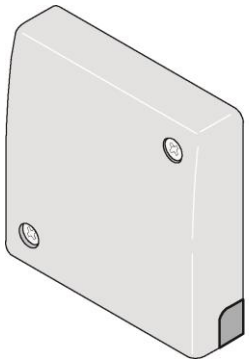
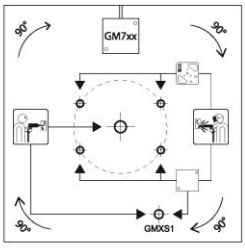
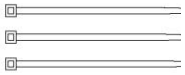
GM730

(en) Seismic detector
(de) Körperschallmelder
(es) Detector sísmico
(fr) Détecteur sismique
(it) Rivelatore sismico
(pl) Czujka sejsmiczna
(pt) Detetor sísmico
(sv) Seismisk detektor
(zh) **震动传感器**







安装手册：Installation manual: 008321_o
版本：Edition: 01.10.2015

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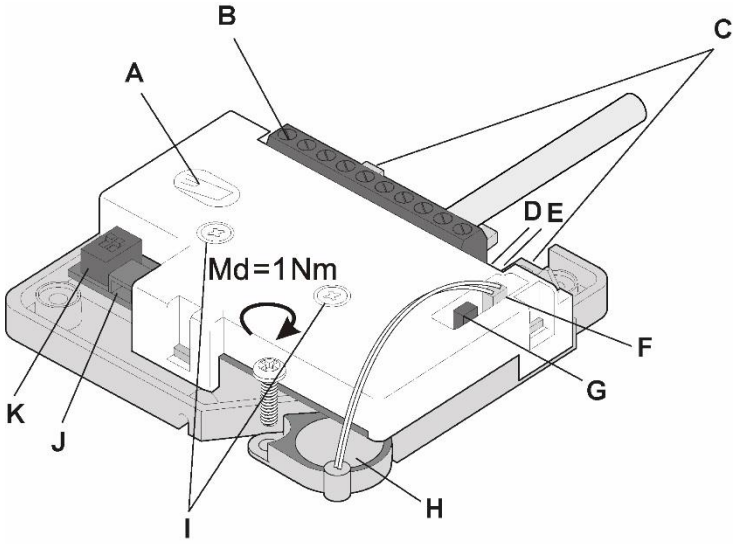

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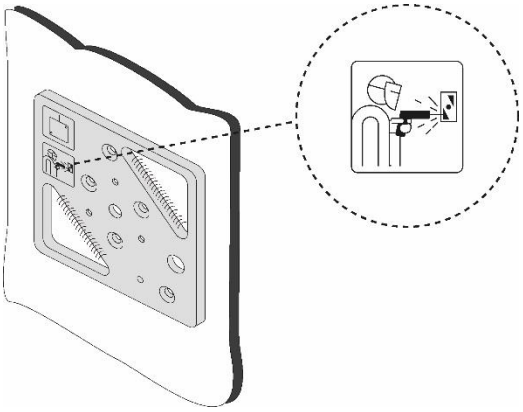

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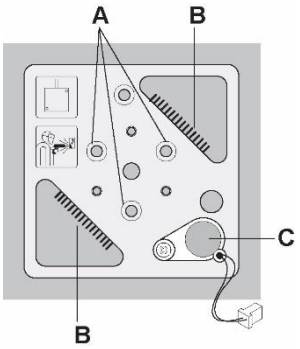

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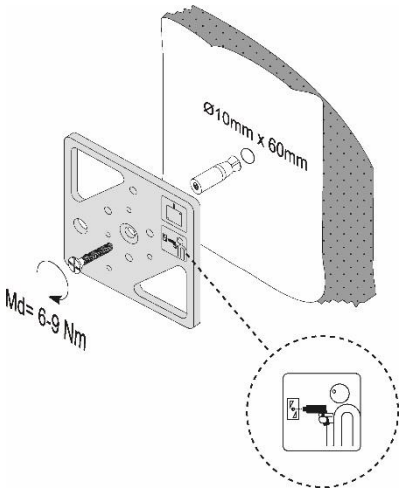

