

Mini-Seismic Vibration Detector SC105



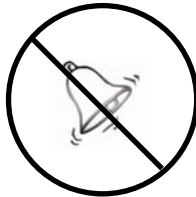

Planning and Installation

User Guide

- To get the best use of the product, please read the User Guide carefully before using the product.
- Keep the User Guide at an easily accessible place and make it available to the next user.

TO THE INSTALLER

Before planning and installing Seismic Vibration Detector SC100, the circumstances below should be avoided:

 <p style="text-align: center;">Electrical Devices</p>	 <p style="text-align: center;">Water piping</p>
<p>Do not apply the detectors close to electrical devices (such as electric motors, transformers, fans, air conditioners and so on), which may create mechanical vibrations in the protected structure.</p> <p>Avoid mechanical contact between such devices and the protected surface, or using appropriate insulating materials to reduce the vibrations.</p>	<p>Do not apply the detectors close to water piping.</p> <p>The flow of water through piping, when in mechanical contact with the protected structure, emits a strong signal in the structure itself, which may cause nuisance alarms.</p>
 <p style="text-align: center;">Bells</p>	 <p style="text-align: center;">Human activity</p>
<p>Do not apply the detectors close to the bells;</p> <p>Or apply a piece of tape on the bell to suppress the overtones generated in the frequency range of the detectors.</p>	<p>Apply carpet or vibration damping material on vaults and under safes placed on concrete or marble floors.</p>

Regular maintenance and inspection (at least annually) by the installer and frequent testing by the user are vital to continuous satisfactory operation of any product.

The installer should assume the responsibility of developing and offering a regular maintenance program to the user, as well as acquainting the user with the proper operation and limitations of the product and its component parts. Recommendations must be included for a specific program of frequent testing to insure the product's operation at all times.

LIMITED WARRANTY

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Seller does not represent that the product(s) it sells may not be compromised or circumvented; that the product(s) will prevent any personal injury or property loss by burglary, robbery, fire or otherwise; or that the product(s) will in all cases provide adequate warning or protection. Customer understands that a properly installed and maintained alarm system may only reduce the risk of a burglary, robbery, fire, or other events occurring without providing an alarm, but it is not insurance or a guarantee that such will not occur or that there will be no personal injury or property loss as a result. CONSEQUENTLY, SELLER SHALL HAVE NO LIABILITY FOR ANY PERSONAL INJURY, PROPERTY DAMAGE OR OTHER LOSS BASED ON A CLAIM THAT THE PRODUCT(S) FAILED TO GIVE WARNING. HOWEVER, IF SELLER IS HELD LIABLE, WHETHER DIRECTLY OR INDIRECTLY, FOR ANY LOSS OR DAMAGE ARISING UNDER THIS LIMITED WARRANTY OR OTHERWISE, REGARDLESS OF CAUSE OR ORIGIN, SELLER'S MAXIMUM LIABILITY SHALL NOT IN ANY CASE EXCEED THE PURCHASE PRICE OF THE PRODUCT(S), WHICH SHALL BE THE COMPLETE AND EXCLUSIVE REMEDY AGAINST SELLER.

This warranty replaces any previous warranties and is the only warranty made by Seller on this product(s). No increase or alteration, written or verbal, of the obligations of this Limited Warranty is authorized.

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1 About This Document

Thank you for purchasing Honeywell Mini-Seismic Vibration Detector SC105!

This guide is designed to be a reference for the planning and installation of Mini-Seismic Vibration Detector SC105.

Overview of Contents

This document contains the following chapters:

- *Chapter 1, About This Document*, gives a brief introduction of “Mini-Seismic Vibration Detector SC105 Planning and Installation User Guide”.
- *Chapter 2, Introduction*, general information about Mini-Seismic Vibration Detector SC105, applications and features.
- *Chapter 3, Function Description*, introduces the function criteria and function modules of Mini-Seismic Vibration Detector SC105.
- *Chapter 4, Basic Accessories*, lists all basic accessories will be used with Mini-Seismic Vibration Detector SC105.
- *Chapter 5, Planning Protections*, gives an instruction on planning Mini-Seismic Vibration Detector SC105 on different applications.
- *Chapter 6, Installation*, introduces how to install Mini-Seismic Vibration Detector SC105 and related accessories.
- *Chapter 7, Settings*, shows how to configure sensitivities and other settings on Mini-Seismic Vibration Detector SC105 base.
- *Chapter 8, Connecting the Detector*, introduces how to wire and connect Mini-Seismic Vibration Detector SC105 to the protected zone.
- *Chapter 9, Test*, introduces the tests of the Mini-Seismic Vibration Detector SC105.
- *Chapter 10, Technical Specifications*, introduces technical specification of Mini-Seismic Vibration Detector SC105.

Special Font and Symbols

<i>Italic</i>	references
Note	the important notice should pay attention to
Caution	important operating alerted

How to Use This Document

- Pictures in the manual are for reference only, so 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.

