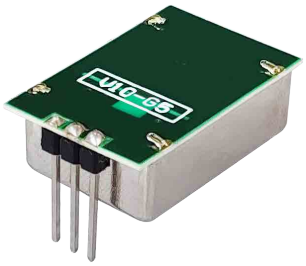
X-Band Doppler Motion Detector Unit

Model:PD-V10-G5



Key Features

- Low Cost
- High Sensitivity
- Patch Antenna
- Low Power consumption
- 3V and 5V versions available
- RoHS compliant

Applications

- Intrusion Alarms
- Automatic Door Openers
- Presence Sensing

The Microwave Solutions PD-V10-G5 Motion Detector Unit is a miniature X-Band microwave transceiver that utilises the Doppler shift phenomenon to "sense" motion.
The unit, housed in a metal can, features a dielectric resonator stabilised oscillator, which provides stable operation over a broad temperature range in either CW or low duty cycle pulse mode and an integrated homodyne receiver for enhanced sensitivity and reliability.
This module family is available with either a +5v or +3v supply voltage.

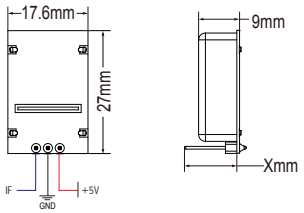
Operation

The basic principle of operation consists of detecting the frequency shift between a transmitted and a received signal reflected back from a moving object within the field of view of the unit.
The unit produces a low level output signal which can be amplified and processed to provide an audible or visual alarm signal and employs low cost surface mount manufacturing techniques which are field proven as being rugged and reliable.

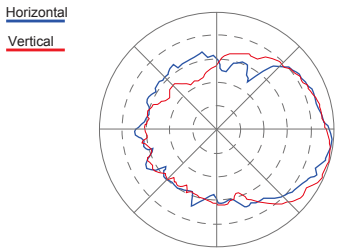
Available Modules

Part NO.	Country	Frequency	Comments
PD-V10-501	UK	10.587 GHz (5V)	
PD-V10-502	USA	10.5-10.55 GHz (5V)	FCC-ID
PD-V10-502	Belgium, Holland, Italy	10.525 GHz (5V)	Meets RED Directive
PD-V10-301	UK	10.587 GHz (3V)	
PD-V10-302	Belgium, Holland, Italy	10.525 GHz (3V)	Meets RED Directive

Electrical Characteristics



Coverage Pattern



Transmitter

Frequency	See table over
Power Output (Min.)	12 dBm EIRP
Operating Voltage	+5 V ± 0.25 V
	+3 V ± 0.15 V
Operating Current (CW)	25mA (max)
	20mA (typ)
Harmonic Emissions	<-30dBm

Pulse Mode Operation

Average Current (5% DC)	1 mA typ.
Pulse Width (Min.)	5 µsecs
Duty Cycle (Min)	1%
Pulse Repetition Frequency	2-4 KHz

Receiver (Bandwidth 1Hz~3KHz)

Sensitivity (for a 10 dB S/N ratio)	-84 dBm
Noise (measured in a 3Hz to 80Hz bandwidth)	< 30 µV

Antenna : standard

Gain	5 dBi
-3 dB Beamwidth	
E Plane	50°
H Plane	60°

Mechanical Characteristics

Weight	4 g
Pin header connectors	2.54mm spacing X3

Environmental Characteristics

RoHS Compliant	
Power/Temp. Coefficient (over operating temp. range)	3 dB
Frequency/Temp. Coefficient (over operating temp. range)	6.5 MHz
Operating Temperature	-20° C to +70° C

NOTES

The strength of the sensor's output （detection range）depends on the Signal to Noise Ratio.
Higher or lower than the nominal operating temperature, the sensor can also work, but the performance will be reduced.
To avoid damage to the devices, care should be exercised during handling. Proper Electrostatic Discharge (ESD) precautions should be observed at all stages of storage, handling, assembly, and testing.

pdlux®

Ningbo Pdlux Electronic Technology CO.,Ltd

www.pdlux-solution.com www.pdlux.com Tel: 86-574-83008608(20 lines)

Regulatory Module Integration Instructions

2.2 List of applicable FCC rules

This device complies with part 15.245 of the FCC Rules.

2.3 Summarize the specific operational use conditions

This module can be used in household electrical appliances as well as Intelligent switch , Wall-hung switch equipments. The input voltage to the module should be nominally 3.0 to 5.25 VDC ,typical value 5VDC and the ambient temperature of the module should not exceed 70℃.

This module using only one kind of antennas with maximum gain is 5dBi .Other antenna arrangement is not covered by this certification.

The antenna is not field replaceable. If the antenna needs to be changed, the certification should be re-applied.

2.4 Limited module procedures

Not applicable

2.5 Trace antenna designs

Not applicable

2.6 RF exposure considerations

The modular transmitter is authorized to be used in a specific type of host platform and installed such that it can be operated at closer than 20 cm to users or nearby persons.This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter .
If the equipment built into a host as a portable usage, the additional RF exposure evaluation may be required as specified by 2.1093

2.7 Antennas

Module contains one PCB antenna. No additional external connectors.

2.8 Label and compliance information

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 FCC ID: 2AIWW-PD-V10-G5”,or “Contains FCC ID: 2AIWW-PD-V10-G5 ”, Any similar wording that expresses the same meaning may be used.

2.9 Information on test modes and additional testing requirements

a) The modular transmitter has been fully tested by the module grantee on the required frequency , it should not be necessary for the host installer to re-test.

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.

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 has been corrected

2.10 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, including the transmitter operation and should refer to guidance in KDB 996369.

Frequency spectrum to be investigated

For host products with certified modular transmitter, the frequency range of investigation of the composite system is specified by rule in Sections 15.33(a)(1) through (a)(3), or the range applicable to the digital device, as shown in Section 15.33(b)(1), whichever is the higher frequency range of investigation.

Operating the host product

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). See ANSI C63.4, ANSI C63.10 and ANSI C63.26 for further general testing details.

FCC Statement

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.