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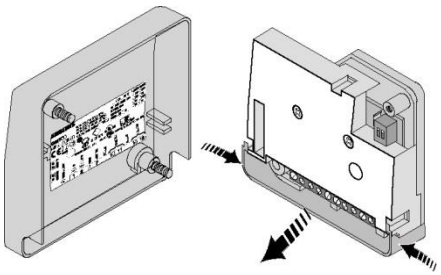

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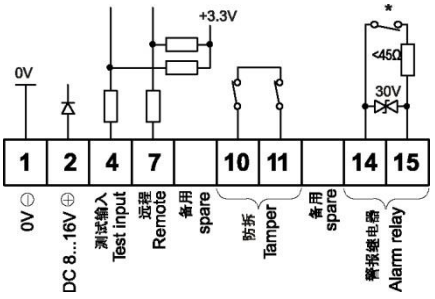

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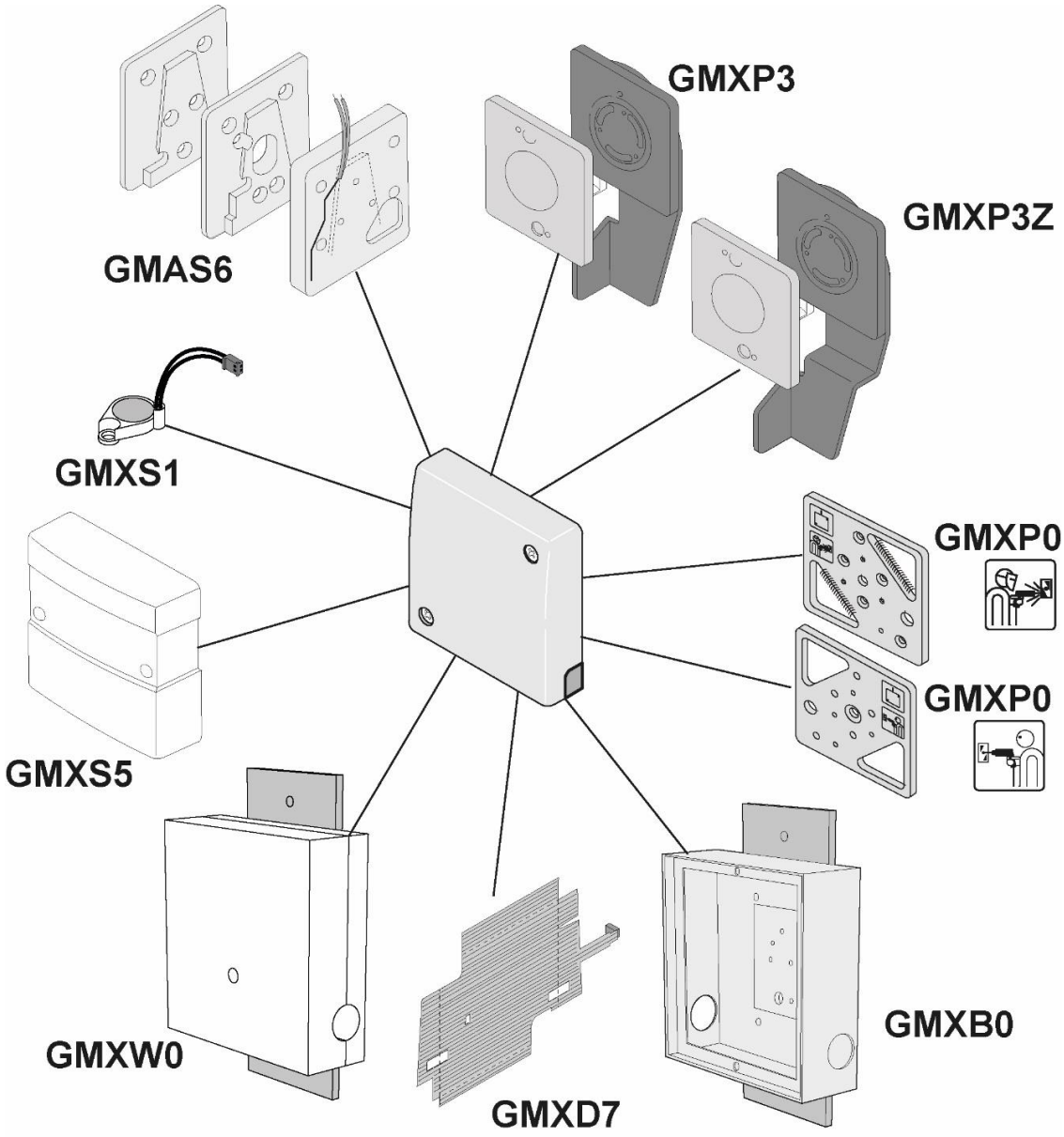

