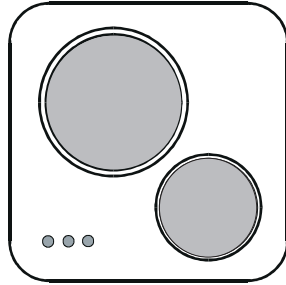




Ceiling Mount Motion Sensor

INSTALLATION INSTRUCTIONS

Model
DT-6360STC



MOUNTING LOCATION

The DUAL TEC® 6360STC motion sensor provides maximum coverage when mounted on ceilings from 8' (2.4 m) to 16' (4.8 m) high. Refer to the [System Set-up](#) section to determine which passive infrared (PIR) mirror assembly to use at different ceiling heights.

Choose a mounting location in the center of the protected area. The protected area should be free of objects that might prevent the PIR sensor from detecting an intruder: large pieces of furniture, room dividers, etc.

Remember, infrared energy cannot penetrate solid objects. If the PIR detector is blocked, the DT-6360STC will not trigger an alarm.

Note: If you plan to use the DT-6360STC's tamper switches, read the [Tamper Installation](#) section on page 1.

MOUNTING PROCEDURE

To remove the front cover, orient the DT-6360STC so that one of the sides with the small rectangular slot in the center is visible. Using a small flathead screwdriver, gently push down on the slot while separating the housing parts. Set the front cover aside.

Remove the printed circuit board (PCB) by depressing one of the retaining brackets at its sides. Use the microwave antenna to carefully pull the PCB out.

Surface Mounting

If mounting the DT-6360STC directly on a ceiling, use the back cover as a template to mark holes for the mounting screws and wiring. Drill the holes. Then pull several inches of wiring from the ceiling through the center hole in the back housing.

Attach the back housing to the ceiling with the mounting screws. **Recommended mounting screws:** #6 (M3.5) pan head.

Note: If surface wiring, use the knockout hole on the side of the housing.

IMPORTANT: To ensure insects do not get inside the DT-6360STC housing, make sure to seal all holes. (Recommended sealant: silicone RTV.)

Flush Mounting

The DT-6360STC is shipped with a special kit for flush mounting. The kit contains a recess "bucket" and retainer ring. The retainer ring is only needed when flush mounting the unit in ceiling tile. Removing the tile from the ceiling (if possible) will make the installation process easier.

To flush mount the unit, cut a 5.5" x 5.5" (14 cm x 14 cm) hole in the ceiling. Insert the recess bucket into the hole, using it as a template to mark drill holes for the four mounting screws. Remove the bucket and drill the screw holes.

If using the retainer ring, place it through, then directly over, the hole in the ceiling tile. **Make sure to orient the retainer ring and recess bucket as shown in Figure 1.**

Next, attach the back housing of the DT-6360STC to the inside of the recess bucket, using the same screw holes and screws used for surface mounting [#6 (M3.5) pan head]. Pull several inches of wiring from the ceiling through the center hole in the recess bucket and DT-6360STC back housing.

Insert the recess bucket into the hole in the ceiling, securing it to the ceiling (and retainer bracket) with four mounting screws.

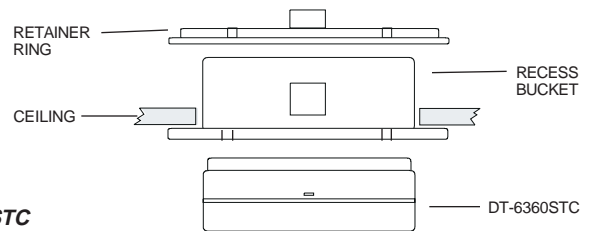


Figure 1
DT-6360STC
Flush Mounting Kit

Tamper Installation

The DT-6360STC is equipped with two tamper switches: a cover tamper and ceiling tamper. When the tamper switches are used, removing the cover from the sensor will activate the cover tamper; removing the sensor from the ceiling will activate the ceiling tamper. Both tamper switches are normally closed (NC) and internally wired in series.

The cover tamper switch can be used without the ceiling tamper and requires no modifications to the DT-6360STC housing.

To use the ceiling tamper, remove the square knockout in the rear housing (directly behind the ceiling tamper switch), then install a screw* in the ceiling. Leave enough of the screw protruding to depress the tamper switch. Refer to Figure 2.

If the installation is recessed, remove the knockout from the rear housing, drill a screw hole (behind the knockout) in the recess bucket, then install the screw* in the recess bucket. Leave enough of the screw protruding to depress the tamper switch. Refer to Figure 2.

