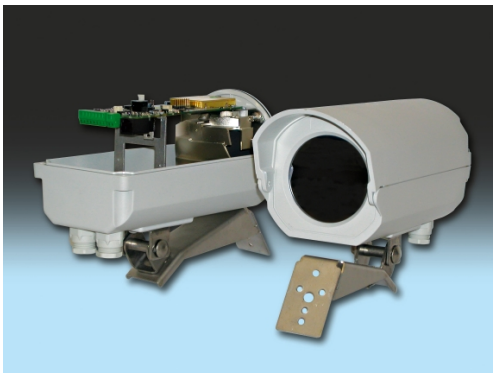
Installation Manual

VID-W20L030

Vista Infra-Red Detector Medium-Range Volumetric

A Detector for Outdoor Perimeter Protection



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1 Introduction

The VID-W20L030 is a highly sensitive Passive Infrared Detector designed for detection outdoors with a wide angle, volumetric differential field of view. It incorporates microprocessor-controlled signal processing including signal shape analysis, adaptive threshold level by feedback of environmental effects, temperature compensation and rejection of disturbance signals.

Sensitivity adjustments are done with DIP-Switches for each individual unit in function of the required detection range in order to adapt to the specific needs of an installation.

2 Features

- Multi Zone Volumetric with Creep Zones
- 4 Meter (13 Feet) Mounting Height
- Advanced Tamper Detection
- Low Power Consumption – Ideal for Wireless and Solar Applications
- Wide Power Supply Range
- Integrated Bracket for Wall Mounting

3 Mounting and Installation

The mounting structure should be sold enough to resist significant movement in windy conditions. Movement of the VID-W20L030 caused by vibrations or other movements will result in changing fields of view covered by the VID-W20L030 and could cause erratic signals. These unwanted signals may lead to an increase in the alarm threshold level which reduces the detection probability or in certain cases can lead to unwanted alarms.

The stainless steel bracket is ideally suited for wall mounting. For pole mounting the VID-PA is available (the pole mount bracket comes with two strap bands for poles with diameters of 4 – 16cm). For further information please refer to 16.2.

It is very important that the cover of the detector is tightened securely. Tighten the two screws to the point where it cannot be tightened further with reasonable force. There should be less than 1mm gap between the cover and the bottom part of the housing.

The detectors are fitted with two M16 cable entry points. The nut on the cable entry assembly should be tightened to clamp the cable in place. If the cable diameter is too small to be held properly, insulation tape should be wound around the cable to increase the outside diameter to a suitable size.

4 Connecting the VID-W20L030

For the definition of the electronic board and terminal block see appendix 19.1.

5 Alarm Signalling

There are two types of alarm outputs on the VID-W20L030:

- one SPST potential-free relay contact
- one open collector transistor output

Cover Switch

A tamper detection switch is fitted for the cover, this contact opens when the cover is opened.

6 Field of View

The VID-W20L030 has a volumetric field of view with differential detection areas. For the nominal range and width at that range see table below.

Definition	VID-W20L030
Nominal Range	30m (100 feet)
Width at Nom. Range	20m (65 feet)

7 Alignment

The detection range of a PIR detector is not limited but it is a function of the target size, speed and temperature contrast against its background. The VID-W20L030 should be aligned so that a natural or artificial background at the end of the range terminates the field of view.

Vertical alignment is optimal when the upper edge of the field of view is at 1.5 to 2.5m (5 to 8 ft) above ground at the end of the required detection range. Use the grove on the top of the detector for correct alignment. This line of sight corresponds to the upper edge of the detection pattern. To limit the detection range, a terminating screen can be used to prevent detection of targets beyond the required range.

7.1 Vertical alignment of VID-W20L030 for a required detection up to nominal range

The VID-W20L030 should be aligned vertically so that **at a minimum** the lower half of a person standing upright at the maximum required range will be within the field of view (see Fig. 1 below).

Side view

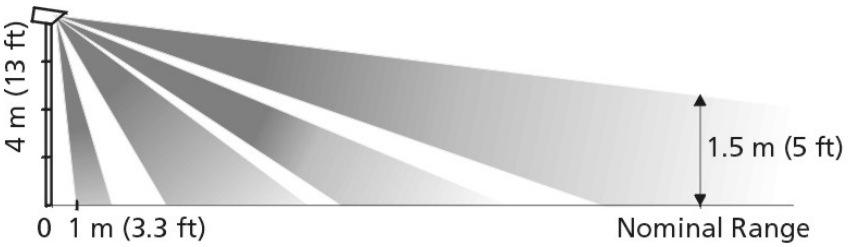


Fig. 1

7.2 Horizontal alignment of VID-W20L030

Horizontal alignment should be done in a way to avoid unwanted signals being generated by miscellaneous objects (branches, bushes and fences etc.) that are likely to be moVID by wind (see Fig. 2 below). Movement within the field of view will reduce the sensitivity of the VID-W20L030 by increasing the alarm threshold level and may also lead to unwanted alarms.

