

INSTALLATION GUIDE



Intrusion Reference Design



PRODUCT FEATURES

The ZMOTION Intrusion Reference Design (ZIRD) demonstrates how to use Zilog's ZMOTION Intrusion Motion Detection solution in a PIR-based intrusion motion detector. It also shows how to implement additional functions such as anti-mask and power supply supervisory features.

The ZMOTION Intrusion Motion Detection solution provides an integrated and flexible solution for Passive Infrared (PIR)-based security/intrusion motion detection applications. It includes the Z8FS021 ZMOTION Intrusion Detection MCU combined with a selection of lenses and pyroelectric sensors to fit a range of intrusion motion detection applications.

Main Features:

- Complete Intrusion Motion Detection design supporting three lens types:
 - WA 1.2 GI 12 V4 (18 meter, wide angle) – Installed
 - LR 1.2 GI 12 V3 (30 meter, corridor)
 - VB 1.2 GI V1 (15 meter, vertical barrier)
- White light immunity >12,000 LUX
- 12kg/30kg selectable pet immunity
- Selectable NORMAL and PULSE modes
- Auto-LED
- Anti-mask demonstration
- Power supply supervisory

INSTALLING THE DETECTOR

The detector can be wall-, ceiling- or corner-mounted, depending on the application requirements. It ships with the WA 1.2 GI 12 V4 lens installed.

- Unscrew the holding screw at the bottom of the detector and gently raise the front cover until it detaches from the base.
- Carefully remove the screw securing the PCB and lift it out of the detector base by grasping the terminal block.
- Break out the required knockout screw holes for proper mounting.
- The rectangular channel in the detector base is used for wire entry. You may also use mounting holes that are not in use for running the wiring into the detector. Pull the wires through the hole in the base.
- Mount the detector base to the wall, corner or ceiling and tighten the mounting screws so the detector is not accidentally knocked out of place.
- Reinstall the PC board by fully tightening the holding screw.
- Make the required electrical connections to the detector terminal block (see Detector Connections).
- Select the appropriate jumper settings for the desired detector features (see Setting Detector Features).
- Replace the cover by inserting it back into the closing pins, then fasten the holding screw.

SETTING DETECTOR FEATURES

PET IMMUNITY JUMPER (PET)

Install PET Jumper J2 to select 30KG pet immunity. Remove PET Jumper J2 to select 12KG (Normal) pet immunity.

PULSE JUMPER (PULSE)

Install PULSE Jumper J1 to select 2-PULSE mode. Remove PULSE Jumper J1 to select 1-PULSE (NORMAL) mode.

LED JUMPER (AUTO-LED)

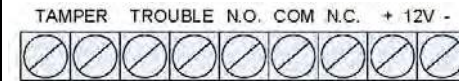
Remove Jumper J3 (LED) to enable LED indication (LED ON). The Red status LED will illuminate when motion is detected. Install Jumper J3 to disable Red Status LED indication (LED AUTO). The status LED does not illuminate when motion is detected. In this position, the status LED can be enabled by shining a bright light (e.g., a flashlight) onto the status LED (within ≈6 inches) for 2 seconds. This mode will stay active for 5 minutes.

ANTI-MASK JUMPER

Install ANTI-MASK Jumper J4 to enable Anti-Mask detection. The Yellow Trouble LED will illuminate and the Trouble output contact will be activated when a masked condition is detected. Remove ANTI-MASK Jumper J4 to disable Anti-Mask detection.

DETECTOR CONNECTIONS

All electrical connections are made via the Terminal Block located at the top of the PCB. Install the wire by inserting it into the terminal block and using a flathead or Phillips screwdriver to secure it in place.



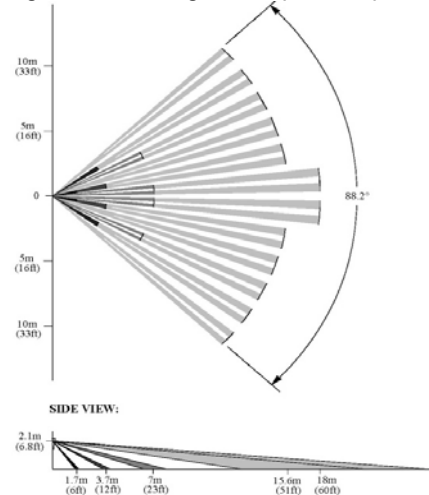
Connection	Description
Tamper	Tamper switch – normally closed
Trouble	Trouble contacts – normally open
N.O.	Alarm contact – normally open
COM	Common alarm terminal for N.O. and N.C.
N.C.	Alarm contact – normally closed
+/- 12V	Detector DC supply voltage

TECHNICAL SPECIFICATIONS

Detection Method	Dual Element PIR
Power Input	8.5V to 18V
Current Consumption:	
Standby with Anti-Mask On	16mA
Standby with Anti-Mask Off	19mA
Detection Range:	
WA 1.2 GI 12 V4	18 meters
LR 1.2 GI 12 V3	30 meters
VB 1.2 GI V1	15 meters
Walk Test/Auto-LED Time	5 minutes
Alarm O/P Active Time	2 seconds
Alarm O/P Type	Form-A/Form-B
Trouble O/P Type	Form-A
Tamper O/P Type	Form-B
Power on Warm up Time	45 seconds
White Light Immunity	>12,000 LUX
Pet Immunity	Selectable 12KG/30KG
Power Supply Supervisory Trip Level	8.5V
Dimensions (LxWxH)	6.4cm x 5.1cm x 12.7cm