***Note:** #6 (M3.5) pan head is recommended.

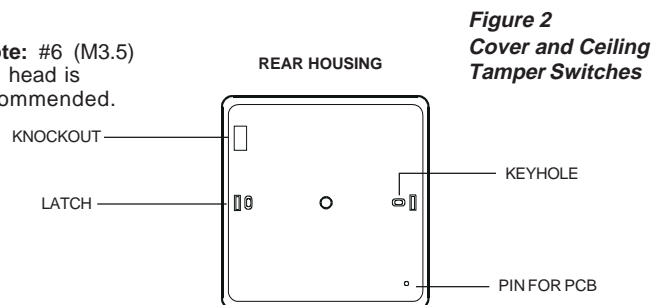
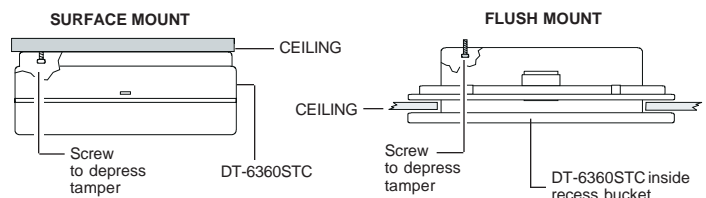


Figure 2
Cover and Ceiling
Tamper Switches



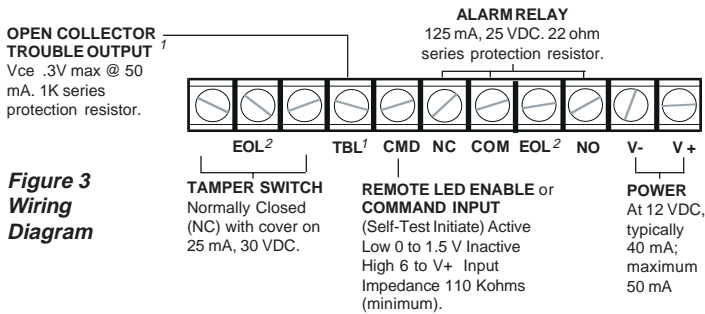
Removing Front Cover After Installation (flush mount)

After installing and walk-testing the DT-6360STC flush mount, you may need to make adjustments. Use a screwdriver to reopen the front cover.

Insert the screwdriver as far as it will go in the grooves inside the recess bucket. Gently press outward to release the latches holding the front cover in place.

WIRING

Observing the proper polarity, wire the sensor as shown below (use 22 to 14 AWG). **Note:** Reverse polarity will not damage the unit.



¹The Trouble Output is activated when a self-test failure or an INFORMER[®] condition occurs. Refer to THE INFORMER CIRCUIT and the TROUBLESHOOTING sections.

²EOL = End-of-Line (spare) terminal.

Note: Do not leave excess wire inside the unit. Push as much wire as possible into the ceiling when returning the PCB to its housing.

Note: For proper wiring methods, refer to National Electrical Code NFPA 70.

SYSTEM SET-UP

Changing the PIR Mirror Assembly

The DT-6360STC package contains two PIR mirror assemblies: one for ceilings from 8' (2.4m) to 11' (3.3m) high, another for ceilings from 12' (3.65m) to 16' (4.8m) high. **The unit is shipped with the 8'-11' (2.4m-3.3m) mirror installed.**

To change the mirror assembly, remove the front cover and turn it over. Next, remove the protective cap and existing mirror assembly by depressing the four retaining latches at their sides. Store (or discard) the existing mirror and install the new one. Snap the protective cap back into place, then replace the front cover.

PIR Masking

To eliminate specific PIR zones from the pattern, mask corresponding segments on the PIR mirror with the adhesive-backed masking tape provided. Remember, segments to be masked will be on the side of the mirror **OPPOSITE** the unwanted zones. See Figure 4.

Once the tape has been applied, walk-test the sensor to ensure that the correct mirror segments have been masked.