Top view

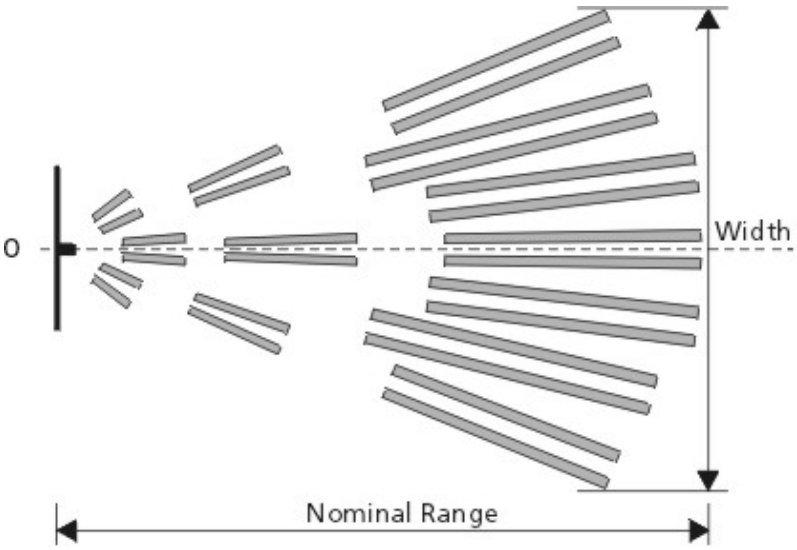


Fig. 2

The detection patterns of Fig. 1 and 2 are for illustration of the volumetric coverage of the detectors. Actual detection zones depend on the mounting height and exact alignment.

8 Sensitivity Settings

The settings of the VID-W20L030 are adjusted by means of multiple DIP - Switches on the printed circuit board.

The **DIP – Switches 1 and 2** are for **setting sensitivity** depending on the required detection performance. If the maximum required range is less than the nominal range of the detector, a reduction in the overall sensitivity is recommended to reduce nuisance alarms.

Switch 1 and 2	Overall Sensitivity	
off – off	40 %	
off – on	75 %	
on – off	100 %	Factory Setting
on – on	Not used.	

9 Adaptive Threshold Discrimination (ATD)

The background noise is constantly averaged and used to adjust the threshold levels for the alarm. This special feature reduces the probability of nuisance alarms caused by wind, moving vegetation or objects that have a thermal contrast usually weaker than that of a person.

Each signal exceeding a certain minimum value will activate the ATD and increase the threshold levels depending on its strength. The time constants for increase and decrease are chosen in a way to adapt to gradual changes. Signals generated by a person moving within the specified speed range, however, are strong enough for detection.

Repeated movement of any kind within the field of view is therefore activating the ATD, reducing the overall sensitivity. This has to be noted particularly when walk testing the following installation.

The **DIP – Switch 3** is used to activate or deactivate the **ATD** (Adaptive Threshold Discrimination).

Switch 3 (ATD)	
off	*)
on	Factory Setting

*) Operation of the VID-W20L030 in this mode is possible but not recommended in outdoor applications as the nuisance alarm rate could increase significantly as a result of turbulences.

When the unit is walk tested the threshold level will increase as a result of the signal generated by the target, it will subsequently decrease exponentially in time after the event. To make sure that original sensitivity is reached, wait at least for 3 minutes between each crossing (walk test) or disable the ATD function by setting DIP - Switch 3 to “off“.

10 Pulse Count

The **DIP – Switch 4** is used to set a pulse count delay for the alarm activation. This means that the alarm output is only activated after a pre-set number of pulses having reached the alarm criteria within a certain period of time. If DIP – Switch 4 is set to “on” the pulse count delay is 3.

The programmed setting adds the defined number of pulses to the one pulse required without pulse count (e.g. pulse count 3 results in 1 + 3 = 4 pulses for alarm).

Switch 4	Pulse Count	
off	off	Factory Setting
on	on	

11 Test

When conducting a walk test using the VID-WT, DIP-Switch 5 needs to be set to “on“. On completion switch “test” to “off”.

Switch 5 (Test)	
off	Factory Setting
on	

The VID-WT’s transmitter has to be placed within the housing with the detector cover closed and securely tightened. The antenna of the transmitter needs to be placed vertically or horizontally in the detector housing.