GMAS6
GMXP3
GMXP3Z
GMXS1
GMXP0
GMXP0
GMXS5
GMXW0
GMXD7
GMXB0

en

1. EC declaration of conformity

Hereby Vanderbilt International (IRL) Ltd declares that this equipment type is in compliance with all relevant EU Directives for CE marking. From 20/04/2016 it is in compliance with Directive 2014/30/EU (Electromagnetic Compatibility Directive).
The full text of the EU declaration of conformity is available at the following internet address:
http://pcd.vanderbiltindustries.com/doc/Seismic.

2. Application

The GM730 seismic detector provides reliable protection against break-in attempts on safes, automatic cash dispensers, ticket machines, night deposit boxes, vaults and steel strongrooms. Intelligent signal processing enables the level of detection sensitivity to be custom-set, thereby reducing the risk of false alarms. The anti-tamper for the detector cover (Fig. 1, item A) will detect opening of the detector, and the anti-tamper on the back of the detector will detect forcible removal.

Installation, programming and commissioning must be performed by specialists.

Additional approval requirements can be found in the Appendix at the end of this document.

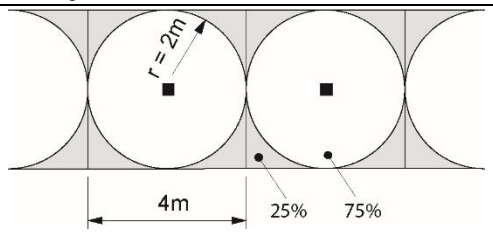
3. Contents

- 1 x GM730 seismic detector
- 1 x GM7xx drilling template
- 3 x cable ties

4. Coverage area

The area monitored by the detector is referred to as the coverage area. It covers the area around the detector with an operating radius (r).

Detector coverage

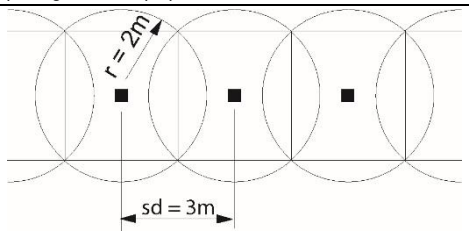


Joints in the construction of the vault may impair the transmission of the signal. Doors must have their own detector installed to provide the correct coverage.
Tightly sealed corners and edges may reduce the operating radius (r) by >25%, therefore, corners and edges on steel vaults must be seamlessly welded. Incorrect positioning can reduce the coverage area. It is recommended that detectors are installed on each plane (walls, floor, and ceiling) of the protected area. Coverage from adjoining planes should not form part of a comprehensive protection strategy.

4.1. Detector spacing distance

Detectors should be positioned so that they cover the entire area to be monitored. The distance between detectors is referrred to as the spacing distance (**sd**).

Detector spacing distance (**sd**)



To ensure complete coverage of the protected area, the following formula should be applied to determine the correct spacing distance between seismic detectors.
Spacing distance (**sd**) = operating radius(**r**) x 2 x 0.75
Example:

Material	Operating radius (r)	Spacing distance (sd)
Steel	2m	3m
Concrete	4m	6m

5. Installation

5.1. Direct installation on steel

The GM730 seismic detector can be installed directly onto a flat, even metal surface.