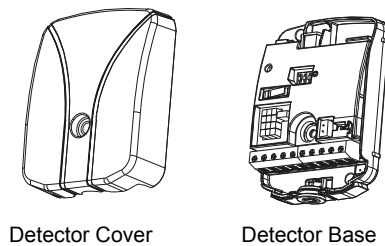
2 Introduction

Overview of the Detector

Mini-Seismic Vibration Detector SC105 is a seismic or structural vibration detector designed to detect selected vibrations from burglary or intrusion attempts on high value storage units, such as Mini-ATMs, Vending Machines and Ticket Machines.

The detector consists of a sensor element to convert mechanical vibrations to electrical signals, a signal conditional block, micro controller block, output alarm block, tamper protection, and a switching block for selecting detector settings, all in a miniature metal housing.

Figure 2-1 Detector Description



Applications

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

- Mini-ATMs (Lobby ATMs)
- Vending machines
- Ticket machines

According to the vibration characteristics of the application constructions, sensitivity required in each sensor, and the natural vibrations and ambient noise level in the premises, the detection ranges of Detector SC105 should follow the parameters in the table below.

Table 2-1 Application Settings

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

- Note**
- Sensitivity settings (G_{high} , G_{normal} , G_{low} , G_{noisy}) are defined in “*DIP Switch Settings*” on page 13.
 - The parameters in the table above are for reference only, and they may vary according to the quality of the material.
 - The detection range will be reduced if cracks and joints exist in the material.

Features

Mini-Seismic Vibration Detector SC105 has the following features:

- 24-hour detection of known attack tools on Mini-ATMs, Vending Machines and so on.
- Flat frequency non resonant response sensor for genuine frequency analysis.
- Built-in diagnostic tool used to set detector sensitivity in relation to existing noise level.
- DIP switch sensitivity settings adapt to various applications.
- Integrated EOL resistors compatible with various control panels.
- High detection capability due to new sophisticated signal handling and computer algorithms incorporated.
- Low current consumption.
- Solid state form A breaking alarm relay.
- Multipurpose accessories provided with multiple applications.
- Standard drill sheet protection.
- Rate of Rise and temperature alarm.
- Miniature metal housing – easy to fit in restricted spaces.
- Approved by IMQ type 3 (pending), UL (pending), ULC (pending), CE, and CCC (pending).

3 Function Description

Function Criteria

Detection Parameters

The detection function of Mini-Seismic Vibration Detector SC105 is based on the structural vibrations generated on the protected surfaces upon an attempt to break through the physical barriers.

Vibrations detected comprise four important parameters:

- signal strength (amplitude)
- signal frequency (spectra)
- signal duration
- structure of duration

These parameters differ between real attacks and "normal" background vibrations and will be detected and analyzed by the detector before an alarm is triggered. The characteristics below represent signals that can be detected by Detector SC105:

- Signals with very high amplitude and short duration, which can be generated by explosives.
- Signals with medium to high amplitude and medium to long or intermittent duration, which can be generated by mechanical demolition tools.
- Signals with wide frequency spectra, low amplitude and long duration, which can be generated by thermal attacks.

Alarm Criteria

In Detector SC105, the signals detected will be analysed by several parallel software detection modes with specific algorithms for detection of known attack methods and tools, which can be described as below:

- **The low level detection mode** is designed to recognize low to medium amplitude signals with long duration, like those caused by a thermic lance, oxy-arc or acetylene torch.
- **The medium level detection mode** is designed to detect medium to high amplitude signals as caused by mechanical demolition, such as electric power tools.
- **The high level detection mode** is designed to detect very high amplitude and short duration signals as caused by explosives.

The signal from the sensor is fed to the signal conditioning block and further to the micro controller for evaluation. An alarm signal will be sent to the output alarm block when a criteria with signal strength, frequency spectra and signal duration is achieved.

Function Modules

Sensor Element

Mini-Seismic Vibration Detector SC105 includes a sensor element that converts mechanical vibrations into electrical signals providing a non resonant flat frequency response for genuine signal analysis, which is used for detection of structural vibrations caused by attacks against the protected surface. These signals will be analyzed in different software detection modes.

Signal Conditional Block

The electrical signal that sensor converted is fed to the signal conditional block that adapts the signal for further analysis. It also contains circuits for supply voltage and temperature supervision (see [Alarm Criteria](#) on page 4). This block also generates test signals for the Test Transmitter SC113.

Switch Block

This block contains the DIP switches for sensitivity settings, application settings and the noise LED settings, further communicating with the micro controller and signal conditional blocks.

Micro Controller Block

This block is the heart of Detector SC105. It handles functions for signal analysis and recognition, circuit supervision of power supply and temperature, noise recognition and indication, test and sensitivity reduction etc.

It also contains a watchdog function which is used to detect system lockups and create an alarm signal to the output alarm block. This block contains nano watt technology and the software code stored in a flash program memory with code protection.

Output Alarm Block

The circuits in the output alarm block will be activated by the micro controller block when intrusion attack signals are recognized. The alarm output provides two forms of alarm signals:

- One potential free solid state SPST breaking relay.
- One open collector transistor output, going into conductive mode upon alarm condition.