12 Anti-Vandal Function (AVF)

The VID-W20L030 is equipped with a sophisticated **protection against vandalism mechanism**. These detectors can sense certain changes to the original their alignment position as set during installation. A change of the detector’s alignment generates a permanent alarm **until the detector’s alignment is returned to its original position or until the position is manually reset**.

After the turn-on time (typically. 60 seconds from power on) the detector determines and stores its alignment position (this will only occur when the detector cover closed).

After opening and closing the cover with the unit powered on, the detector determines its alignment position and after 5 minutes stores this value, without the detector being in permanent alarm state.

The anti-vandal function is activated by setting DIP – Switch 6 to “on“.

Switch 6 (AVF)	
off	
on	Factory Setting

13 LED

The electronic board is fitted with a dual LED having a red and green colour side. This can be monitored during installation while the cover is open.

- The red LED “on” indicates that the detector is in an alarm state.
- The green LED flashing at 2 Hz frequency indicates the detector ready state.

During the turn-on time the red LED is on.

14 Alarm Time

Alarm time per event is determined by the duration of the detected event and depends on the shape and amplitude of the alarm signal. Individual alarm pulses have a minimum time of approximately 2.5 seconds.

15 Internal Temperature Compensation

The VID-W20L030 is detecting the radiation differences of a target against its background. In the course of a day and a year the contrast of a person will vary considerably and affect the signal strength. To compensate for this contrast variation, the VID-W20L030 has an internal temperature compensation with maximum sensitivity setting of approximately 30°C (where the contrast of a human target is weakest) and gradual reduction at higher and lower temperatures.

When installing a unit the internal temperature may take up to 30 minutes or more to stabilise to the actual external temperature. Sufficient time should be given to the VID-W20L030 to reach the correct internal temperature and sensitivity before performing walk tests.

During the initial period of operation it is strongly recommended that walk tests are repeated under various weather conditions such as high and low temperatures, wind, fog, snow, rain etc. to obtain comparative data and information on the effects of environmental conditions on detection and nuisance alarm probabilities for this particular site. Fine-tuning of the detector based on this data by changing the sensitivity settings may optimise the performance.

16 Accessories

16.1 Cordless Walk Tester VID-WT

The cordless walk tester VID-WT is an accessory for remotely checking the detector alignment. During a walk test it indicates a detection alarm with a beeper and a LED. The walk tester VID-WT consists of a transmitter (VID-WT-T) and a receiver (VID-WT-R). For further information regarding the use of the VID-WT please refer to chapter 10.

16.1.1 Receiver

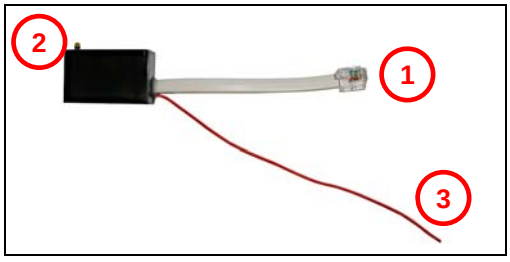
LED Description

Power
LED indicates power is on and battery o.k., dims when voltage is low.

Comm.
LED indicates communication with transmitter is o.k.

Alarm
LED lights up as long as alarm is activated.

16.1.2 Transmitter



Description

1. **Power and Communication plug**
   This plug connects to the detector’s test socket.
2. **Power LED**
   LED indicates correct connection and power.
3. **Antenna**
   To be placed straight in the detector housing.

16.2 Pole Mount Adapter VID-PA

Pole mounting bracket with two strap bands for poles of 4 – 16cm (1.6 – 6.25") diameter

17 Maintenance

The detector has been designed to be virtually maintenance free but the following precautions are recommended:

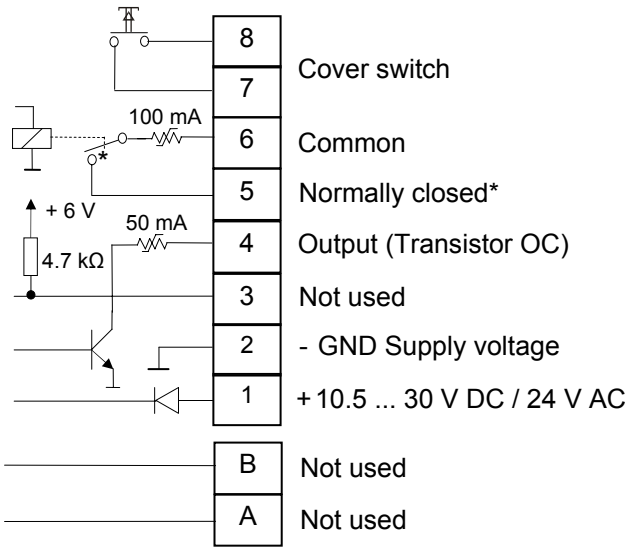
1) **Visual inspection of the front window** for accumulation of dirt on the outer surface or damage to be carried out at approximately 6 monthly intervals. Clean the surface with a paper tissue and avoid rubbing dirt into the surface.
2) **Walk tests** for checking the detector alignment and sensitivity settings to ensure optimal performance and reliability.
3) **Inspection is recommended following extreme conditions** such as snow storms, sand storms, hail etc. to make sure that nothing has been damaged and the sensitivity is not reduced by accumulation of snow, sand or dirt on the front window. Snow or dust in front of the window should be remoVID by hand or by using of a soft instrument.

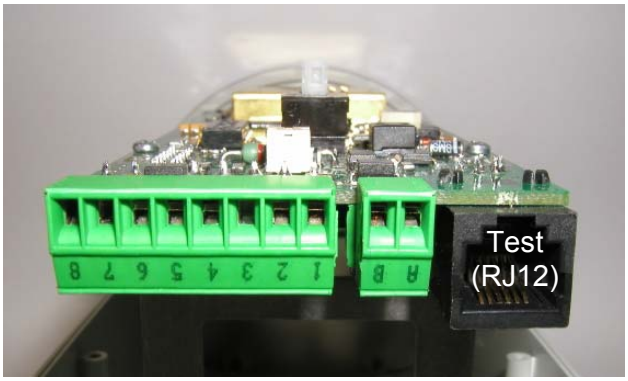
18 General Comment on the VID-W20L030

- Despite the advanced design and state-of-the-art features of the VID-W20L030 it is in the nature of a Passive Infrared Detector that an absolute detection probability and freedom from nuisance alarms cannot be achieVID, **masking of the VID-W20L030 cannot be excluded.**
- Detection is a function of thermal contrast, speed and size of a target crossing the detectors field of view. Contrast conditions can vary significantly in the course of the day and year.
- Detection depends also on the sensitivity settings, the exact aiming and the prevailing weather conditions as well as the nature of the target and background.
- The detection pattern and frequency response of the VID-W20L030 has been optimised for the detection of a human target crossing the field of view in an upright position at speeds in the range of 0.2 … 5.0 meters/second.
- Detection of slow moving targets at long ranges may become difficult under weak contrast conditions. Limiting the zone length is strongly recommended to less than the nominal range when human targets moving at the minimum specified speed need to be detected with a high probability of accuracy.
- Animals or crawling people may or may not be detected depending on their size, speed, contrast and distance from the detector.
- It is therefore strongly recommended to **combine the VID-W20L030 with alarm verification** such as CCTV or a second system using other physical means of detection (e.g. VMD).
- Any liability for direct or indirect damage resulting from the use of the VID-W20L030 as a detection device is explicitly disclaimed.
- The information in this product manual is based on testing of samples taken at random from production and believes to be representative, E&OE.

19 Appendix Electronic Board and Terminal Block

19.1 Terminal Block





* Relay shown in energised (non-alarm) condition

19.2 Dip Switches

Sensitivity

SW1	SW2	Function
ON	ON	Not used
ON	OFF	HW setting 100%
OFF	ON	HW setting 75%
OFF	OFF	HW setting 40%