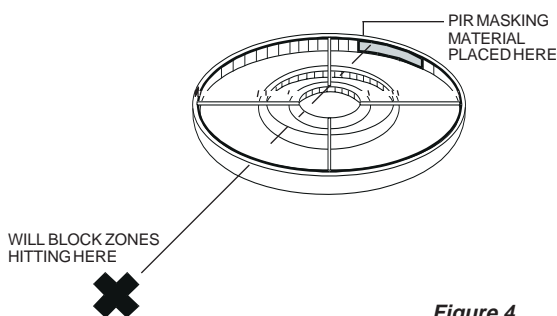
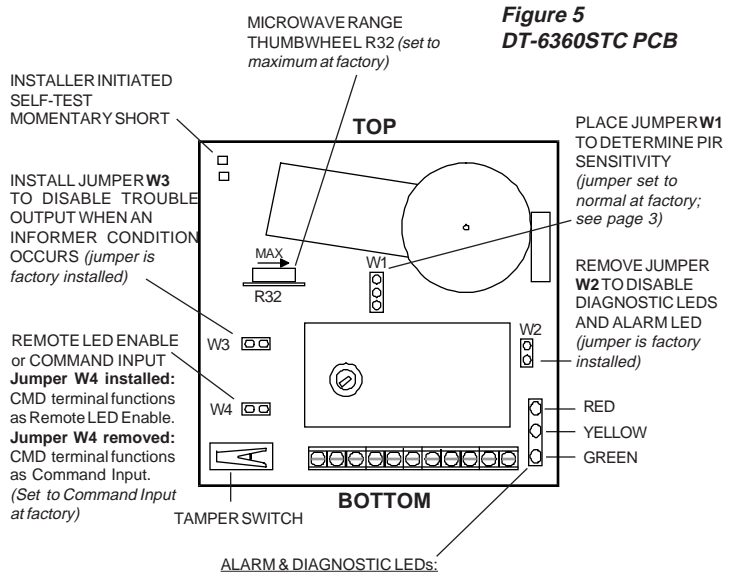


Figure 4
Masking the PIR Mirrors

SYSTEM TESTING

DT-6360STC sensors are equipped with two diagnostic LEDs: green for PIR and yellow for microwave. The red LED is used to indicate an alarm condition.

Apply power to the sensor and wait until self-test is completed (90 seconds). Begin walk-testing after all three LEDs have gone out.



Red - During normal operation LED illuminates when an ALARM condition is triggered.*

Yellow - During normal operation LED flashes ON when a MICROWAVE event is detected.*

Green - During normal operation LED flashes ON when a PIR event is detected.* (PIR Zone Finder)

* If Self-Test fails or an INFORMER condition occurs, LEDs indicate nature of problem (see Tables 1, 2 & 3)

Microwave Range Adjustment

DT-6360STC sensors are equipped with a microwave range thumbwheel (R32) for range adjustment. (Refer to Figure 5.) Set the range at MINIMUM by turning the thumbwheel all the way to the left.

As you perform the walk-test, gradually turn the thumbwheel to the right to increase the microwave sensitivity until the desired range is obtained.

Walk-test

Walk across the protected area at the ranges to be covered. Two to four normal steps make the diagnostic LEDs light, and the red LED should indicate an alarm condition. When there is no motion in the protected area, all three LEDs should be off.

COMMAND INPUT / REMOTE LED ENABLE

Position **W4** determines what function the Command Input (CMD) terminal will provide.

Installing a jumper at position **W4** makes the CMD terminal function as a Remote LED Enable terminal. If the signal to the Remote LED Enable terminal is low, the LEDs are enabled. If the signal to the terminal is high, the LEDs are disabled. However, if a self-test error occurs, the LEDs will light regardless of the state of the signal.

The CMD terminal functions as a Command Input terminal when the jumper is removed from position **W4**. A momentary low signal to the terminal (at least .5 seconds) will initiate the self-test.

LED DISABLE (Local)

To disable the diagnostic LEDs and alarm LED, remove the jumper from position **W2** on the PCB. (See Figure 5.)

THE INFORMER CIRCUIT

The INFORMER circuit counts the number of events registered by both the microwave and PIR technologies, and uses the resulting ratio to determine if either technology is misapplied or working properly.

The informer ratio is preset at 32 to 1. This ratio means that before one technology registers 32 events, the other must register at least one event. If it does not, trouble will be signaled.

When an INFORMER condition occurs, the trouble output becomes active until the INFORMER condition is cleared, and the LEDs display an INFORMER trouble code. (By installing the jumper at position **W3**, the LEDs will display an INFORMER trouble code, but there will be no trouble output. See Figure 5.) The DT-6360STC immediately performs a self-test to determine if the problem is internal.

- *If a self-test error is detected*, the self-test LED pattern replaces the INFORMER LED pattern and the Trouble output becomes active for eight seconds. (Refer to the Troubleshooting Matrix on page 4.)