The transistor is protected against overload with a series resistor of 1.38k ohm.

Note No protection against sabotage attempts with external magnetic fields is needed due to solid state alarm relay.

Power Supply Block

The input circuits are very well protected against electrical interference and high energy electrical surges by filtering, transient absorber and spark gaps. The small mechanical dimensions, circuit board layout and design, results in very good resistance against RFI from various transceivers, cellphones and so on. Detector SC105 has a wide supply voltage range from 8 to 16 VDC due to the low internal system voltage of 5 Volt.

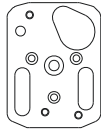
Sabotage Protection

Mini-Seismic Vibration Detector SC105 has a full range of tamper protection facilities, thus an alarm will be given when an attempt is made to:

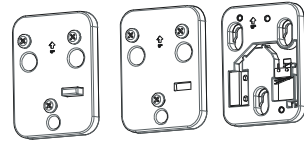
- Pry off the detector from the protected surface
- Open the detector
- Disable the detector by heat
- Lower the supply voltage below 6.5V

The detector is equipped as standard with a stainless steel drill shield that makes it difficult to drill into the detector and at the same time generates strong vibrations.

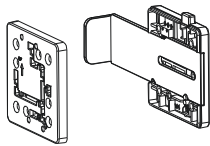
4 Basic Accessories



Mounting Plate SC110



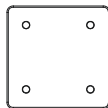
Movable Mounting Kit SC111



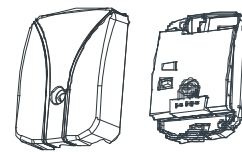
Keyhole Protection Kit SC112



Test Transmitter SC113



Spacer for Keyhole Protection Kit SC118



External Test Transmitter SC115



Armored Cable Kit (8 wires) SC114

5 Planning Protections

Before mounting the detector, it is recommended to plan the mounting locations to achieve an extremely high security level.

In general, the detectors should be mounted at the center of the protective surface (see [Table 2-1 Application Settings](#) on page 2.) or on the positions where most of the attacks are aimed at.

Caution Please read *TO THE INSTALLER* first before planning protections.

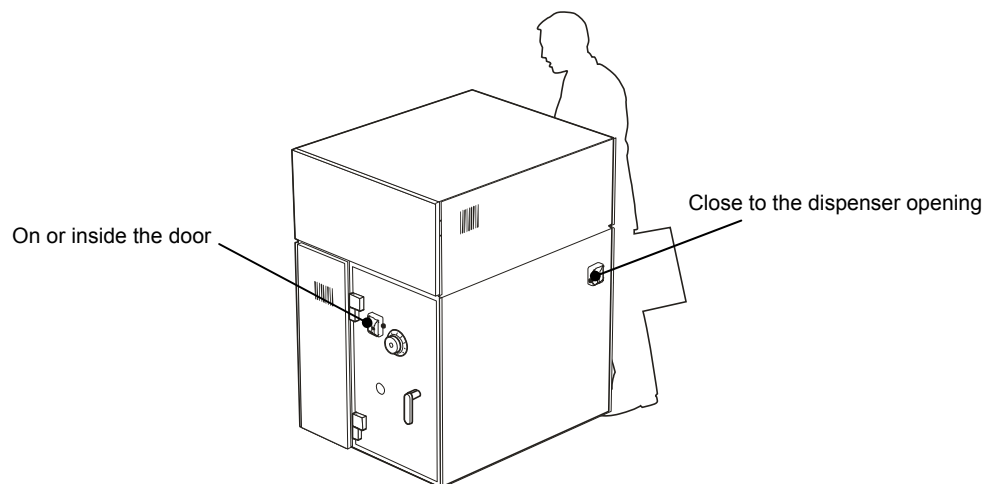
Mini-ATMs

Mini-ATMs are objects exposed to human made noise as well as extensive internal noise, therefore detector sensitivity (DIP switch 1 and 2 and delay function DIP switch 3) settings should be carefully tested before taking the installation in use.

For Mini-ATMs we recommend mounting:

- At least one detector on or inside the safe cabinet close to the dispenser opening.
- One detector on the door close to or between the hinges or inside the door leaf.

Figure 5-1 Planning ATM Protection



The Movable Mounting Kit SC111 or the Keyhole Protection Kit SC112 and the Armored Cable Kit SC114 can be used when mounting detectors on the Mini-ATMs.

