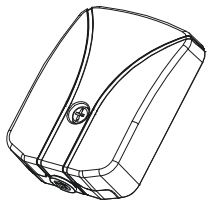
Honeywell SC105 Mini-Seismic Vibration Detector

Installation Guide



- 24-hour surveillance of mini-ATMs, Filing Cabinets and so on
- Flat frequency response sensor for genuine signal analysis
- DIP switch sensitivity settings
- Noise sensitivity settings using build-in diagnostic tool
- Integrated EOL resistors
- High detection capability
- Low current consumption
- Standard drill sheet protection
- Miniature metal housing – easy to fit in restricted spaces

1. General Information

SC105 Mini-Seismic Vibration Detector is a seismic or structural vibration detector designed to detect selected vibrations from burglary or intrusion attempts on mini-ATMs, Containers, Filing Cabinets and so on. The detector consists of a sensor to convert mechanical vibrations to electrical signals, a signal conditioning block, signal analysis and alarm criteria blocks, output alarm circuits, tamper protection, and a switching block for selecting detector settings, all in a miniature metal housing.

This Installation Guide provides general information about the mounting and configuring of SC105 Mini-Seismic Vibration Detector. For more details, such as planning detector locations, please refer to *"SC105 Mini-Seismic Vibration Detector Planning and Installation Guide"*.

2. Applications

SC105 Mini-Seismic Vibration Detector is designed to detect any known attack tool on:

- Mini-ATMs
- Filing Cabinets
- Gates
- Containers
- Chests
- Vending machines
- Ticket machines

2.1 Application Settings

Sensitivity Settings	Material	Detection Radius	Applications	Noise Level
G_{high}	Steel	3.0 m	Mini-ATMs (grade 3,4) and Containers	Insignificant noise level
	Concrete	2.0 m		
G_{normal}	Steel	1.5 m	Mini-ATMs (grade 1,2) and Chests	Moderate noise level
	Concrete	1.0 m		
G_{low}	Steel	1.0 m	Filing Cabinets, Gates	Considerable noise level
G_{noisy}	Sheet Steel	<3.0 m	Vending machines, Ticket machines	Heavy noise level

Notes:

1. Sensitivity settings (G_{high}, G_{normal}, G_{low}, G_{noisy}) are defined in "***4.2.1 DIP Switch Settings***".
2. The parameters in the table above are only for reference, and they may vary according to the quality of the material.
3. The detection range will be reduced if cracks and joints exist in the material.

3. Mounting the Detector

SC105 Mini-Seismic Vibration Detector can be mounted on any solid surface, of which the most common surfaces are: Steel, Stainless Steel, Hardened Steel and Concrete.

3.1 Opening the Detector

Before mounting the detector, separate the detector cover from the detector base first (by loosing the top screw, see *Figure 1*).

Figure 1 Open the detector

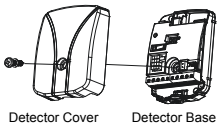
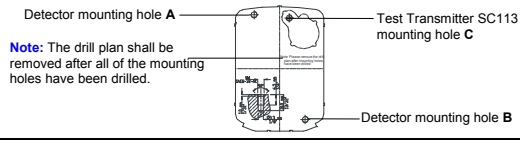


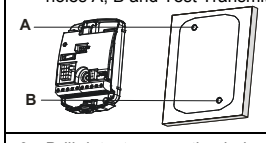
Figure 2 Drill Plan



3.2 Mounting on Steel

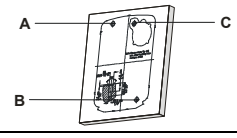
When mounting the detector on a flat and smooth steel surface, both Drill Plan (see *Figure 2*) and Detector Base can be used to mark the mounting holes.

1. Remove and clean paint from the mounting area.
2. Attach the detector base or drill plan on the mounting area, then mark the outline and center punch detector mounting holes A, B and Test Transmitter SC113 mounting hole C.



Notes:

- Detector base cannot be used to mark Test Transmitter SC113 mounting hole C.
- Skip marking hole C if Test Transmitter SC113 is not used.



