FW2-MAG

FREEWAVE2™ TWO WAY WIRELESS MAGNETIC DOOR/WINDOW CONTACT

CROW
Electronic Engineering Ltd

INSTALLATION INSTRUCTIONS
P/N 7101590 REV. G

INTRODUCTION

The FW2-MAG is an advanced magnetic contact sensor with integrated RF transceiver designed to be a fully supervised low-current device

The FW2-MAG is a part of the FREEWAVE2™ which is a supreme wireless line of devices that uses an advanced 2way RF transceiver combined with an intelligent communication protocol.

A built-in reed switch and/or an external wired input may be applied in this device.

To maximize security, an 8.2k end-of-line resistor is monitored on the external wired input.

FW2-MAG uses smart message control, which verifies that all messages are successfully transmitted, so that no intrusion event will be uninformed to the system.

Each FW2-MAG has a unique factory set ID code (24bit) which by registration is set into memory of the paired FREEWAVE2™ TRANSCEIVER, enabling more secured communication and devices to be remotely controlled from a specific transceiver.

FEATURES

- State-of-the-art 2 way wireless security system
- Freewave2 advanced & secured RF protocol
- Low current Technology
- Powered by a single 3V Lithium battery
- Battery life: more than 5 years
- Available Frequencies: 868.35MHz / 916.5MHz
- Contact Open/Close transmission
- Tamper Open/Close transmission
- Supervision transmission
- Battery status send on every transmission
- LED indications for monitoring
- Range up to 500m on open space.
- Unique ID number
- Front and back tamper.
- Alarm trigger either by the internal reed switch and / or by wired terminal
- Wired terminal with E.O.L 8K2 resistor.

OPERATION

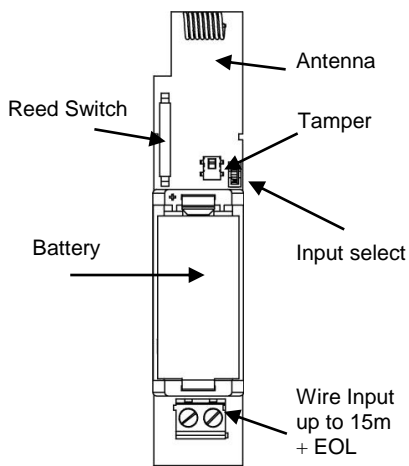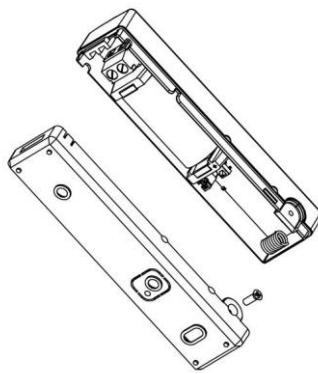The Wireless Magnetic detector transmits the following events data:

SUPERVISION - a periodical transmission every 7 min. indicates detector's presence.

ALARM - Alarm transmission triggered by intrusion detection by REED SWITCH and WIRE input.
(Selectable, See section 8: SETTING THE OPERATION MODE).

LOW BAT – Whenever the battery reaches a pre-set low level (~2.4V) Battery Low signal will be sent with the next scheduled message (Supervisor, Alarm, etc.).

TAMPER – Whenever the FW2-MAG cover is removed or tore off wall, a message will be transmitted with "Tamper" signal.

FIG. 1 - REMOVAL OF FRONT COVER

FIG. 2 - BATTERY PLACEMENT

Fig. 3 - CIRCUIT LAYOUT

Antenna

Reed Switch

Tamper

Battery

Input select

Wire Input up to 15m + EOL

SETTING THE OPERATION MODE

There are 3 operational modes for the FW2-MAG and it should be configured during the power-up (battery placing)

1.Internal Reed Switch only:
Jumper is connected and Wired Terminal open.

2. External Reed switch only:
Jumper is connected and external reed switch closed with resistor 8K2.
Note: to return to internal reed installer should reset device (battery remove and replace)

3. Both internal and external reed switches:
Jumper is **NOT** connected

Note: At this mode if one of the reed switches is open an "Open zone" message will be transmitted.