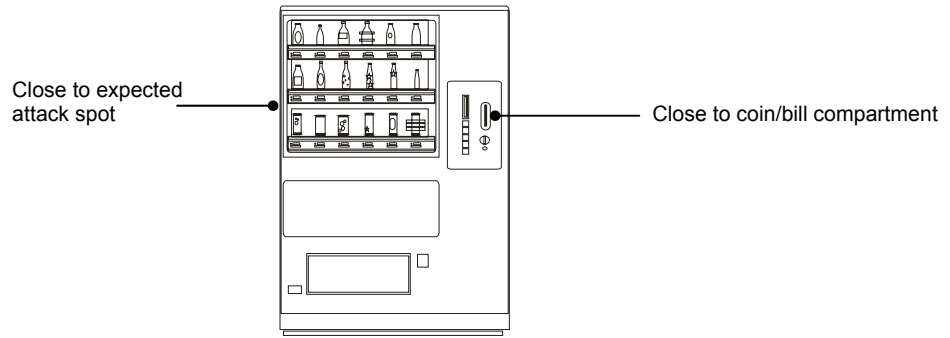
Vending Machines and Ticket Machines

Same as Mini-ATMs, Vending machines and ticket machines are objects exposed to human made noise as well as extensive internal noise, therefore it is recommended that the application setting for them should be G_{noisy} .

For both Vending machines and ticket machines we recommend mounting:

- At least one detector inside the machine close to the coin/bill compartment.
- Another detector located in the machine close to where an attack is expected.

Figure 5-2 Planning Vending Machine/Ticket Machine Protection



6 Installation

Mounting the Detector

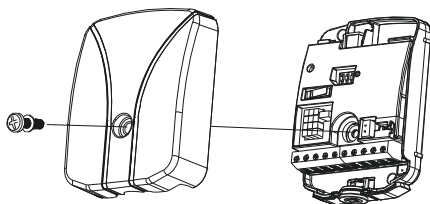
Mini-Seismic Vibration Detector SC105 can be mounted on solid surfaces, of which the most common surfaces are Steel, Stainless Steel and Hardened Steel.

- Caution**
- Please read *TO THE INSTALLER* first before mounting the detector.
 - Before the installation is finished, make sure the sensitivity setting is correct and the noise level is considered.
 - Detector should not be mounted on cinder block or other unproved masonry surface.

Opening the Detector

Before mounting the detector, loose the top screw to separate the detector cover from the detector base.

Figure 6-1 Opening the Detector

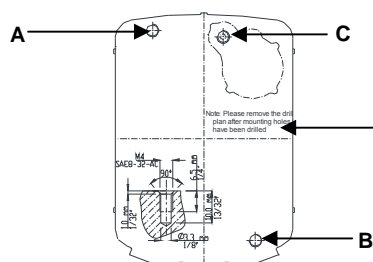


Note: The top screw is only used for fixing the cover, so do not tighten it too much when mounting the detector.

Mounting on Steel

When mounting the detector on a flat and smooth steel surface, both Drill Plan (see *Figure 6-2 Drill Plan*) and Detector Base (see *Figure 2-1 Detector Description*) can be used to mark the mounting holes.

Figure 6-2 Drill Plan



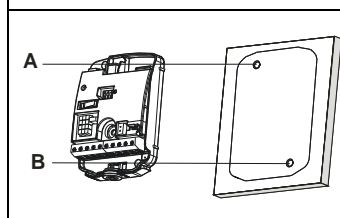
A, B - Detector SC100 mounting hole
C - Test Transmitter SC113 mounting hole

Note: The drill plan shall be removed after all of the mounting holes have been drilled.

Refer to the steps below to mount the Detector SC105 on steel.

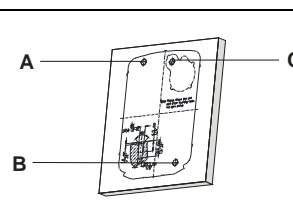
1. Attach the Detector Base or Dill Plan on the mounting area, and then mark the outline and center punch the detector mounting holes A, B and test transmitter mounting hole C.
2. Remove the Drill Plan or Detector Base, and then thoroughly remove the paint in the outline marked on the mounting area.

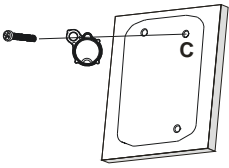
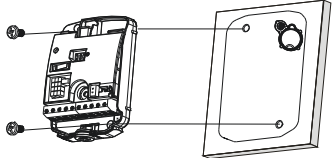
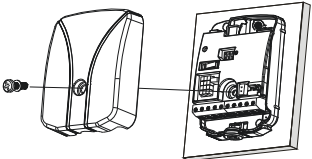
Note: The remnant Drill Plan or paint will weaken the sensitivity badly.



Notes:

- Detector base cannot be used to mark test transmitter mounting hole C.
- Skip marking hole C if no Test Transmitter SC113 is used.

