

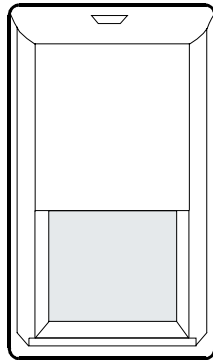


DT-600 Series

INSTALLATION INSTRUCTIONS

Models:

- DT-640STC**
12 m x 12 m (40' x 40')
- DT-660STC**
18 m x 18 m (60' x 60')
- DT-6100STC**
30.5 m x 6 m (100' x 20')



MOUNTING LOCATION

Select the best location in the room for both technologies. Aim the DUAL TEC® 600 series motion sensor toward the interior of the room, away from windows, moving machinery, and heating/cooling sources.

Maximum range is obtained at a mounting height of 2.3 m (7'6"). Make sure the sensor has a clear line-of-sight to all areas you wish to protect. Infrared energy cannot penetrate solid objects. If the passive infrared (PIR) sensor is blocked, it will not trigger an alarm.

NOTE: Mount at height of 1.2 m (4 feet) when using Pet-Alley lens.

MOUNTING PROCEDURE

To remove the sensor's front cover, use a small slotted screwdriver to push down on the latch at the top of the unit, while separating the housing parts.

To remove the printed circuit board (PCB), lift up on the latch at the top of the unit, while using the microwave antenna to gently pull the PCB forward.

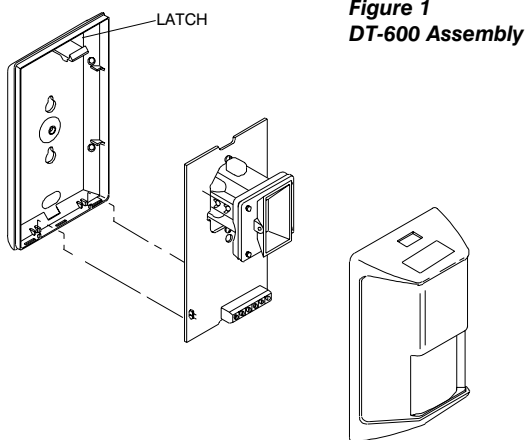


Figure 1
DT-600 Assembly

Securely mount the rear housing at the desired location. When mounting the sensor on a wall, use the two keyholes in the back of the rear housing. When mounting the sensor in a corner, use the breakout tabs on the beveled corners of the unit. A swivel mount bracket (Model SMB-10) is also available from C&K Systems.

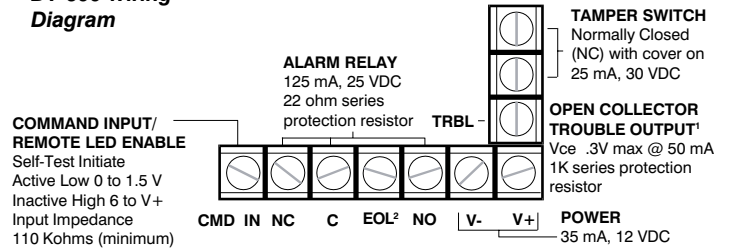
IMPORTANT: To ensure insects do not get inside the DT-600 housing, make sure to seal all knockouts. (Recommended sealant: silicone RTV.)

WIRING

Observing the proper polarity, wire the sensor as shown below (use 14 to 22 AWG). Do not leave excess wire inside the unit. Push as much of the wire as possible back into the wall when returning the PCB to its housing.

NOTE: Reverse polarity will not damage the unit.

Figure 2
DT-600 Wiring
Diagram



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

¹The Trouble Output is activated when there is a self-test failure, or when an INFORMER® condition occurs. Refer to THE INFORMER CIRCUIT and the TROUBLESHOOTING THE DT-600 SERIES sections.

²EOL = End-of-Line (spare) terminal.

SYSTEM TESTING

All the walk-test LEDs are located at the bottom, left side of the sensor. DT-600 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. Minimize any motion in the area until the self-test is completed (one minute). Begin walk-testing after all three LEDs have gone out.