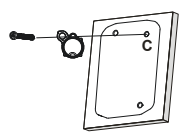
3. Drill detector mounting holes A, B (Ø 3.3 mm and minimum 8 mm deep), and then thread the two holes with a M4 Tap (6 mm at least).
4. Drill Test Transmitter SC113 mounting hole C (Ø 3.3 mm and minimum 8 mm deep), and then thread the hole with a M4 Tap (6 mm at least).
5. Remove dill plan and all of the burrs.

Notes:

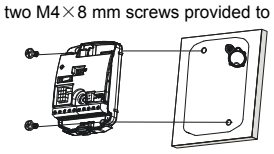
- Cool the tools with oil while drilling and threading.
- Skip step 4 if Test Transmitter SC113 is not used.

6. Attach Test Transmitter SC113 on the mounting area (at C) and then use the M4×8 mm screw to fix it.

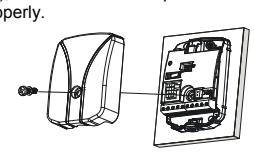
Note: Skip this step if Test Transmitter SC113 is not used.



7. Attach the detector base on the steel surface and then use the two M4×8 mm screws provided to fix it.



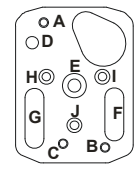
8. Wire and configure the detector (see *"4. Wirings and Settings"*), and then use the top screw to fix the detector cover properly.



3.3 Mounting on Stainless Steel or Hardened Steel

When mounting on stainless steel or hardened steel, Mounting Plate SC110 (**UPSIDE DOWN**, see *Figure 4*) must be used and should be welded on the mounting surface first.

Figure 3 Mounting Plate SC110 UPSIDE



A, **B** – Detector SC105 mounting holes

C, **D**, – Test Transmitter SC113 locating holes

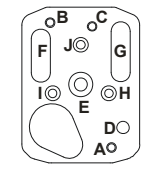
E – Mounting Plate SC110 Mounting hole

F, **G** – Welding Slots

H, **I**, **J** – Countersink screw hole (compatible with other mounting plates)

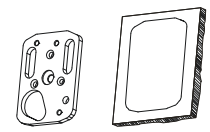
This orientation is used for mounting on **concrete**.

Figure 4 Mounting Plate SC110 UPSIDE DOWN



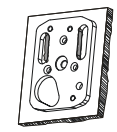
This orientation is used for mounting on **stainless steel** or **hardened steel**.

1. Remove paint from the mounting area (especially welding area).
2. Attach Mounting Plate SC110 on the mounting area, and then mark the outline.



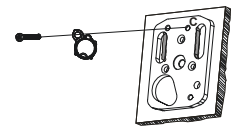
3. Fix Mounting Plate SC110 into the outline marked and ensure it cannot move, and then along the **INSIDE** of the welding slots weld Mounting Plate SC110 on the mounting surface.

Note: The welding must be done along the **INSIDE** of the welding slots, otherwise Mounting Plate SC110 can be deformed.

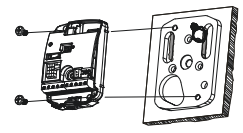


4. Tap off slag and remove weld spatter and make sure the whole mounting surface is still flat.
5. Attach Test Transmitter SC113 on Mounting Plate SC110 (at C) and then use the M4×8 mm screw to fix it.

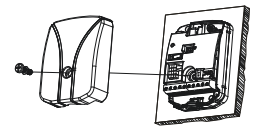
Note: Skip this step if Test Transmitter SC113 is not used.



6. Attach the detector base on Mounting Plate SC110 and then use the two M4×8 mm screws provided to fix it.



7. Wire and configure the detector (see *"4. Wirings and Settings"*), and then use the top screw to fix the detector cover properly.

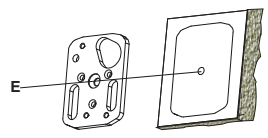


3.4 Mounting on Concrete

When mounting on Concrete, Mounting Plate SC110 (**UPSIDE**, see *Figure3*) must be used.

Note: Mounting directly on a bare or plastered concrete surface may result in low detection sensitivity and cause damage to the detector.

