PIR/MICROWAVE MOTION DETECTOR

F2-200 SERIES INSTALLATION INSTRUCTIONS

FEATURES

- Patented Multi-Level Signal Processing (PIR)
- Digital temperature compensation
- Digital microwave signal processing
- DRO microwave technology for low current and reliable operation
- Adjustable microwave detection pattern to match room size
- MOV transient / static protection
- High RF immunity with SMD construction
- Exceptional white light immunity
- Microprocessor low voltage protection
- Optional tamper switch
- Optional Form 'C' alarm contacts

SPECIFICATIONS

ELECTRICAL

Operating Voltage	9.5 to 14.5 VDC
Ripple Tolerance	3 VP-P at 12 VDC
Stand-by Current	30 mA at 12 VDC
Alarm Current	30 mA at 12 VDC
Alarm Contacts	Form 'A' (standard) Form 'C' (optional)
Tamper Contact	Optional
Contact Ratings	100 mA at 24 VDC
Alarm Contact Series Resistance	10Ω 0.25W

OPERATION

Coverage (max. length x max. width)	40' × 50' (12m × 15m)
MW Range Adjust	10' to 40' (3m to 13m)
Alarm Duration	2 seconds
Walk Speed	0.5 ft/s to 10 ft/s (0.15m/s to 3.0m/s)
Nominal Mounting Height	7.5' (2.3m)
Jumper	Alarm LED on/off

IMMUNITY

RF Immunity	30 V/m over range 0.01 to 1200 MHz
Transients at Terminals	2.4 kV at 1.2 joules
Static Discharge Immunity	25 kV
White Light	20 000 Lux at the detector
Operating Temperature	32° to 122° F (0° to 50° C)
Humidity	5% to 95% RH non-condensing
Temperature Compensation	Over entire operating range

DESCRIPTION

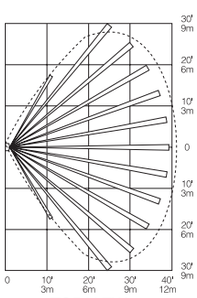
The F2-200 is a dual detector employing both microwave (MW) and passive infrared (PIR) motion sensors. The sensors are combined through a microprocessor to provide intelligent motion detection designed to eliminate single detector false alarms.

Significant technical features such as the PIR's Multi-Level Signal Processing (MLSP), digital temperature compensation, a highly reliable DRO microwave sensor and digital MW signal analysis combine for a new level of detection sensitivity, stability and false alarm immunity.

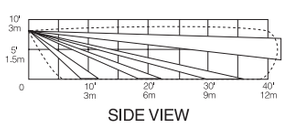
The PIR and MW systems are each designed as independent, high quality motion detectors. When combined, the result is a detector with unmatched performance.

The detector indicates an alarm when both sensors detect motion within 10 seconds of each other. The first sensor, either the PIR or MW, which detects motion will start the 10 second confirmation period during which the other sensor must also detect motion. If the first sensor's detection is not confirmed within 10 seconds, the unit disregards the alarm.

PIR/MW BEAM PATTERNS



TOP VIEW



SIDE VIEW

LOCATING THE DETECTOR

Mount the detector in a dry indoor location which will force the intruder to walk perpendicular to the beam, and allow the beam pattern to adequately cover the area being protected. Survey the mounting location and the area being protected for the following potential problems.

MOUNTING HEIGHT

The Force2 is designed to provide optimum coverage when mounted between 2.1m (7') to 2.4m (8') from the floor. If the unit is mounted above 2.4m (8'), the PIR will have a slightly longer range, but the "dead" zone directly below the unit will be increased. If the unit is mounted below 2.1m (7') the PIR section will have a shorter range and the "dead" zone directly below the detector will be decreased.

NOTE: Optimum dual detector detection occurs when the coverage patterns of the PIR and MW section are matched. Differences between PIR and MW coverage patterns could reduce its effectiveness.

REFLECTIVE/METALLIC SURFACES

Do not aim the detector at reflective surfaces or metallic surfaces that could vibrate. Reflective surfaces could distort the PIR coverage pattern; vibrating metallic surfaces or rotating fans could be seen as motion by the MW sensor. Metallic surfaces close to the unit may reduce MW sensitivity.