- *If no self-test error occurs*, the unit continues to display the INFORMER LED pattern. The problem is misapplication. Walk-test the DT-6360STC to pinpoint the cause.

Note: If eight microwave (and no PIR) events occur within one minute, the INFORMER circuit will disable itself for eight minutes. This feature allows the INFORMER circuit to compensate for temporary environmental disturbances. If a PIR event occurs during the disable period, the microwave is automatically reset.

Important: If the LEDs are enabled by Remote LED Enable and an INFORMER condition occurs, the LEDs will flash the INFORMER trouble code until the condition is cleared, even if the LEDs are subsequently remotely disabled.

DT-6360STC ALARM SEQUENCE (MAP PROCESSING)

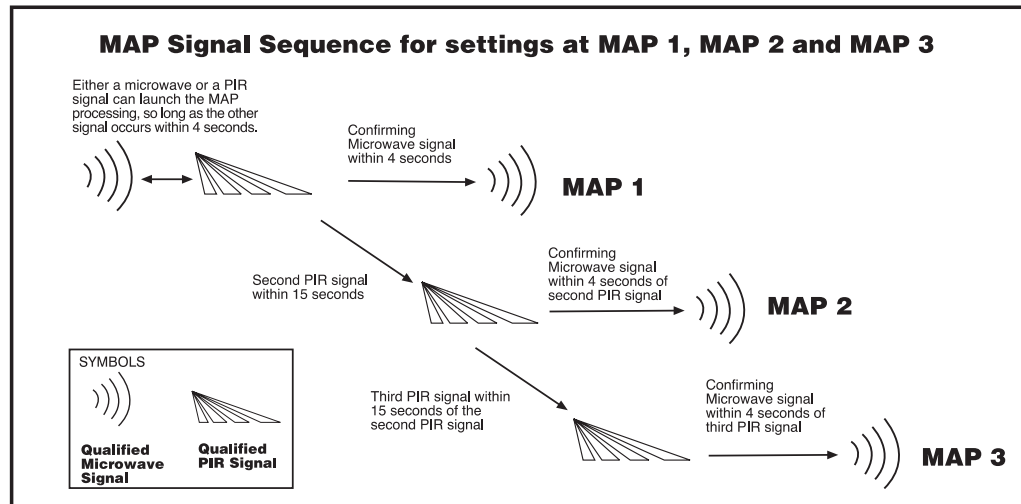
DT-6360STC sensors use the event sequence in Figure 6 (below) to determine an alarm:

Note: An event is the detection of a microwave signal or a single edge of a PIR signal. (The PIR pulse count is 3.)

If the microwave technology malfunctions (determined by a self-test), the sensor reverts to a PIR sensor.

Figure 6
MAP Signal Sequence

M.A.P. Processing	W1 Jumper Position
1	On pins 1 & 2
2	On pins 2 & 3
3	Removed



TROUBLESHOOTING THE DT-6360STC

DT-6360STC sensors automatically perform a series of self-tests in the following instances: when the unit is powered up, when the tests are installer initiated, upon command input, and periodically during normal operation as on-going self-tests. When a self-test

error occurs, all three LEDs flash (if enabled) and the trouble output becomes active until the failure is cleared. The following chart describes how the diagnostic LEDs appear during self-tests, and what action needs to be taken for each type of display.










TEST DESCRIPTION	ALARM (Red)	MW (Yellow)	PIR (Green)	ACTION
Power Up Self-Test				No action required.
On Line - All Self-Tests Passed, Ready for Walk-Test				Unit is working properly.
On-going Self-Test				Send the unit in for repair. ¹



















Table 1
Self-Test
Troubleshooting
Matrix

¹ Return the DT-6360STC to C&K for repair.

The troubleshooting matrix below describes two trouble alerts which are reported by the INFORMER circuit. To use this troubleshooting matrix:

- 1) Find the trouble alert that describes the condition of the walk-test LEDs (with no motion in the area).

- 2) Walk-test the sensor, carefully watching the reaction of the diagnostic LEDs.
- 3) Refer to the **Possible Causes** column of the matrix for an explanation of the way in which the diagnostic LEDs reacted to the walk-test.