1. Attach Mounting Plate SC110 on the mounting area and then mark the outline and center hole E.
2. Drill the center hole E of Ø 10 mm and minimum 65 mm deep, and then remove all drill residuals and plaster.

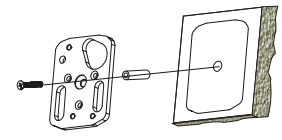


3. Insert M6 anchor into hole E and make sure the end of the anchor can reach but not protrude the concrete surface.

Note: Use a longer M6 anchor or a distance sleeve between Mounting Plate SC110 and the anchor if the M6 anchor cannot reach the solid concrete.

4. Attach Mounting Plate SC110 into the outline marked, and then through the center hole insert M6×50 mm screw into M6 anchor in the wall.
5. Tighten M6×50 mm screw but do not fix Mounting Plate SC110 on the concrete surface, and make sure Mounting Plate SC110 does not expand either.

Note: Mounting Plate SC110 can be rotated here.

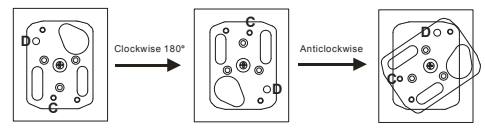


Note: Skip step 6 to step 11 if Test Transmitter SC113 is not used.

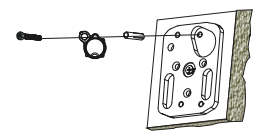
6. Rotate Mounting Plate SC110 clockwise 180° and mark hole C.
7. Rotate Mounting Plate SC110 anticlockwise until the marked hole C can be seen through hole D.

Note: Tighten the center screw slightly to stabilize Mounting Plate SC110 at this step.

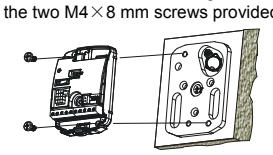
8. Through hole D drill a hole of Ø 5.5 mm and minimum 25 mm deep and then remove all residuals.



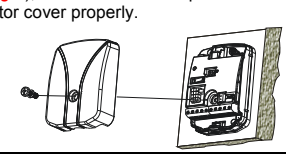
9. Release and turn Mounting Plate SC110 to the original orientation (see the figure below).
10. Insert M4 anchor into the drilled hole and make sure the end of the anchor cannot protrude the concrete surface.
11. Attach Test Transmitter SC113 on M4 anchor, and then use M4×14 mm screw to fix it permanently.



12. Tighten M6×50 mm screw (and knock on the screw head with a hammer when needed) until the mounting plate is fixed on the concrete surface and cannot be rotated.
13. Attach the detector base on Mounting Plate SC110 and then use the two M4×8 mm screws provided to fix it.



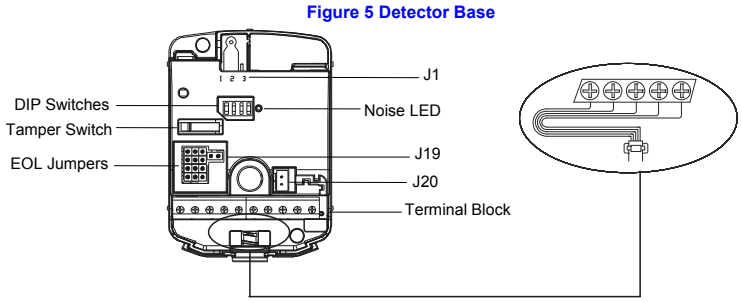
14. Wire and configure the detector (see *"4. Wirings and Settings"*), and then use the top screw to fix the detector cover properly.



4. Wirings and Settings

Wirings and settings are configured on detector base. All function modules on the detector base are shown as below.

Figure 5 Detector Base

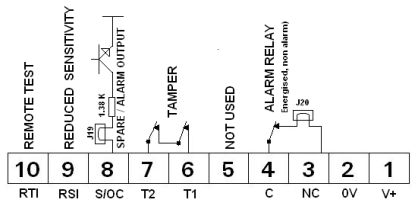


4.1 Wirings

4.1.1 Terminal Block Wiring

The wirings should be connected to the terminal block first, and then should be connected to the panel.