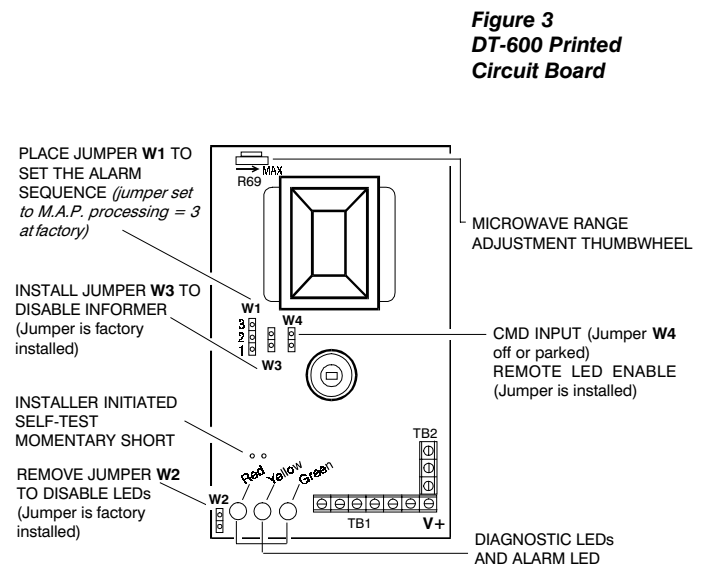


Figure 3
DT-600 Printed
Circuit Board

NOTE: If the jumper is installed on W3, the LEDs will not flash the error code and trouble output is disabled when an INFORMER condition occurs.

MICROWAVE RANGE ADJUSTMENT

DT-600 sensors are equipped with a microwave range adjustment thumbwheel (R69). Set the range at MINIMUM by turning the thumbwheel all the way to the left. (See Figure 3).

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 indicate an alarm condition. When there is no motion in the protected area, all three LEDs should be off.

LED DISABLE

To disable the diagnostic LEDs and alarm LED, remove the jumper from position **W2** on the PCB. (See Figure 3.)

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, and the jumper at position W3 is not installed, the trouble output is active until the INFORMER

condition is cleared, and the LEDs display an INFORMER trouble code. The DT-600 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. (Refer to the Troubleshooting Matrix on page 3.)
- *If no self-test error occurs*, the sensor continues to display the INFORMER LED pattern. The problem is misapplication. Walk-test the DT-600 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.

False alarm immunity from small animals with the DT-640STC & DT-660STC can be expected in installations with:

- Any number of rats
- Any number of birds in a pet cage
- Up to four cats
- Random flying of birds in a warehouse
- 22 kg (50 lb.) dog
- 22 kg (50 lb.) dog plus two cats

For false alarm immunity with the above animals, the following installation procedures must be followed:

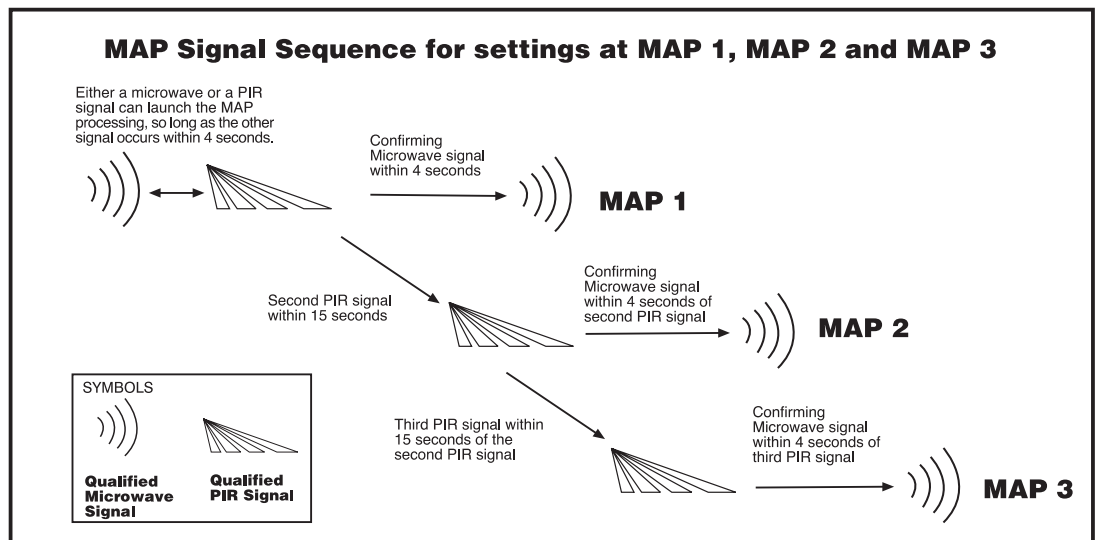
- A. The sensor must be mounted at standard height of 2.3 m (7.5 feet), making sure an animal can't get within 1.8 m (6 feet) of the sensor such as by jumping on furniture or shelving.
- B. M.A.P. pulse count must be set to 3 (remove jumper W1).
- C. Follow normal installation practices such as adjusting microwave sensitivity, if needed.

DT-600 ALARM SEQUENCE (MAP PROCESSING)

DT-600 sensors use the following event sequence to determine an alarm.