Take note of the orientation of the GM730 seismic detector and the required drill pattern.

There must be a direct connection between the detector and the mounting surface. Paint, varnish, dirt, silicone or similar materials will impede the acoustics. Remove these materials from the mounting location before installation.

Use the GM7xx drilling template (provided) to determine the location of the required holes.

1. Drill 3 x 3.2mm holes, 6mm deep. 2 holes for the detector and 1 hole for the GMXS1 internal test transmitter (Fig. 1, item H).
2. Remove the drilling template.
3. Thread all holes to M4.
4. Secure the detector and the test transmitter to the mounting surface.

5.2. Installation on steel using the GMXP0 mounting plate

Use the weld symbol side of the GMXP0 mounting plate (Fig. 2) to install the detector on uneven or reinforced steel surfaces.

The GMXP0 mounting plate can be used for installing a seismic detector on a steel surface. It is essential to use the correct side and mounting methods. The GMXP0 displays a detector symbol to indicate the direction of the cable access to the detector.

Take note of the orientation of the GM730 seismic detector and the required orientation of the GMXP0 mounting plate.

GMXP0 weld symbol	
Detector symbol showing cable access at top	

1. With the weld symbol visible, attach the GMXP0 to the mounting surface using two fillet welds as shown (Fig. 3, item B).
   If welding is not possible, use the GMXP0 as a drill template.
   - Mark the 3 centrally located countersunk holes (Fig. 3, item A).
   - Drill 3 x 3.2mm Ø holes (depth to be determined by the thickness of the mounting surface).
   - Thread to M4.
   - Secure the GMXP0 using 3 x M4 countersunk screws (provided with GMXP0).
2. Mount the detector on to the GMXP0.
3. Mount the GMXS1 internal test transmitter on the designated location on the GMXP0 (Fig. 3, item C) and connect to the detector (Fig. 1, item F).

5.3. Installation on concrete using the GMXP0 mounting plate (Fig. 4)

Use the drill symbol side of the GMXP0 mounting plate (Fig. 4) to install the detector on concrete surfaces.

The GMXP0 mounting plate can be used for installing a seismic detector on a concrete surface. It is essential to use the correct side and mounting methods. The GMXP0 displays a detector symbol to indicate the direction of the cable access to the detector.

Take note of the orientation of the GM730 seismic detector and the required orientation of the GMXP0 mounting plate.

GMXP0 drill symbol	
Detector symbol showing cable access at top	

1. Use the GM7xx drilling template (provided) to determine the location of the required holes.
2. Drill a 10mm Ø x 60mm hole and insert the steel expansion plug.
3. Drill a 5mm Ø x >22mm hole and insert the GMXS1 brass expansion plug.

When installing on concrete, the GMXS1 must not have any contact with the GMXP0 mounting plate. The GMXS1 must be attached to the concrete using the M4 x 21mm screw and the associated brass expansion plug.

4. Secure the GMXP0 to the steel expansion plug with the M6 x 47mm screw.
5. Secure the GMXS1 to the brass expansion plug with the M4 x 21mm screw.
6. Mount the detector on to the GMXP0.

6. Mounting the detector

1. Remove the cover from the detector.
2. Attach the detector to the prepared mounting base using the two mounting screws (Fig. 1, item I).
3. Remove the cable access skirt (Fig. 5).
4. Wire the connection cables to the terminal (Fig. 1, item B) as shown in diagram (Fig. 6).
5. Secure the cable to a cable anchor (Fig. 1, items C) with a cable tie (provided).
6. Connect the accessories and program the detector.
7. Remove the pre-formed cable access points as required to enable cable access through the skirt (Fig. 5).
8. Replace the cable access skirt.

