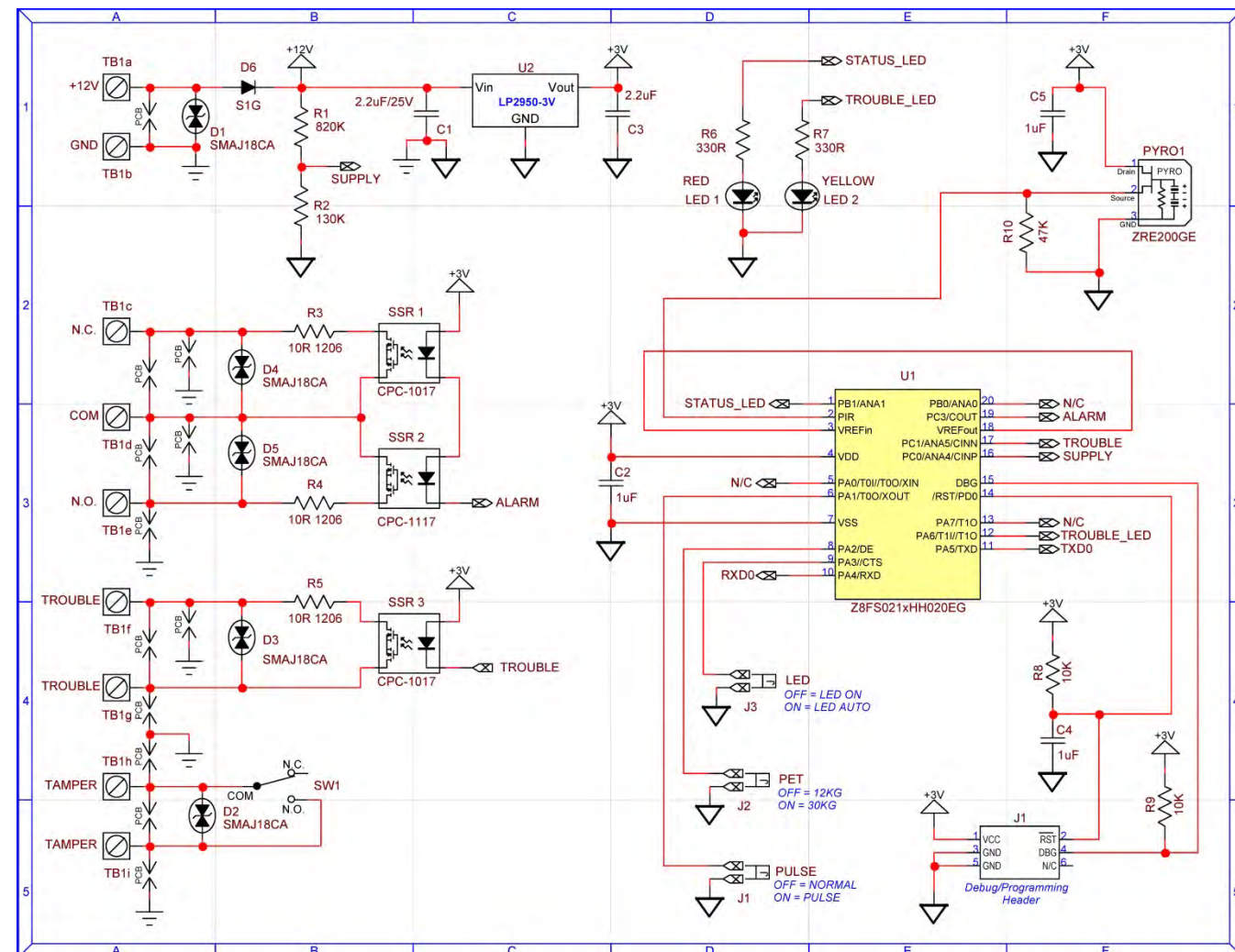


## ZMOTION Intrusion Reference Design

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.