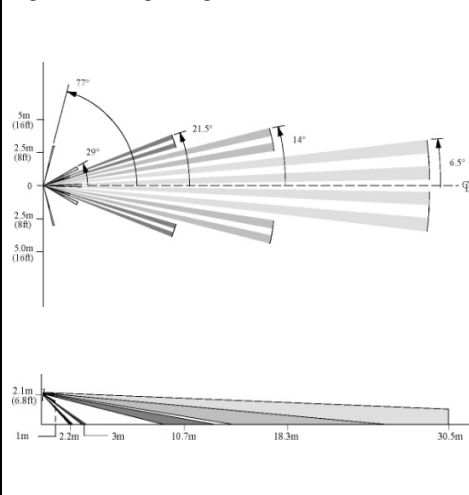
DETECTION PATTERNS

Figure 1. Wide Angle Lens (Installed)



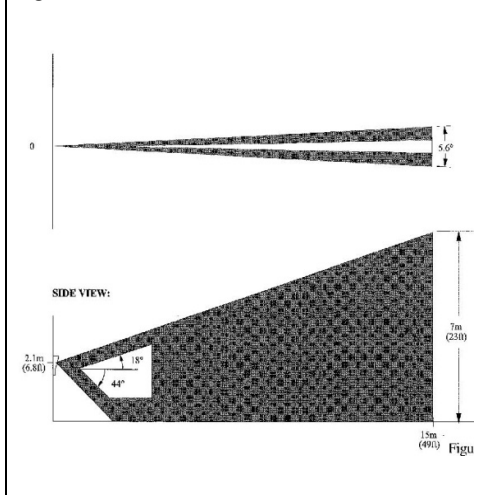
DETECTION PATTERN: LR 1.2 GI 12 V3

Figure 2. Long Range Lens



DETECTION PATTERN: VB 1.2 GI V1

Figure 3. Vertical Barrier Lens



Zilog's ZMOTION™ Intrusion Detection Solution

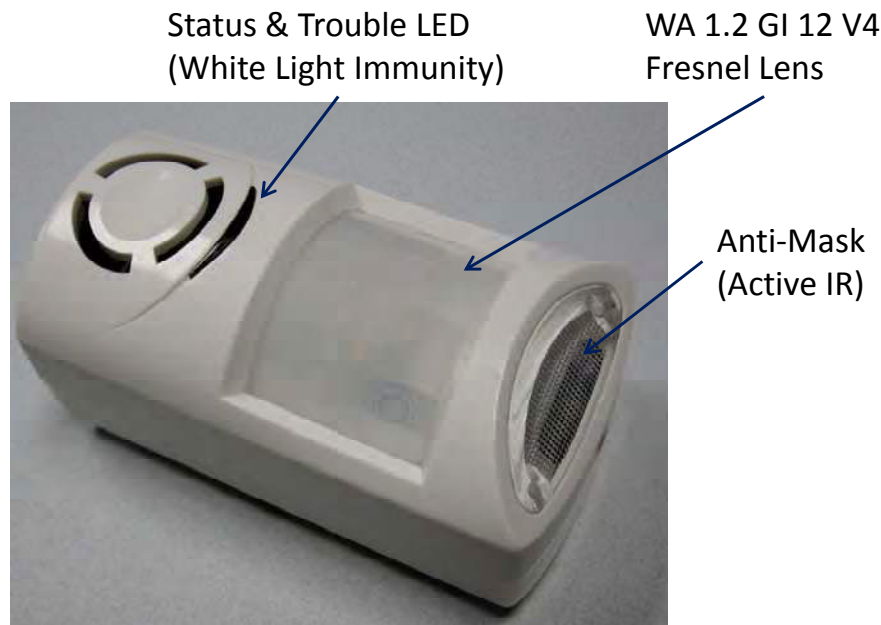


A Superior Motion Detection Solution for Security-Related Applications

This reference design demonstrates how to use Zilog's ZMOTION Intrusion Motion Detection solution in a PIR-based intrusion motion detector. It also shows how to implement additional functions such as anti-mask and power supply supervisory features.

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The Z8FS021 ZMOTION Intrusion MCU ships preprogrammed with motion detection software algorithms that comprise the ZMOTION Engine. These software algorithms run in the background while control and status of the Engine is accessed through a software Application Programmer Interface (API). Optimized API settings are provided that match the Engine operation to each of the lens and pyroelectric sensor combinations provided.



Part Number Reference

ZMOTION Intrusion Reference Design (ZMOTIONS200ZRDG)

Reference Documents

To download any of the following documents and source code, please visit the Zilog website at: www.zilog.com/zmotion.

ZMOTION Intrusion Reference Design Document (RD0001)

ZMOTION Intrusion Reference Design Source Code (RD0001-SC01)

ZMOTION Intrusion Detection Product Specification (PS0288)

Z8 Encore! XP F082A Series Product Specification (PS0228)

ZMOTION Lens and Pyroelectric Sensor Product Specification (PS0286)

ZMOTION: A New PIR Motion Detection Architecture (WP0017)

ZMOTION Detection Lens and Pyro Sensor Configuration Guide (WP0018)

ZMOTION Intrusion Reference Design Lab Findings Report (WP0019)