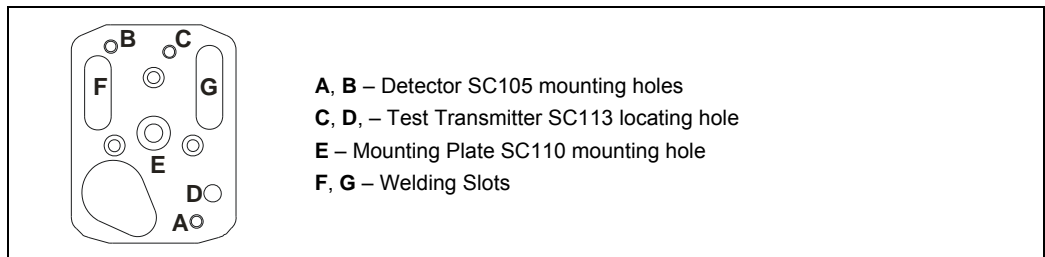


<p>3. Drill the detector mounting holes A, B (\varnothing 3.3mm and minimum 8 mm deep), and then thread the two holes with a M4 Tap (6mm at least).</p> <p>4. Drill the Test Transmitter SC113 mounting hole C (\varnothing 3.3mm and minimum 8 mm deep), and then thread the hole with a M4 Tap (6mm at least).</p> <p>Notes:</p> <ul style="list-style-type: none"> • Cool the tools with oil while drilling and threading. • Skip step 4 if no test transmitter is used. 	<p>5. Remove all of the burrs.</p> <p>6. Attach the Test Transmitter SC113 on the mounting area (at C) and then use the M4 \times 8mm screw to fix it.</p> <p>Note: Skip this step if no Test Transmitter SC113 is used.</p> 
<p>7. Attach the detector base on the steel surface and then use the two M4 \times 8mm screws provided to fix it.</p> 	<p>8. Wire and configure the detector (see the related chapter in this user guide), and after a successful test use the top screw to fix the detector cover properly.</p> 

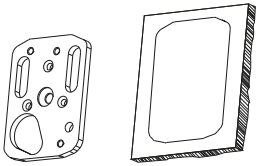
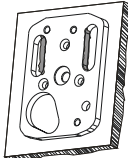
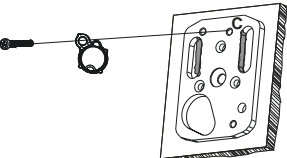
Mounting on Stainless Steel or Hardened Steel

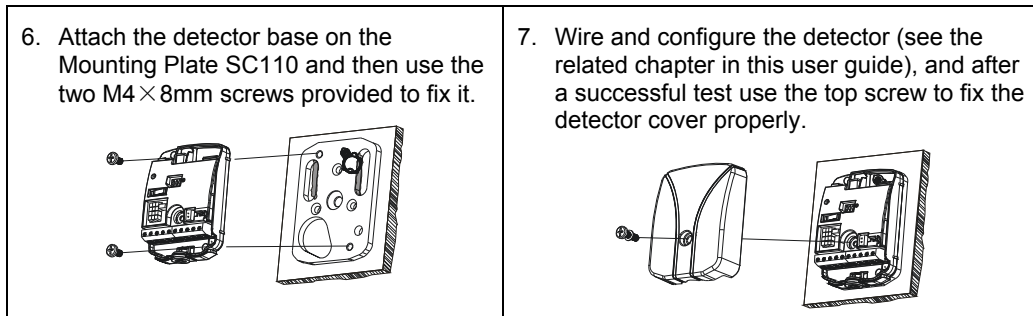
When mounting on stainless steel or hardened steel, the Mounting Plate SC110 (**UPSIDE DOWN**) must be used and should be welded on the mounting surface first.

Figure 6-3 Mounting Plate SC110 - UPSIDE DOWN



Refer to the steps below to mount the Detector SC105 on stainless steel or hardened steel.

<p>1. Remove paint from the mounting area (especially welding area).</p> <p>2. Attach the Mounting Plate SC110 on the mounting area, and then mark the outline.</p> 	<p>3. Fix the Mounting Plate SC110 into the outline marked and ensure it cannot move, and then along the INSIDE of the welding slots weld the Mounting Plate SC110 on the mounting surface.</p> <p>Note: The welding must be done along the INSIDE of the welding slots, otherwise the Mounting Plate SC110 may be deformed.</p> 
<p>4. Tap off slag and remove weld spatter and make sure the whole mounting surface is still flat.</p>	
<p>5. Attach Test Transmitter SC113 on the mounting plate (at C) and then use the M4 \times 8mm screw to fix it.</p> <p>Note: Skip this step if no Test Transmitter SC113 is used.</p> 	



Mounting the Accessories

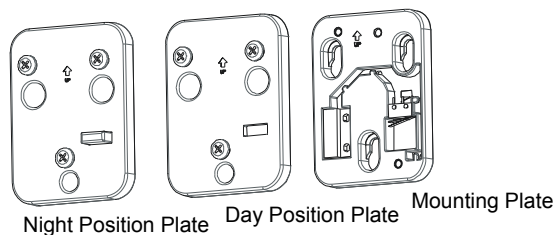
A full range of mounting accessories for different applications facilitates a wide range of mounting requirements.

The Movable Mounting Kit SC111

The Movable Mounting Kit SC111 consists of one mounting plate on which Detector SC105 is mounted, one Day position plate on which Detector SC105 is positioned during non armed time, and one Night position plate mounted on the protected surface, on which Detector SC105 is positioned during armed time.

The figure below shows the components of the Movable Mounting Kit SC111. For more information, please refer to *“Movable Mounting Kit SC111 User Guide”*.