Figure 6 Terminal Block Wiring

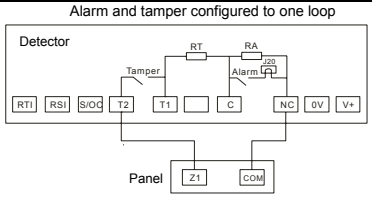


Note: The open collector alarm output (terminal 8) will be active low during alarm.

4.1.2 Panel Wiring

According to the different terminal block wirings, there are two ways to connect the detector to the panel.

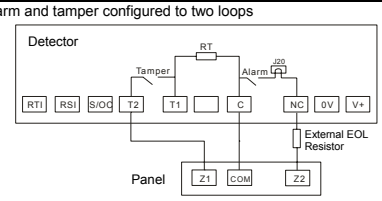
Alarm and tamper configured to one loop



Connected to a zone configured as Dual-End-of-Line

Alarm and tamper configured to two loops

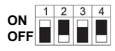
Note: When this wiring diagram is used, RT still can be used for tamper loop, but the jumper on RA needs be removed and the external EOL resistor has to be connected to alarm loop.



Connected to a zone configured as Single-End-of-Line

4.2 Settings

4.2.1 DIP Switch Settings



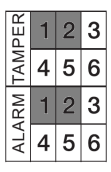
Sensitivity Settings				Application Settings		Noise LED	
	1	2		3		4	
G_{high}	off	off	High sensitivity setting	off	Delay	off	Noise indicator OFF
G_{normal}	on	off	Normal sensitivity setting	on	No Delay	on	Noise indicator ON
G_{low}	off	on	Low sensitivity setting				
G_{noisy}	on	on	Noisy environment sensitivity setting				

* Factory default settings are shown in grey.

Notes:

1. Any change of DIP switch 3 will cause an alarm.
2. Any change of DIP switch 3 must be followed by a power off sequence of 5 seconds.
3. Application setting with DIP switch 3 in ON position gives normal 100% response time to alarm. In applications with intermittent noise a delayed 200% response to alarm is possible by setting DIP switch 3 in OFF position. *Example*: A Lobby ATM with extensive internal or external intermittent noise and the sensitivity is needed to fully protect the ATM.
4. The Noise LED will light or flash intensively if the noise level (external or internal) is too high. Reduce the sensitivity with DIP switch 1 and 2 until the Noise LED turns off.
5. When scratching the surface of the protected object lightly, the Noise LED will turn on as a confirmation of detection.
6. In case of alarm, the Noise LED will flash with 5 Hz, appx. 2.5 seconds.
7. Turning off the Noise LED by DIP switch 4 will reduce current consumption.

4.2.2 EOL Jumper Settings



Jumper	Position	EOL Value
TAMPER (RT)	1-2	1.0 K
	2-3	2.2 K
	4-5	4.7 K
	5-6	5.6 K
ALARM (RA)	1-2	1.0 K
	2-3	2.2 K
	4-5	4.7 K
	5-6	5.6 K

* Factory default settings are shown in grey.

Notes:

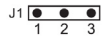
1. Refer to Control Panel manual for proper EOL selection.
2. For each block, only one EOL value can be set.
3. Other EOL resistor values can be used by removing all jumpers on the EOL jumper field and wire new resistors directly on the terminal block.

4.2.3 J19/J20 Settings

	No Jumper	Jumper
J19	Terminal 8 = Not Used	Terminal 8 = Alarm O/C Output
J20	Connect SC111/SC112 to the loop	Normal Close

* Factory default settings are shown in grey.

4.2.4 J1 Remote Test Settings



Position		Function	Method	Result
1		No test	Connect jumper to J1 pin 1 only.	
1-2		Electronics test	Connect jumper to J1 pin 1 and 2; Apply 0 volt to terminal 10 on the terminal block (see *Figure 6*) to start the test.	A successful remote test will be acknowledged by an alarm from the detector within 1 second.
2-3		Complete test (including mounting check)	Connect Test Transmitter SC113 to J1 (black cable to pin 2 and red cable to pin 3); Apply 0 volt to terminal 10 on the terminal block (see *Figure 6*) to start the test.	A successful remote test including mounting check will be acknowledged by an alarm from the detector within 1 second.