AIR FLOW

The Force2 is protected against air flow and airborne contamination. However, do not locate the detector where it will be subject to direct high air flow such as fans, hot air vents or open windows.

CONTAMINATION

Do not locate the detector near a source of oil or water vapour, such as a steaming kettle or cooking area in a kitchen.

SUNSHINE

The Force2 is resistant to white light but direct sunlight is a high energy source. Do not locate the detector where it will receive direct sunlight, particularly in the morning or evening when the sun is low and may shine in through a window.

TEMPERATURE CHANGES

Do not aim the detector at objects that change temperature rapidly, such as heaters or ovens.

OBSTRUCTIONS

Do not limit the desired area of protection by placing large objects such as plants or filing cabinets, so as to obstruct the detector's coverage pattern.

PETS

Do not aim the detector where pets may trigger either the microwave or PIR motion sensors. If both sensors are tripped, an alarm will result.

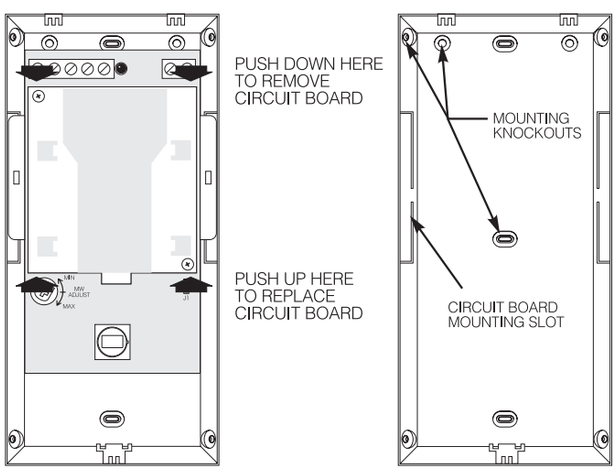
DISASSEMBLING THE DETECTOR

To open the detector, pull on the front of the detector while pressing on the release at the bottom of the detector with a small screwdriver.

To remove the circuit board and sensor assembly from the detector case, press gently on the top of the MW detector until the circuit board unlocks and slides towards the bottom of the detector.

To replace the circuit board and sensor assembly, place the circuit board assembly into the detector's back so that the white plastic frame fits into the two slots in the detector's back. Press gently on the bottom of the MW detector assembly to slide the circuit board towards the top of the detector. The circuit board assembly will snap firmly into place.

NOTE: To avoid damage to the detector, do not press against any of the components on the circuit board when removing and replacing the board.

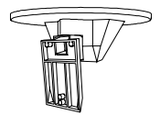


With the circuit board removed, use a small screwdriver to punch out the wiring and mounting knockouts located in the detector's back. Feed the wiring through the wiring knockout and secure the detector to the wall.

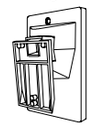
DM-C AND DM-W DETECTOR MOUNTING BRACKETS

Use the optional DM-W wall-mount and DM-C ceiling mount brackets to solve difficult placement problems. The DM-W and DM-C mount to either the wall or ceiling and allow for full vertical and horizontal positioning of the motion detector - the detector can be tilted up or down and rotated through 90° to obtain the best position for optimal coverage. The Force2 has been designed to be fully compatible with the DM-W and DM-C brackets. Contact your DSC distributor for more information.

DM-C
Ceiling Mounting Bracket



DM-W
Wall Mounting Bracket



IMPORTANT NOTE: Maximum detection coverage occurs when the Force2 is mounted at the height specified in the mounting instructions and the mounting surface is vertical. If this cannot be achieved with a mounting bracket, then detector coverage may be less than specified.

WIRING

Once the detector is mounted in the desired location, connect the wiring as shown below. Note that various models have the following optional features.