ID REGISTRATION

Refer to the system transceiver's installation instructions and follow the procedure given there for "learning" detector IDs.

Place battery as instructed & wait until start up LED stops blinking.

Make sure that the transceiver is on learning mode according to control panel installation instruction.

Generate a transmission by pressing and releasing tamper switch - this will start the "learn" data transmitting by the device to the control panel transceiver.

Note the LED indications on the device:

- Green/Red LED flashes alternately – for 5 sec Magnet was registered successfully cover may be closed only after verification with control panel.
- Green LED blinks periodically – Device was not sighed into FW2-TRANSCEIVER. Repeat registration process
- Red LED blinks – for over 20sec Battery voltage is critically low. Replace battery

SELECT MOUNTING LOCATION

It is recommended to mount the FW2-MAG vertically on a flat area to get maximum range. As the detector is a wireless transceiver, and in order to take full advantage of it's sophisticated operation, do not install the detector in areas where large metal objects could interfere with the transmission of signals.

It is recommended to attach transmitter to the fixed frame and the magnet to the moveable part (door or window), as shown on section 14. Installation is not allowed on a ferromagnetic surface.

> *For detector installation it is recommended to use*
>
> **SCREW 3x30 PH. FLAT HEAD**
> **CAUTION: *using a different or a bigger screw can damage* the electronic board.**

RSSI – RF SIGNAL INDICATION

The FREEWAVE2™ control panel has "RF Signal Strength Indication" (RSSI) for each transceiver in order to help the installer to define the best location for the detector from RF perspective.
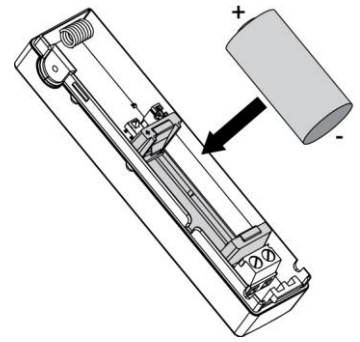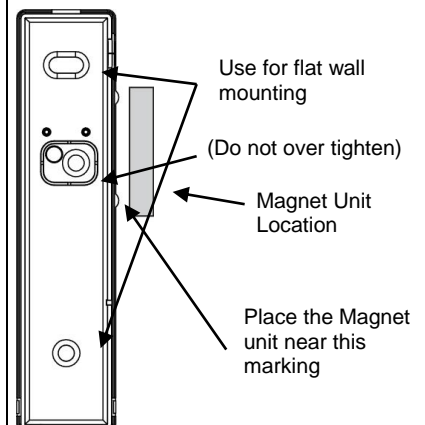
The indication value is between 10 and 100, where 100 is the best RF received signal. If the RSSI indication value is less then 30, it is a sign for a weak RF link and it is recommended to find a better installation for the FW2-MAG.

NOTES:
Supported only on selected Crow CP.

FIG. 4 - KNOCKOUT HOLES

Use for flat wall mounting

(Do not over tighten)

Magnet Unit Location

Place the Magnet unit near this marking

MOUNTING THE DETECTOR

1. To remove the front cover, unscrew the holding screw, insert a flat screwdriver in the slot between the front and the bottom while pushing and twisting it gently until the front cover is disengaged. (Fig. 1)
2. Mount the detector base: place all 3 screws and make sure you tighten the tamper screw (the middle screw) easily, so the back tamper switch will press the switch successfully when PCB is placed back - over winding may result in false mechanical adaptation and lack of tamper press.
3. Mount the Magnet Unit near the Marking.
4. Place the CR123A BAT according to the right polarity
5. Place the cover by inserting it back in the appropriate closing pin and screw the holding screw.

INSTALLATION

Basic installation at 10mm between FW2-Mag and Magnet Unit.