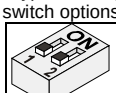
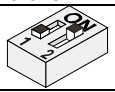
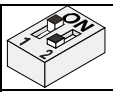
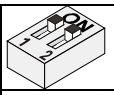
7. Accessories

All of the accessories (Fig. 7) have their own installation instructions, which are supplied with each accessory. These installation instructions should be followed for the correct installation and optimum performance from this seismic detector. For ordering information, see section 14.

8. Programming

8.1. Application setting (Fig. 1, item G)

The specified operating radius applies to an attack with an oxygen lance. If attacked with a mechanical tool (e.g. a drill) the value may be as much as three times higher. The specified operating radius is a guideline which is heavily influenced by the characteristics of the material and the type of construction.
Select the material type for the protected space and the required detection radius by selecting the DIP switch options as follows:

Operating radius (**r**)				
Mode	Fixed	Fixed	Fixed	USER MODE
Steel	2m	1.5m	---	1***** / 1,5 / 2m
Concrete	---	---	4m	2.5 / 4m

There are 3 settings selectable via the DIP switch (Fig. 2, item G). To enable the USER MODE selectable settings through the GMSW7 SensTool software, DIP switches 1 & 2 must be in the ON position to establish communications between the PC and the detector.

8.2. Sensitivity (Fig. 6, terminal 7)

When this input is active, the sensitivity of the detector is reduced. The sensitivity input should only be applied under special circumstances, and only for short periods of time. Any reduction in sensitivity must comply with applicable regulations such as VdS in Germany. The factory setting is Active low. Active high is selectable through the GMSW7 SensTool software.

Sensitivity is reduced to 12.5% of the original setting for the duration of the remote signal. A potential application is the prevention of alarm triggering where loud functional noises prevail.

8.3. Test input (Fig. 6, terminal 4)

The GMXS1 internal test transmitter (Fig. 1, item H) is activated by the application of a low signal into the test input terminal. If the detector is functioning correctly, the detector will trigger an alarm (trigger time <3s).
The factory setting is Active low. Active high is selectable through the GMSW7 SensTool software.

Active low = 0 V applied to activate.
Active high = 0 V removed to activate.

9. LED display

The red LED (Fig. 1, item E) pulses during initialisation. In the event of an alarm, the LED illuminates for approximately 2.5 seconds. This LED is only visible when the cover of the detector is removed.

10. Commissioning

1. Apply the supply voltage.
   The LED (Fig. 1, item E) pulses for 10 seconds.
2. Leave the detector for a further 20 seconds.
   The detector is now operational.
3. Verify the correct radius and material type have been selected by the DIP switches or SensTool.

If SensTool is not available, use a multimeter (Ri ⩾ 20 kΩ) at terminal 1 (0 V) and at the test point (Fig. 1, item D) to monitor for the analogue integration signal:

Quiescent level	0 V
Integration start	1 V
Alarm threshold (w/o load)	3 V

4. Check for interference using the SensTool > **Analyse** option. The **Digital Filter** option in the **Settings** tab may assist in reducing inherent interference. For additional information, please refer to the SensTool software and the associated manual.

10.1. Functional Checks

Functional checks can be performed as follows:

- With the cover removed, scratch the metal case of the detector with a screw driver until the LED (Fig. 1, item E) confirms an alarm.
- Apply the required input to terminal 4 to activate the GMXS1 internal test transmitter, if provided.
- Apply the required input to activate the GMXS5 external test transmitter, if provided.
- Simulate an attack on the protected space.
- Carefully replace the cover and secure it in place.

11. Service

The function of the detector and its mounting should be checked at least once a year, as follows:

- Functionally test the detector as detailed in section 10.1.
- Verify the settings of the detector by the DIP switches or by the GMSW7 SensTool software.
- Check the mounting of the detector to ensure that the detector is securely attached.
- Check that there is a direct connection between the detector and the mounting surface. Paint, varnish, dirt, silicone or similar materials will impede the acoustics.