Condition of LEDs with No Motion			Reaction of LEDs to Walk-Test			Type of Problem	Possible Causes
ALARM (Red)	MW (Yellow)	PIR (Green)	ALARM (Red)	MW (Yellow)	PIR (Green)		
						RATIO IMBALANCE	MW environmental problem MW unstable MW range too long PIR was blocked
						RATIO IMBALANCE	PIR range too short PIR aimed wrong PIR not reporting
						RATIO IMBALANCE	PIR environmental problem PIR unstable MW range too short
						RATIO IMBALANCE	MW range too short MW not reporting

Note: If you enter the detection pattern and the LEDs go off, you can retrieve the LED pattern to pinpoint the problem. Refer to the Trouble Memory section below.

Table 2 **INFORMER**
Troubleshooting Matrix

TROUBLE MEMORY

When the DT-6360STC signals a trouble output, the LEDs display a failure pattern — all three LEDs flash at the same rate.

You can recover the individual pattern to determine what trouble occurred. To recover the LED pattern, remove the front housing from the unit. Use a screwdriver to connect the two (self-test) pins at the left-hand side of the PCB (see Figure 5) and cause a momentary short. The trouble LED pattern will reappear.

Connect the pins with the screwdriver again to clear the LED pattern.

Notes: The Trouble Memory only stores a single event (the last event to occur) in memory. Once the LED pattern is cleared, the memory is erased, and the self-test restarts.

The matrix below shows the individual patterns and the appropriate action.











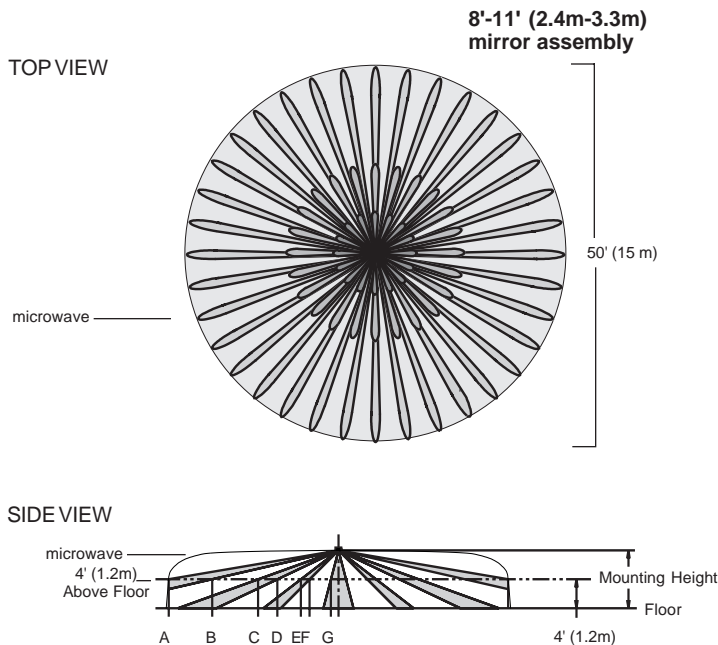
TEST DESCRIPTION	ALARM (Red)	MW (Yellow)	PIR (Green)	ACTION
Microwave Pulse Self-Test				Send the unit in for repair. ¹
Temperature Compensation Self-Test				Send the unit in for repair. ¹

Table 3
Trouble Output
Troubleshooting
Matrix

¹ Return the DT-6360STC to C&K for repair.

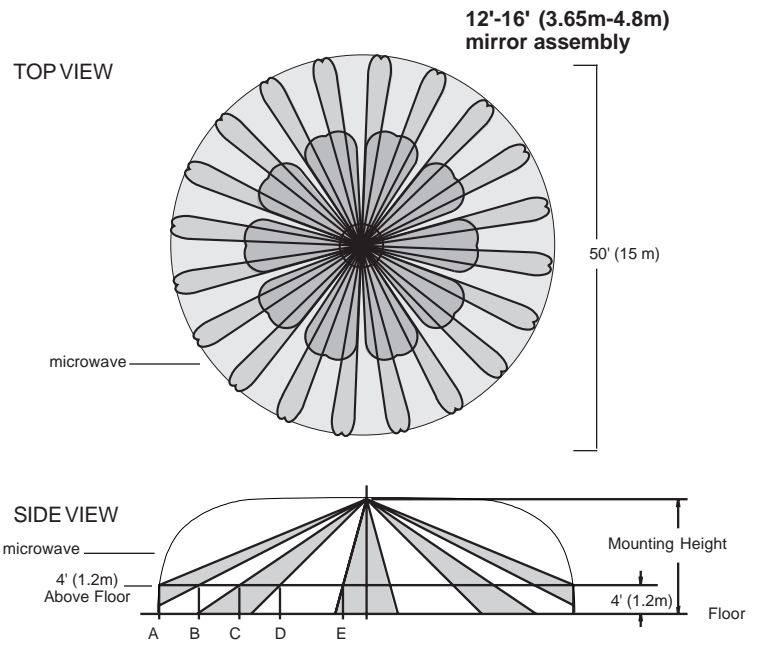
LED Legend:  = LED is Flashing Fast  = LED is Flashing Slow  = LED is ON  = LED is OFF