* Factory default settings are shown in grey.

5. Maintenance

Check the detector mounting and functions regularly (once a year at least).

Note: Connect Terminal 9 to low level (<0.6VDC), the sensitivity of detector will be reduced to about 1/8 of original level.

6. Technical Specifications

Power Requirements	
Supply Voltage	8 ~ 16 VDC, nominal 12 VDC
Current Consumption (Quiescent)	Typical 3 mA @ 12 VDC
Current Consumption (Alarm)	Typical 2 mA @ 12 VDC
Voltage Ripple	100Hz, ≤10% of nominal voltage
Step Change	Unom +/- 25%
Slow Change of Supply Voltage	Unom +/- 25%
Warm-up Time	< 5sec
Sensitivity	
Adjustable Sensitivity	4 levels by DIP Switches
Reduced Sensitivity (Maintenance, Service) Input	Active low (terminal 9) ≤ 0.6 VDC
Detection Radius (Thermal Tools) on Concrete K350	2 m
Detection Radius (Thermal Tools) on Steel	3 m
Alarm Outputs	
Solid State Relay SPST (Normally Closed)	30 VDC / 100 mA / typical Ri=25 Ω
Transistor Open Collector	Active low during alarm / Ri=1.38 kΩ
Alarm Hold Time	Approx. 2.5 sec
Sabotage Protection	
Pry-off and Cover Switch	30 VDC / 100 mA
Low Supply Voltage Alarm *	< 6.5 VDC
Temperature Alarm *	+85°C ± 5°C
Internal Functional Alarm*	Stainless steel drill shield
* Sabotage and fault functions will cause the alarm relay to drop.	
Inputs	
Remote test of detector mounting and detector function or Remote test of detector electronics only.	Active low≤ 0.6 VDC, test duration < 1 sec
Reduced Sensitivity (Maintenance, Service) Input	Active low≤ 0.6 VDC, duration = as long as active low Sensitivity reduction to 12.5%
Installation Tool	
A noise and alarm indicator is incorporated to support sensitivity setting	
Environmental Conditions	
Maximum Humidity	95% RH (non-condensing)
Operation Temperature	-40°C ~ +70°C
Storage Temperature	-50°C ~ +70°C
Environmental Class (VdS)	III
Housing Protection Category	IP43 IK04
Housing	
Dimensions (H x W x D)	80 mm x 60 mm x 21 mm
Chassis and Cover	Die-cast metal
Color	RAL7035 (light grey)
Weight	0.228 kg

7. Certifications and Approvals

SC105 Mini-Seismic Vibration Detector meets approvals as below:

- NF&A2P type 3
- IMQ type 3 (Pending)
- UL (Pending)
- ULC (Pending)
- CE
- CCC
- VdS G 110005 class C

8. Ordering Information

Mounting Plate	SC110
Movable Mounting Kit	SC111
Keyhole Protection Kit	SC112
Test Transmitter	SC113
1.8 m Armored Cable Kit (8 wires)	SC114
External Test Transmitter	SC115
Recess Mounting Box	SC116
Floor Mounting Box	SC117
Spacer for Keyhole Protection Kit	SC118

9. Shipping List

Description	Quantity
SC105 Mini-Seismic Vibration Detector	1
Screw M4x8mm	2
Cable Strap	1
Drill Plan	1
Two-way Jumper Link	1
Installation Guide	1

Notice for Installation Guide

Pictures in the manual are for reference only. Please see the actual items.
The products will be updated and the information shall not be distributed.
Please read the book before operation and keep it properly for future use.
The manual has been reviewed and the accuracy is guaranteed. If there is any uncertainty or controversy, please refer to the final explanation of Honeywell. Honeywell does not take any responsibility for any consequences caused by misunderstanding of the manual or improper operations.

Honeywell

www.honeywell.com/security
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