Figure 6-4 Movable Mounting Kit SC111 Components

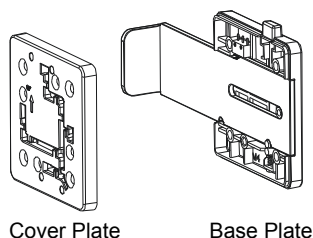


The Keyhole Protection Kit SC112

The Keyhole Protection Kit SC112 is used with Detector SC105 to prevent unlocking during armed installation or loading explosives into the keyhole, as it at the same time is a mounting plate for the Detector SC105 to detect intrusion attempts on doors.

The figure below shows the components of the Keyhole Protection Kit SC112. For more information, please refer to *“Keyhole Protection Kit SC112 User Guide”*.

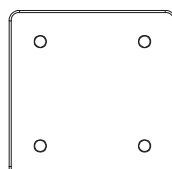
Figure 6-5 Keyhole Protection Kit SC112 Components



The Spacer for Keyhole Protection Kit SC118

The Spacer SC118 is used for Keyhole Protection Kit SC112 only if the steel slide on SC112 touches the keyhole collar on the protected surface. For more information, please refer to *“Keyhole Protection Kit SC112 User Guide”*.

Figure 6-6 Spacer for Keyhole Protection Kit SC118 Components



The Armored Cable Kit SC114

The Armored Cable Kit SC114 is designed to be used as a protection of the detector cable from the detector on the door of a safe or mini-ATMs.

The Armored Cable Kit SC114 includes the following items:

- 8 core cable, white
- Flexible stainless steel conduit
- Cable straps

Figure 6-7 Armored Cable Kit SC114



The Test Transmitter SC113

The Test Transmitter SC113 is used for checking the proper mounting, wiring and function of the detector, and it should be mounted inside of the detector, about how to mount the Test Transmitter SC113, please refer to *Mounting the Detector* on page 9.

Figure 6-8 Test Transmitter SC113

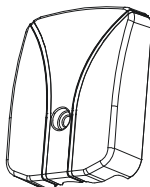


The External Test Transmitter SC115

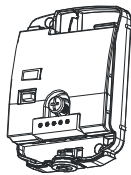
The SC115 External Test Transmitter is a range test transmitter developed to generate a simulated attack signal in protected object with multiple SC105 seismic detectors installed in concrete vaults and all other solid structure value storage units, checking whether the mounting and the function of the seismic detector is good.

The figure below shows the components of the External Test Transmitter SC115. For more information, please refer to *External Test Transmitter SC115 Installation Guide*.

Figure 6-9 External Test Transmitter SC115 Components



Front Cover

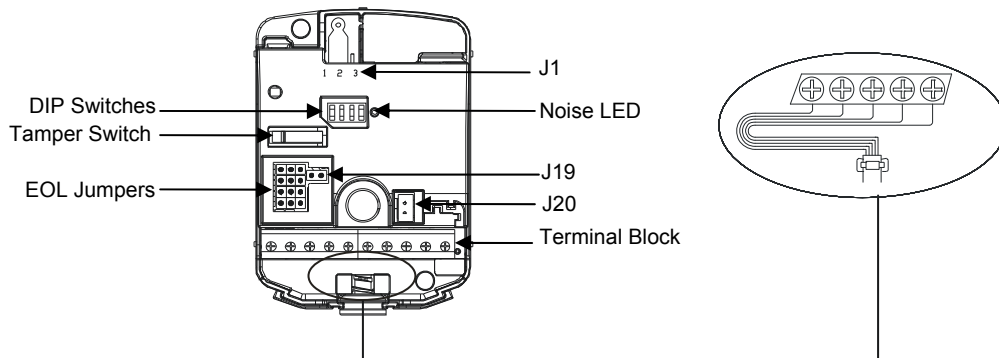


Transmitter Base

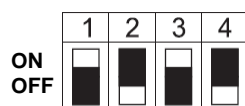
7 Settings

All the settings should be configured on the detector base before the detector is installed permanently. The related function modules are shown as below.

Figure 7-1 Function modules on Detector Base



DIP Switch Settings



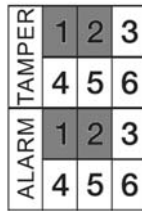
	Sensitivity Settings		Application Settings	Noise LED	
	1	2	3	4	
G_{high}	OFF	OFF	High sensitivity setting	OFF Delay	OFF Noise indicator OFF
G_{normal}	ON	OFF	Normal sensitivity setting	ON No Delay	ON Noise indicator ON
G_{low}	OFF	ON	Low sensitivity setting		
G_{noisy}	ON	ON	Noisy environment sensitivity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

* Factory default settings are shown in grey.

Note

- Any change of DIP switch 3 will cause an alarm.
- Any change of DIP switch 3 must be followed by a power-off sequence of 5 seconds.
- 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.
- 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.
- When scratching the surface of the protected object lightly, the Noise LED will turn on as a confirmation of detection.
- In case of alarm, the Noise LED will flash with 5Hz, appx. 2.5 seconds.
- Turning off the Noise LED by DIP switch 4 will reduce current consumption.

EOL Jumper Settings



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

* Factory default settings are shown in grey.