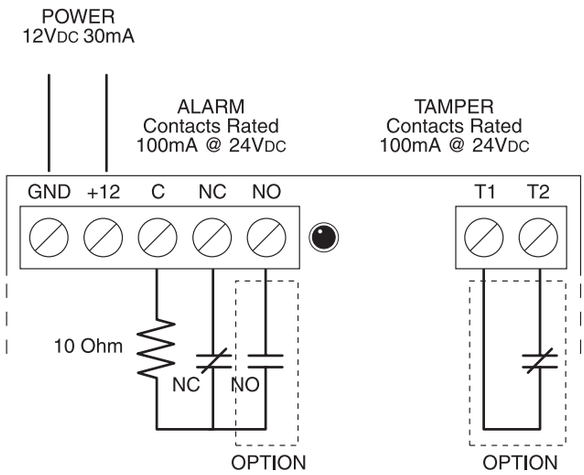
FORCE 2 - OPTIONS

F2-200 ..... 'A' Alarm contact only

F2-201 ..... 'A' Alarm contact & Tamper switch

F2-202 ..... 'C' Alarm contact & Tamper switch

NOTE: Contacts are shown in the non-alarm state with power applied to the detector.
Wiring shall be insulated with PVC, TFE, PTFE, FEP neoprene or polymide.



POWER UP

Upon application of power, the alarm indicator will be illuminated for 60 seconds to indicate the unit is warming up. During this period, the alarm relay is held in its normal non-alarm state. After the 60 second warm-up period, the alarm indicator will go out and the unit will respond to motion in the protected area.

ALARM INDICATOR ON/OFF JUMPER J1

With jumper J1 OFF, the alarm indicator will turn on each time the unit goes into alarm. With J1 ON, the alarm indicator is disabled.

RANGE ADJUSTMENT

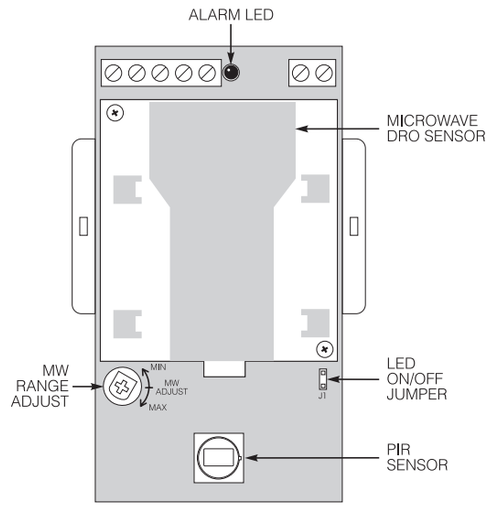
The detector's range is adjustable from about 10' minimum to 40' maximum (3m minimum to 13m maximum). Rotating the "MW Adjust" potentiometer clockwise increases the range; rotating the potentiometer counter-clockwise decreases the range. For optimum performance, the range should be adjusted so that it matches the size of the area to be protected. The unit is factory-set for maximum range.

It is strongly recommended that the range of the detector be adjusted to match the size of the protected area. To do this, first, set the LED jumper to the OFF position to enable the LED.

Have someone walk at the farthest spot from the detector that is still within the desired detection area. Adjust the "Range Adjust" potentiometer until the alarm LED no longer illuminates when the person walks through the extreme edge of the detection area. When so adjusted, readjust the potentiometer so that the unit will go into alarm when a person walks at the extreme edge of the detection area.

CAUTION: Microwave frequencies can penetrate walls and glass. Adjust the range so that it does not extend outside the desired area of detection.

COMPONENT LOCATIONS



WALK TESTING

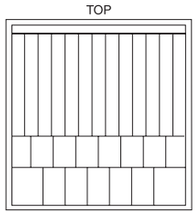
It is imperative that the unit be thoroughly walk tested after mounting and any necessary adjustment be made to ensure that coverage extends over the desired area. Refer to the 'Range Adjustment' section of these instructions.

Once coverage has been confirmed, Jumper J1 may be set to the ON position to disable the alarm LED indicator.

IMPORTANT NOTE: Upon installation, the unit should be thoroughly tested to verify proper operation. The end user should be instructed on how to perform walk tests, and should perform a walk test at least once per year.

PIR LENS

The PIR lens is mounted with the textured side facing in (smooth side facing out). Note that the long lens elements are at the top when the lens is properly positioned. Ensure the lens is properly seated, and that the lens holder is securely snapped into place.



LIMITED WARRANTY

Digital Security Controls Ltd. warrants that for a period of twelve months from the date of purchase, the product shall be free of defects in materials and workmanship under normal use and that in fulfilment of any breach of such warranty, Digital Security Controls Ltd. shall, at its option, repair or replace the defective equipment upon return of the equipment to its repair depot. This warranty applies only to defects in parts and workmanship and not to damage incurred in shipping or handling, or damage due to causes beyond the control of Digital Security Controls Ltd. such as lightning, excessive voltage, mechanical shock, water damage, or damage arising out of abuse, alteration or improper application of the equipment.