- 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
- Uses low-cost RE200GE Basic dual-element pyroelectric sensor
- 12 kg/30 kg selectable pet immunity
- Selectable NORMAL and PULSE modes
- Auto LED
- Anti-mask demonstration
- Power supply supervisory
- Independently verified to meet EN-50131 EMC susceptibility requirements



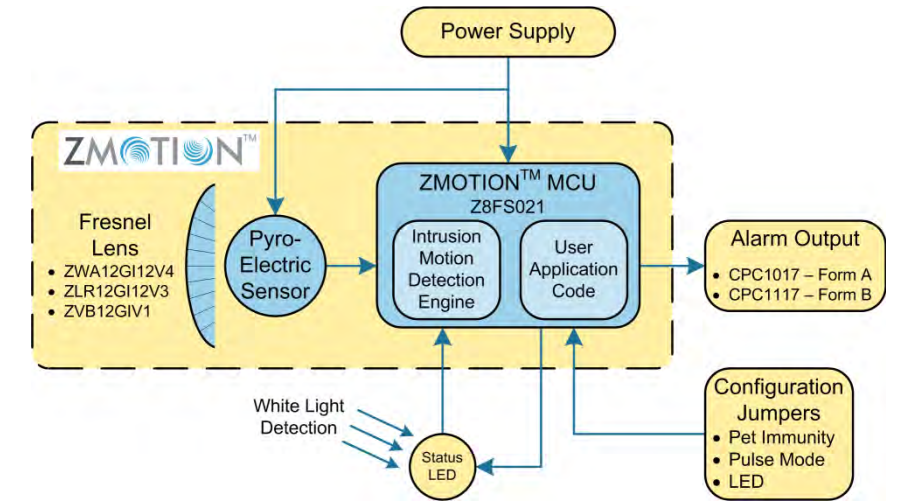
## ZMOTION® Intrusion Motion Detection Solution

Simple and Superior PIR Motion Detection Solutions for Intrusion/Security Applications



[www.zilog.com/ZMOTION](http://www.zilog.com/ZMOTION)

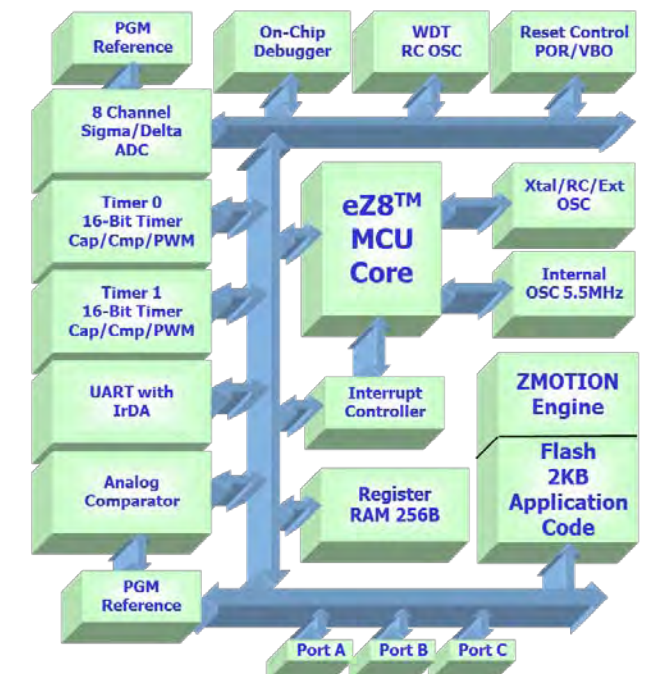
Zilog's ZMOTION Intrusion Motion Detection product family is an integrated and flexible solution for Passive Infrared (PIR)-based intrusion/security motion detection applications. It includes a high-performance microcontroller with **integrated PIR motion-detection S/W algorithms** and a selection of lenses and PIR sensors to fit a wide range of intrusion motion detection applications. These PIR motion-detection algorithms – called the ZMOTION Engine – are pre-programmed in the device and provide all motion sensing functions plus **White Light Detection, Pet Immunity, and EMI Rejection**. Using statistical processing methods, the ZMOTION Engine provides a dramatic improvement in both sensitivity and stability over traditional PIR motion detection designs while eliminating the need for external temperature compensation. Also, the pyroelectric sensor is interfaced directly to the MCU without filtering, allowing for better detection of EMC events associated with false detections and **eliminating the need for external op-amps, electrolytic capacitors and other discrete components** used in traditional designs. These features lead to a simpler and smaller circuit design, providing better reliability, sensitivity, and stability than traditional designs. The ZMOTION Intrusion Detection Solution is the ideal solution for security applications in which highly stable intrusion detection capability is vital.



## ZMOTION MCU

The ZMOTION MCU provides all the features and functions needed for intelligent Intrusion Detection applications.