Note

- Refer to Control Panel manual for proper EOL selection.
- For each block, only one EOL value can be set.
- 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.

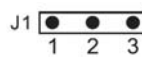
J19/J20 Settings



	No Jumper	Jumper
J19	Terminal 8 = Spare Terminal	Terminal 8 = Alarm O/C Output
J20	Connect SC111/SC112 to the loop	Normal Close

* Factory default settings are shown in grey.

J1 Setting



J1 is used for remote test, and for all the information, please see *Remote Test (Alternative)* on page 16.

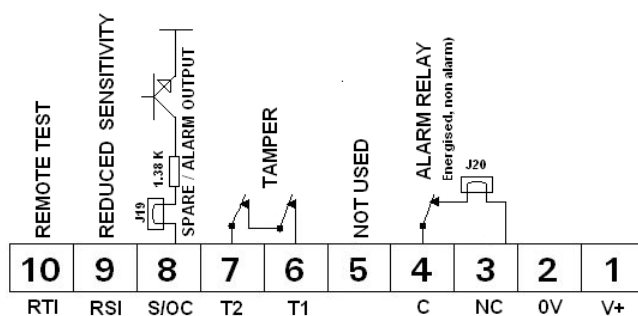
8 Connecting the Detector

The terminal block of the Detector SC105 should be wired correctly before the detector cover has been fixed.

It is recommended to follow the steps below to wire the pins on the terminal block:

1. Bring and feed the cable through the grommet and cable inlet, see *Figure 7-1 Function modules on Detector Base* for reference.
2. Cut and strip the cable, leaving approximately 10cm of wires after the strain relief.
3. Remove the wire insulation about 6 mm.
4. Wire the terminals according to wiring diagram below.

Figure 8-1 Wirings on the terminal block



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

5. Connect the detector to the panel according to the actual applications: See *Figure 8-2* for connecting the detector to a zone configured as Dual-End-of-Line and *Figure 8-3* for connecting the detector to a zone configured as Single-End-of-Line.

Figure 8-2 Alarm and tamper configured to one loop

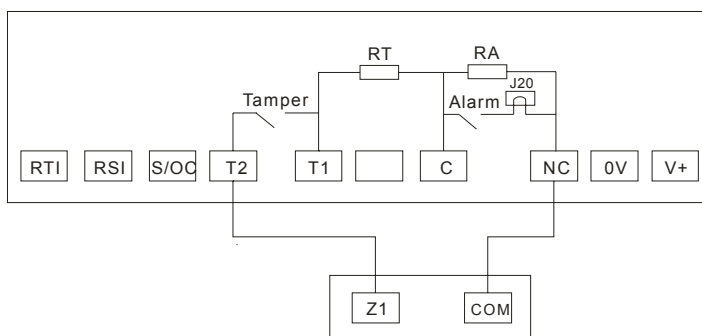
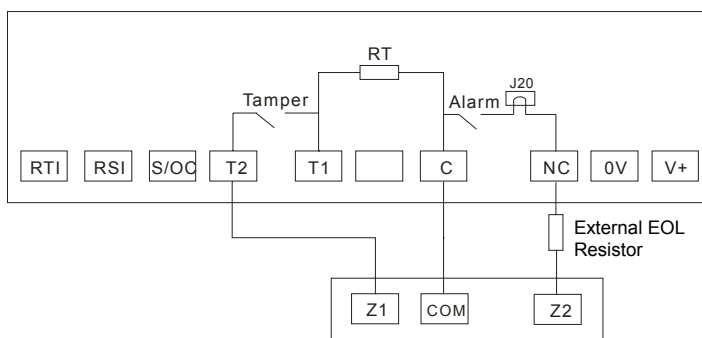


Figure 8-3 Alarm and tamper configured to two loops



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.

9 Test

Detector SC105 features two important tests in order to provide the highest level of security:

- **Control and Function Test** - Checking the proper mounting and wiring of the detector before mounting it permanently.
- **Remote Test** - Checking the proper function, mounting and wiring of the detector at any time.

Control and Function Test

Before leaving the installation, the control and function test should be performed to ensure:

- The proper wiring of the detector, preferably against a wiring diagram.
- The proper mounting of the detector, the Test Transmitter SC113 or External Test Transmitter SC115 (see "*External Test Transmitter SC115 User Guide*").

Perform the following tests:

1. Scratch with a screw driver on the protected surface at the fringe of the expected coverage area, an alarm from the detector should be activated within 45 seconds.

Note To protect the surface from damage it is advised to use a small metal plate between hammer and surface.

2. Give one powerful blow near the detector with a hammer. The detector should give an alarm immediately. This test simulates an attack from extensive mechanical force or explosives.

Note Check up the background noise level in the detector to prevent nuisance alarm.

3. Activate the Noise LED tool by setting the DIP switch 4 in ON position.
4. Set the sensitivity to G_{high} . Make sure that all possible sources of vibrations in the protected area are present and operating.
5. Check the noise LED that shall not lit if the noise level is acceptable. If the noise led is flickering or is lighting steadily try to find the noise source and remove it.