*Figure 4
MAP Signal Sequence*

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



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

TROUBLESHOOTING THE DT-600 SERIES SENSORS

DT-600 sensors automatically perform a series of self-tests in the following instances: when the sensor 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	MW	PIR	ACTION
	(Red)	(Yellow)	(Green)	
Power Up Self-Test (1 minute)				No action required.
On Line - All Self-Tests Passed, Ready for Walk-Test				Sensor is working properly.
On-going Self-Test				Send the sensor in for repair. ¹

Table 1
Self-Test
Troubleshooting
Matrix

¹ Return the DT-600 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-600 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 sensor. Use a screwdriver to connect the two (self-test) pins at the left-hand side of the PCB (see Figure 3) and cause a momentary short. The trouble LED pattern will reappear.

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

NOTE: 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	MW	PIR	ACTION
	(Red)	(Yellow)	(Green)	
Microwave Pulse Self-Test				Send the sensor in for repair. ¹
Temperature Compensation Self-Test				Send the sensor in for repair. ¹

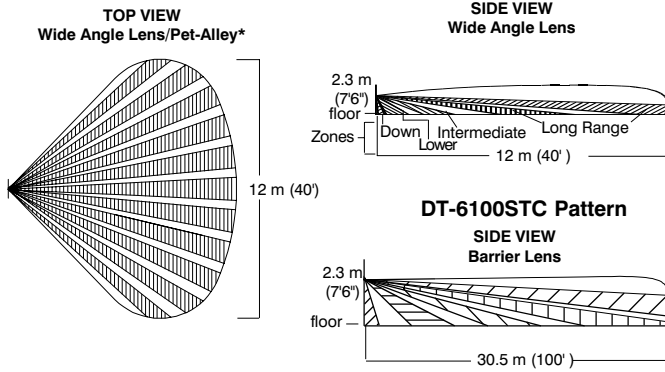
Table 3
Trouble Output
Troubleshooting
Matrix

¹ Return the DT-600 to C&K for repair.

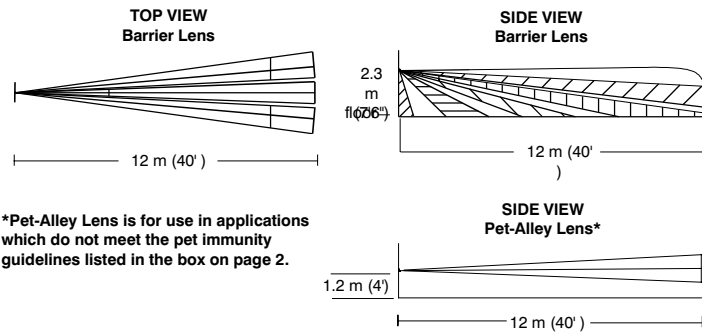
LED Legend: = LED is Flashing Fast = LED is Flashing Slow = LED is ON = LED is OFF

DETECTION PATTERNS Patterns for: DT-640STC

(Use as reference for DT-660STC)



DETECTION PATTERNS FOR OPTIONAL LENSES



*Pet-Alley Lens is for use in applications which do not meet the pet immunity guidelines listed in the box on page 2.

NOTE: Pet-Alley lenses are not to be used in ULC-certified installations.

IMPORTANT: The DT-600 series sensors should be tested at least **once each year** to ensure proper operation.

IMPORTANT: For UL certificated installation, the DT-600 series sensors 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.

FCC Notice: 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 measures:

- 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.

PRODUCT SPECIFICATIONS

Range:

DT-640STC	12 m x 12 m (40' x 40')
DT-660STC	18 m x 18 m (60' x 60')
DT-6100STC	30.5 m x 6 m (100' x 20')

Alarm relay:

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

Power requirements:

10 - 14.5 VDC
35 mA max., 12 VDC

PIR white light immunity:

10,000 Lux

RF immunity:

10 MHz - 1000 MHz (30 V/m)

Trouble output:

Open collector
Voltage between collector and emitter (Vce) is .3V max at 50 mA
1K series protection resistor

Command input:

Self-test initiate
Active low 0 to 1.5V
Inactive high 6 to V+
Input impedance 110 Kohms (min.)

Sensitivity:

2 - 4 steps within field of view

PIR fields-of-view:

standard (wide angle) lens
22 long range
12 intermediate
6 lower
4 down

Frequencies:

Varies per country

Tamper:

NC, 25 mA, 30 VDC

Operating temperature:

0° to 49° C (32° to 120° F)

Relative humidity:

5% to 95% relative humidity (non-condensing)

Dimensions:

13 cm x 7 cm x 6 cm
5" H x 2-7/8" W x 2-5/16" D

Weight:

340.2 g (12 oz)

Accessories:

SMB-10 swivel mount bracket
Lens Kit P/N 0-000-400-05

Approvals/listings:

CE (EMC Directive: Residential, Commercial and Light Industrial)
FCC certified
UL listed
ULC* listed
IC certified
DTI (except DT-6100STC)

***NOTE:** 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.

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.