DETECTION PATTERN



MOUNTING HEIGHT	OUTER TIER		MIDDLE TIER		INNER TIER		CENTER
	A	B	C	D	E	F	G
8' (2.4m)	25.3' (8m)	18.8' (5.7m)	11.8' (3.6m)	9.0' (2.7m)	5.6' (1.7m)	4.3' (1.3m)	1.7' (0.5m)
9' (2.7m)	31.6' (9.6m)	23.5' (7m)	14.8' (4.5m)	11.3' (3.4m)	7.0' (2.1m)	5.4' (1.7m)	2.1' (0.6m)
11' (3.3m)	44.3' (13.5m)	33.0' (10.1m)	20.7' (6.3m)	15.8' (4.8m)	9.8' (3m)	7.5' (2.3m)	2.9' (0.9m)

DETECTION PATTERN



MOUNTING HEIGHT	OUTER TIER		INNER TIER		CENTER
	A	B	C	D	E
12' (3.65m)	19.8' (6m)	16.0' (4.8m)	12.1' (3.68m)	8.3' (2.5m)	2.3' (0.7m)
14' (4.2m)	24.8' (8m)	20.0' (6m)	15.2' (4.6m)	10.3' (3.1m)	2.9' (0.9m)
16' (4.8m)	29.7' (9m)	24.0' (7.3m)	18.2' (5.5m)	12.4' (3.78m)	3.4' (1.04m)

PRODUCT SPECIFICATIONS

Range:

50' (15m) diameter
[25' (7.6m) radius]

Alarm relay:

Energized Form C (NC)
22 ohm series protection resistor
125 mA, 25 VDC

Tamper switch:

Form A (NC)
25 mA, 30 VDC

Power requirements:

10 - 12.9 VDC ,
typically 40 mA
50 mA maximum,
AC Ripple: 3 V peak-
to-peak at nominal
12 VDC

Frequencies:

Center band -
10.525 GHz (USA),
may vary in other
countries

RF immunity:

30 V/m,
10 MHz-1000MHz

Command input:

Self-test initiate
Active low 0 to 1.5V
Inactive high 6 to V+
Input impedance
110K (minimum).
(For future use)

PIR fields of view:

8'-11' (2.4m-3.3m) mirror
Three 360° fields
36 long range zones
24 intermediate
16 short range
1 look-down

12'-16' (3.65m-4.8m) mirror

Two 360° fields
40 long range zones
20 intermediate
1 look-down

PIR white light immunity:

900 LUX

Trouble output:

Open collector
voltage between
collector and
emitter (Vce) is
.3V max at 50 mA
(For future use)

Sensitivity:

2-4 normal steps
within field of view

Dimensions:

5" high x 5" wide x 2.3" deep
(12.7 cm x 12.7 cm x 5.8 cm)

Weight:

14 oz (397 g)

Operating temperature:

32° to 120° F
(0° to 49° C)

Relative humidity

5% to 95%
(non-condensing)

Standard accessories included:

DT-6360STC recess kit;
PIR masking material

Approvals/listings:

CE (EMC Directive)
FCC certified
UL listed
*ULC listed
IC certified

Important Notices

The DT-6360STC should be tested at least **once each year** to ensure proper operation.

For UL certificated installation, the DT-6360STC must be connected to a UL listed power supply or UL listed control unit capable of providing a **minimum of four hours** of standby power.

*The ULC label or listed marking on a product is the only evidence provided by Underwriters Laboratories of Canada to identify products that have been produced under the Listing and Follow-up Service.

NOTICES

FCC

This equipment has been tested and found to comply with the limits for a field disturbance sensor, pursuant to Part 15 of the FCC Rules. The user is cautioned that changes or modifications not expressly approved by C&K Systems could void the user's authority to operate this equipment.

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following methods:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Industry Canada

This device complies with RSS-210 of Industry and Science 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.

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.