Note

- Always try to remove the source of ambient noise before reducing the detection range.
- Switch off noise LED tool by setting DIP switch 4 in OFF position.
- Set the sensitivity of the detector to an appropriate value. Close the detector cover and check for closed-loop condition of the tamper-loop. Perform a functional test of both alarm and tamper signals according to panel specifications.

Remote Test (Alternative)


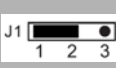
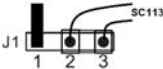
To reach the highest security level of Detector SC105, system provides three different remote test possibilities. For high security installations a daily remote test of the Detector SC105 function and mounting is advised.

- Remote test of detector electronics, excluding the vibration sensing element.

- Remote test of the detector functionality including the detector vibration sensor element and the acoustical fixing to the protected object. This test alternative incorporates the Test transmitter SC113 to be mounted on the protected object but covered by Detector SC105.
- Remote range test of several Detector SC105s simultaneously. This test alternative includes remote test of the detector functionality including the detector vibration sensor element and the acoustical fixing to the protected object as well as testing of the signal propagation in the solid structure of the protected object between Detector SC105 and the External Test Transmitter SC115.

J1 (see *Figure 7-1 Function modules on Detector Base* on page 13) on the detector base is used for remote test, and detail functions are shown in the table below.

Table 9-1 Remote Test

Position	Function	Method	Result
	No test	Connect jumper to J1 pin 1 only (or no jumper at all).	
1	 Range test with External Test Transmitter SC115 (including mounting check)	See " <i>External Test Transmitter SC115 User Guide</i> ".	
1-2	 Electronics test	Connect jumper to J1 pin 1 and 2; Apply an active low 0 volt to terminal 10 on the terminal block to start the test.	A successful remote test will be acknowledged by an alarm from the detector within 1 second.
2-3	 Complete test with Test Transmitter SC113 (including mounting check)	Connect Test Transmitter SC113 to J1 (red cable to pin 2 and black cable to pin 3); Apply an active low 0 volt to terminal 10 on the terminal block 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.

10 Technical Specifications

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.

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	0.228kg

*Specifications are subject to change without notice.

Honeywell Security & Communications
(EMEA head quarter)
1198, Avenue du Docteur Maurice Donat
BP1219,
06254 Mougins Cedex
France
Tel: +33 (0) 492 942 950
www.honeywell.com

For more information:
www.honeywell.com/security/emea
Fax: +33 (0) 492 942 960

Honeywell Security Group
Avenida de Italia nº 7
Pol Ind C.T.C Coslada
28820 Coslada, Madrid
España
Tel: +34 902 667 800
www.honeywell.com

Más información en:
www.honeywell.com/security/es
Fax: +34 902 932 503
Email : seguridad@honeywell.com

Honeywell Security Group
Ampèrestraat 41
1446 TR Purmerend
Nederland
Tel : +31 (0) 299-410200
www.honeywell.com

Voor meer informatie:
Fax : +31 (0) 299-410201
Email : intrusion.nl31@honeywell.com
www.honeywell.com/security/nl

Honeywell Security Group
7 Rue Georges Besse
Immeuble Lavoisier
Parc de Haute Technologie
92160 Antony
France
Tel: +33 (0) 1 40 96 20 50
www.honeywell.com

Pour plus d'informations:
www.honeywell.com/security/fr
Fax: +33 (0) 1 40 96 20 60
Email: contact.intrusion.fr42@honeywell.com

Honeywell Security Group
Novar GmbH
Johannes-Mauthe-Str. 14
72458 Albstadt
Deutschland
Telefon: +49 (0) 7431/ 801-0
www.honeywell.com

Für zusätzliche Informationen:
Fax: +49 (0) 7431/ 801 1220
Email : info.security.de@honeywell.com
www.honeywell.com/security/de

Honeywell Security Group
Honeywell Security Russia
Офис 410, Лужники 24, Москва
119048 Россия
Tel : +7(495)797 - 93 - 71
www.honeywell.com

For more information :
Fax : +7(495)796 - 98 - 93/94

Honeywell Security Group
Newhouse Industrial Estate
Motherwell
Lanarkshire
ML1 5SB
Scotland
Tel:+44 (0) 1698 738200
www.honeywell.com

Find out more:
www.honeywell.com/security/uk
Fax: +44 (0) 1698 738300
email: HSUK64SalesTeam@honeywell.com

Honeywell Security Group
Via della Resistenza 53/59,
20090 Buccinasco
Italia
Tel :+39 0 248 880 51
www.honeywell.com

Per ulteriori informazioni:
Fax : +39 0 248 880 55 33
Email : info.hsce.italia@honeywell.com
www.honeywell.com/security/it

Honeywell Security Group
Honeywell Security Asia Pacific
35/F Tower A, City Center, 100 Zun Yi
Road Shanghai 200051, China
Tel: +86 21.2219.6888
www.honeywell.com

For more information :
Fax : +86 21.6237.0740
www.honeywell.com/security/cn

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