	Opening	Closing
X (Slide)	15mm	14mm
Y1 (Slide Up)	15mm	14mm
Y2 (Slide Down)	15mm	14mm
Z (pivoting)	17mm	14mm

ALARM TRANSMISSION TEST

Removing and placing of magnet unit enables the alarm transmission test feature.
Check that the transceiver unit indicates at least 2 events – one for removing and one for placing the magnet.

To check this function it is necessary to verify that the FREEWAVE2 control panel displays the following massage:

Zone # X Open

The message appears when removing the magnet unit and disappears while placing the magnet back (X = zone number from which the massage received).

TAMPER TRANSMISSION TEST

Pressing and releasing the tamper (push button) enables the TAMPER transmission test feature.

Verify the Control Panel indicates "Zone Tamper open" and TROUBLE LED is ON.

Close the Tamper and verify the Control Panel Indicates ZONE TAMPER OPEN is restored and TROUBLE LED is OFF.

In some control panels READY LED will turn OFF when tamper is open and ON when closed.

Transmission can also be reviewed on the transceiver unit as a rapid Red-Green-LED blink.

BATTERY REPLACEMENT

- Remove the front cover.
- Pull out the old battery.
- Install a new battery according to polarity marking.
- After assembling the battery the LED will flash Green then Red alternately for 45 seconds. During this time the detector does not function, wait until the LED stop flashing.
- Press tamper for 2 sec and then release it.
- Note LED indications:

Green/Red LED flashes 6 times alternately:
The detector was successfully registered in system. The cover may be placed back and closed.

Green LED blinks 20 times:
No response from Transceiver / device was not assigned on CP - Repeat installation procedure.

Red LED blinks continually (over 20 sec):
Battery voltage is critical low device won't function - Replace battery.

EXTERNAL MAG

It is optional to use additional magnet units connected to the MAG terminal input.
This connection is protected by End Of Line resistor value 8.2Khom

Alarm transmission, triggered by intrusion detection at WIRE terminal input, provides signals of door/window open/close up to 15m.

Connect two wires communication cable to the MAG terminal block inputs.
See Fig.3.

REGULATORY APPROVALS

The FW2-MAG conforms to the essential requirements set out by:
- RTTE directive:1999/5/EC
- EMC directive: 2004/108/EC
- Low Voltage directive: 2006/95/EC

Harmonized Standards applicable to this products are:
- EN300220-2
- EN301489-3
- EN301489-1
- EN50130-4
- EN61000-6-3
- EN60950-1
- EN50131-6
- EN50130-5
- EN50131-5-3

Security Grade 2 Environmental Class II
Additional Standards and Directives applicable to this product are:
- RoHS directive: 2002/95/EC
- EN50131-2-6

TECHNICAL SPECIFICATIONS

Data Protocol	FreeWave2
Modulation Type	GFSK (1 Frequency)
Frequency	868.35MHz / 916.5MHz
Identification	Unique ID serial number – 24 bit
Event Transmission	Alarm, Tamper, Supervision, Low Bat Supervision
Detection Method	Internal Reed Switch or External Magnet Device
Range in open space	500m
Battery	Lithium. 3V Type: CR123A Size: 2/3AA
Battery life expectancy	>5 years (10 activation per day)
Current Consumptions:	
Standby	~3 μA
Receive mode	~29 mA
Transmit mode	~38 mA
Low Battery	~2.4Vdc
Transmit power:	~10dBm
Tamper Switch	Front Cover Removal; Back Tamper
External Input	Up to 15m with 8.2Kohm EOL resistor
Operating temperature	-10°C to +50°C
Dimensions	97mm x 22mm x 21mm
Weight (inc. battery)	40 gr.

CAUTION !!!

RISK OF EXPLOSION IF BATTERY IS REPLACED BY DIFFERENT TYPE / MODEL.

DISPOSE USED BATTERIES ACCORDING TO ITS INSTRUCTIONS

The battery must be replaced by 3V Lithium battery Size 2/3A Models such as:

**1. VARTA CR123A
2. GP CR123A**

CROW ("CROW") - WARRANTY POLICY CERTIFICATE

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These instructions supersede all previous issues in circulation prior to July 2016.