- 2 KB Flash and 256 Bytes of RAM available for user application code
- Integrated ZMOTION Engine performs all motion detection functions including Pet Immunity and White Light Detection
- API interface to control all Engine parameters and tune to various lenses
- Two 16-Bit multi-function timers with PWM outputs
- 7 channel ADC and analog comparator
- Full Duplex UART
- On-chip Debug interface for application code development
- 2.7 V to 3.3 V operation @ -40 C to +105 C
- Part Number: **Z8FS021AHH20EG – 20 pin SSOP**





## ZMOTION Engine

The ZMOTION Engine is at the heart of the ZMOTION MCU. This pre-programmed Firmware performs all of the motion detection functions in addition to White Light Detection and EMI filtering. An API is provided to control and monitor the Engine in real time. The API also allows the Engine to be tuned the specific lens (wide angle, long range, vertical barrier, etc.) and pyro-electric sensor (typically dual element or quad element) being used in the application. This means that changing lenses is just a matter of changing the API settings – no changes to external circuitry. Zilog provides a range of pre-tested settings for all of the lenses we provide. These optimized configuration parameters provided for each lens/sensor combination ensures the best possible performance while significantly reducing development risk and minimizing time to market.

Add your custom application code to control and monitor the Engine and drive the appropriate outputs. Use the application code from our reference design or modify it to meet your specific application requirements.

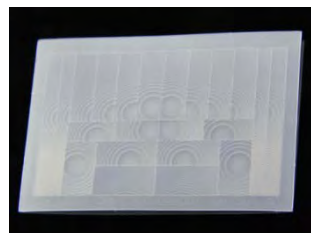
The ZMOTION Engine performs the following functions:

- PIR Motion Detection
- White Light Anti-Jam
- 1 or 2 Pulse Mode
- Pet Immunity
- White Light Detection
- Anti-Jam
- ADC interface
- Lens/pyro settings

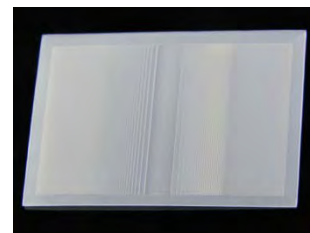
## ZMOTION Lenses

The ZMOTION Intrusion Detection solution includes a selection of 3 Fresnel lenses matching the requirements of most intrusion detection applications. Lens options include a Wide Angle typically used in corner/wall mount detectors, a Long Range for hallways, and a Vertical Barrier for curtain type detectors. API settings are provided to match the ZMOTION Engine operation to each lens type, ensuring the best possible performance while significantly reducing development risk and minimizing time to market. The flexibility of the ZMOTION Engine also allows you to [use your own lens and pyroelectric sensor](#) if desired.

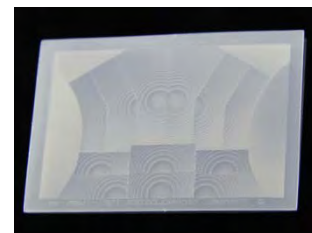
Part Number	Description	Typical Applications
ZWA12GI12V4	Wide Angle Array (88°) 18m Range	18m wide area Intrusion detector
ZWP12GI12V1	Vertical Barrier Array 15m x 7m Curtain	Wall or ceiling mount curtain or vertical barrier intrusion detector
ZLR12GI12V3	Long Range Array 30m Range	Wall mount long rang corridor/hallway 30m Intrusion detector



ZWA12GI12V4



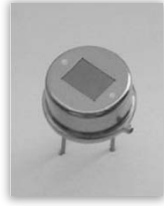

ZVB12GIV1



ZLR12GI12V3

## ZMOTION PIR Sensors

The ZMOTION PIR Motion Detection Solution includes two dual element pyro-electric sensors matched to each lens type.

ZRE200GE	ZSBG323671
	
Basic Dual Element	Premium Dual Element

## Development Support

To simplify your design process, Zilog provides reference designs and development kits, sample applications, and technical support.

## ZMOTION Intrusion Development Kit

Everything you need to evaluate and begin development of your ZMOTION Intrusion project:

- Development Board with ZMOTION MCU
- USB Serial interface/power supply
- 3 Lenses with holders
- 2 Dual Element Pyro-Electric Sensors
- USB Smart Cable (Debugger)
- ZDS-II (IDE including C-Compiler & Debugger)
- Sample Applications
- ZMOTIONS200ZCOG – 20 Pin MCU