The foregoing warranty shall apply only to the original buyer, and is and shall be in lieu of any and all other warranties, whether expressed or implied and of all other obligations or liabilities on the part of Digital Security Controls Ltd. Digital Security Controls Ltd. neither assumes responsibility for, nor authorizes any other person purporting to act on its behalf to modify or to change this warranty, nor to assume for it any other warranty or liability concerning this product.

In no event shall Digital Security Controls Ltd. be liable for any direct, indirect or consequential damages, loss of anticipated profits, loss of time or any other losses incurred by the buyer in connection with the purchase, installation or operation or failure of this product.

Motion detectors can only detect motion within the designated areas as shown in their respective installation instructions. They cannot discriminate between intruders and intended occupants. Motion detectors do not provide volumetric area protection. They have multiple beams of detection and motion can only be detected in unobstructed areas covered by these beams. They cannot detect motion which occurs behind walls, ceilings, floor, closed doors, glass partitions, glass doors or windows. Any type of tampering whether intentional or unintentional such as masking, painting, or spraying of any material on the lenses, mirrors, windows or any other part of the detection system will impair its proper operation.

Passive infrared motion detectors operate by sensing changes in temperature. However their effectiveness can be reduced when the ambient temperature rises near or above body temperature or if there are intentional or unintentional sources of heat in or near the detection area. Some of these heat sources could be heaters, radiators, stoves, barbeques, fireplaces, sunlight, steam vents, lighting and so on.

WARNING: Digital Security Controls Ltd. recommends that the entire system be completely tested on a regular basis. However, despite frequent testing, and due to, but not limited to, criminal tampering or electrical disruption, it is possible for this product to fail to perform as expected.

IMPORTANT INFORMATION

CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY DIGITAL SECURITY CONTROLS LTD. COULD VOID THE USER'S AUTHORITY TO OPERATE THIS EQUIPMENT.

This device complies with RSS-210 of Industry Canada. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Ce dispositif satisfait aux exigences d'Industrie Canada, prescrites dans le document CNR-210. son utilisation est autorisée seulement aux conditions suivantes: (1) il ne doit pas produire de brouillage et (2) l'utilisateur du dispositif doit être prêt à accepter tout brouillage radioélectrique reçu, même si ce brouillage est susceptible de compromettre le fonctionnement du dispositif.

DSC erklærer herved at denne komponenten overholder alle viktige krav samt andre bestemmelser gitt i direktiv 1999/5/EC.

Por este meio, a DSC, declara que este equipamento está em conformidade com os requisitos essenciais e outras determinações relevantes da Directiva 1999/5/EC.

"DSC bekräftar härmed att denna apparat uppfyller de väsentliga kraven och andra relevanta bestämmelser i Direktivet 1999/5/EC".

Con la presente la Digital Security Controls Ltd dichiara che questo prodotto è conforme ai requisiti essenziali ed altre disposizioni rilevanti relative alla Direttiva 1999/05/CE.

"Por la presente, DSC, declara que este equipo cumple con los requisitos requeridos por la Directiva 1999/5/EC".

Hierdurch erklärt DSC, daß dieses Gerät den erforderlichen Bedingungen und Vorrausetzungen der Richtlinie 1999/5/EC entspricht.

'Δία του παρόντος, η DSC, δηλόνει ότι αυτή η συσκευή είναι σύμφωνη με τις ουσιώδης απαιτήσεις και με όλες τις άλλες σχετικές αναφορές της Οδηγίας 1999/5/EC'.

Hierbij verklaart DSC dat dit toestel in overeenstemming is met de eisen en bepalingen van richtlijn 1999/5/EC.

Par la présente, DSC déclare que cet article est conforme aux éxigences essentielles et autres relevantes stipulations de la directive 1999/5/EC.

DSC vakuuttaa laitteen täyttävän direktiivin 1999/5/EC olennaiset vaatimukset.

Hereby, DSC, declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

The complete R & TTE Declaration of Conformity can be found at www.dsc.com/intl/rttedirect.htm.

Toronto, Canada • **www.dsc.com**
Printed in Canada 29001544 R003

FORCE2® is a registered trademark of Digital Security Controls Ltd.