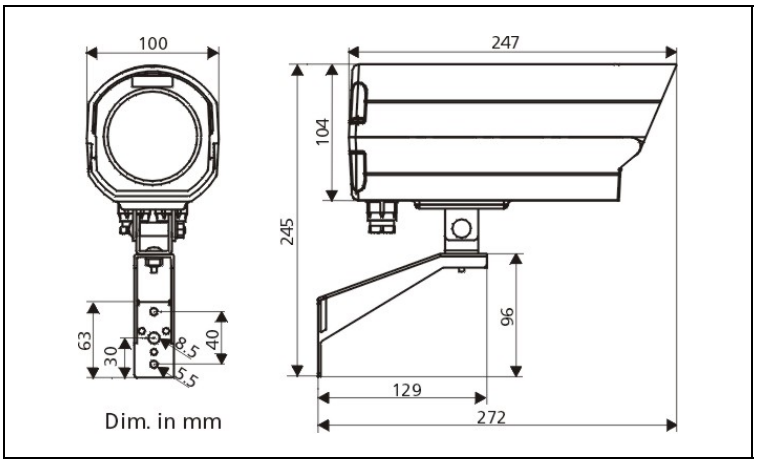
Function Switches

SW	Function
3	ATD
4	Pulse count
5	Test
6	Anti-vandal function

20 Appendix Specification

Model	VID-W20L030
Optical	
Nominal Range	30 m (100 ft)
Width @ Nominal Range	20 m (65 ft)
Mounting Height	2.5 … 4.0 m (8 … 13 ft)
Detection Speed	0.2 to 5 m/s (0.7 to 17 feet/s)
Sensor	Pyroelectric, differential single channel
Spectral Response	8 – 14 µm, double filtering
Optics	Segmented precision mirror
Front Window	PE Filter, IR transmissive
Sensitivity Adjustment	DIP switches
Mechanical	
Case Material	Heavy duty plastic
Colour	white
Weight	app. 900 g (2.0 lbs), incl. mounting bracket
Cable Feeds	2 x M 16 with cable clamp
Outer Cable Diameter	4.5 … 10 mm (0.18 … 0.40 inch)
Electrical	
Supply Voltage	10.5 … 30 V DC / 24 V AC (± 15%)
Current Consumption	typ. 18 mA @ 12 V DC typ. 10 mA @ 24 V DC
Alarm Relay Output	SPST rated 30 V DC, max. 100 mA
Transistor Output	Open collector NPN, 30 V DC, max. 50 mA
Cover Switch	30 V DC, 100 mA
Turn-on Time	typ. 60 seconds from power on
Test Socket	✓
Wiring Terminal Block	0.34 mm^2 … 1.5 mm^2 (AWG 28 … 16)
Environmental	
Operating Temperature	–20°C … +60°C (–4°F … +140°F)
Humidity	95 % RH max.
Sealing	IP 64 splash proof

20.1 Mechanical Dimensions



21 Disclaimer

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22 General Warning

This product must only be installed, configured and used strictly in accordance with the General Terms and Conditions, User Manual and product documents available from Vista. All proper health and safety precautions must be taken during the installation, commissioning and maintenance of the product. The system should not be connected to a power source until all the components have been installed. Proper safety precautions must be taken during tests and maintenance of the products when these are still connected to the power source. Failure to do so or tampering with the electronics inside the products can result in an electric shock causing injury or death and may cause equipment damage. Vista is not responsible and cannot be held accountable for any liability that may arise due to improper use of the equipment and/or failure to take proper precautions.

23 Liability

You agree to install, configure and use the products strictly in accordance with the User Manual and product documents available from Vista. Vista is not liable to you or any other person for incidental, indirect, or consequential loss, expense or damages of any kind including without limitation, loss of business, loss of profits or loss of data arising out of your use of the products. Without limiting this general disclaimer the following specific warnings and disclaimers also apply:

Fitness for Purpose

You agree that you have been provided with a reasonable opportunity to appraise the products and have made your own independent assessment of the fitness or suitability of the products for your purpose. You acknowledge that you have not relied on any oral or written information, representation or advice given by or on behalf of Vista or its representatives.

Total Liability

To the fullest extent permitted by law that any limitation or exclusion cannot apply, the total liability of Vista in relation to the products is limited to:

(i) in the case of services, the cost of having the services supplied again; or

(ii) in the case of goods, the lowest cost of replacing the goods, acquiring equivalent goods or having the goods repaired.

Indemnification

You agree to fully indemnify and hold Vista harmless for any claim, cost, demand or damage (including legal costs on a full indemnity basis) incurred or which may be incurred arising from your use of the products.

Miscellaneous

If any provision outlined above is found to be invalid or unenforceable by a court of law, such invalidity or unenforceability will not affect the remainder which will continue in full force and effect. All rights not expressly granted are reserved.

24 Warranty and Service

24.1 Factory Service

If the unit requires factory service, contact the dealer who supplied the unit to you for the correct procedures on returning the unit to the factory or the nearest factory service centre.

If the dealer is not available, contact the manufacturer of the unit as detailed below and request a Return Material Authorization number (RMA). The unit's serial number must be provided before a RMA number can be issued. Units returned to the factory for service must have freight and insurance prepaid, and must show the RMA number clearly on all shipping documents. The failure symptoms must be clearly described by the operator and enclosed with the unit together with a copy of the original suppliers invoice. Failure to comply with these instructions will delay service of the unit, and may result in the unit not being accepted by the Repair Centre.

24.2 Factory Address

Vista

Norbain House
Eskdale Road
Winnersh Triangle
Wokingham
Berkshire
England
RG41 5TS
www.norbain.co.uk
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