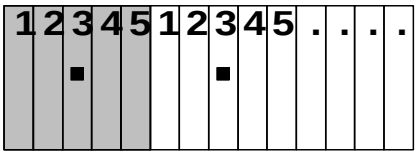
Refer to local approvals for guidance on this matter.

12. Modular vaults

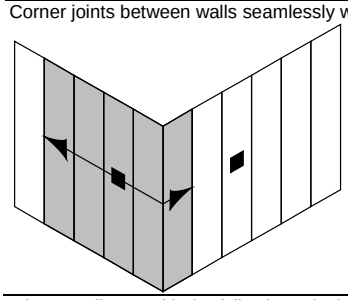
The following principles must be strictly observed when using seismic detectors on modular vaults made from steel or concrete.

- Thickness from 100 to 400mm
- Width up to 1000mm
- Length up to 6500mm

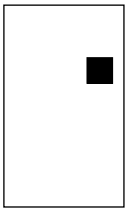
Modules with detector arrangement



Corner joints between walls seamlessly welded



Always 1 detector on doors



Strict compliance with the following principles is vital when using seismic detectors on modular vaults made from steel and concrete:

1. One detector for a maximum of 5 wall modules. The detector must be mounted on the middle module.
2. In addition to being bolted together, all of the joints between the modules must be welded every 400 − 500mm with a 30 − 40mm seam.
3. Corner joints between wall modules must be seamlessly welded if the coverage area is to extend beyond the corners.
4. In the case of wall modules equipped with detectors, the immediately adjoining floor and/or ceiling modules can be included in the coverage area if the corresponding butt joints are seamlessly welded.
5. Where building vaults use modules of varying thickness, the butt joints must be seamlessly welded.
6. Avoid mounting detectors on modules to which guide rails for cassette transport lifts, ventilators or other mechanical equipment are attached.
7. Always equip modules which have a pay-in/withdrawal slot with a detector. The detector can monitor the adjacent modules.
8. All doors must be equipped with a detector.
9. Programming:

	Application setting
Maximum 5 modules	Concrete: 4m radius
Doors	Steel: 2m radius

13. Technical data

Dimensions	89mm x 89mm x 23mm
Supply voltage (nom. 12 V DC)	Vcc = 8 to 16 V DC
Current consumption (8 to 16 V DC)	Ityp = 2.5 to 3.5 mA
Alarm condition	Imax. = 5 mA
Alarm output, terminals 14+15:	
Semiconductor relay	Opens on alarm + low voltage
Contact load	30 V DC/100 mA, ohmic load
Series resistance	<45 Ω
Alarm holding time	2.5 seconds
Sabotage surveillance terminals 10+11:	
Microswitch, cover and floor	Opens on sabotage
Contact load	30 V DC/100 mA
Anti-drilling foil in cover	Sabotage ⇨ Alarm
Test input, terminal 4	Low <1.5 V DC/High >3.5 V DC
Remote input, terminal 7	Low <1.5 V DC/High >3.5 V DC
Operating temperature	-40 ºC to +70 ºC
Storage temperature	-40 ºC to +70 ºC
Air humidity (EN 60721), non-condensing	<95%
Approvals	See the type plate inside the detector cover (Fig. 5)

14. Ordering information

GM730 Seismic detector	V54534-F107-A100
GMXP0 Mounting plate – GM7xx	VBPZ:2772730001
GMXS1 Internal test transmitter – GM7xx	VBPZ:4202370001
GMXS5 External test transmitter – GM7xx	VBPZ:5627000001
GMXW0 Wall / Ceiling recess box – GM7xx	VBPZ:2771210001
GMXB0 Floor recess box – GM7xx	VBPZ:2772020001
GMXP3 Lock protection – GM7xx	VBPZ:3470190001
GMXP3Z Lock protection – GM7xx	VBPZ:5712410001
GMAS6 Movable mounting kit – GM7xx	VBPZ:4886060001
GMXD7 Anti-drill foil(10x) – GM730/760/775	VA5Q00006245
GMSW7 SensTool-SW – GM730/760/775	VA5Q00006245
GMXC2 Connection sleeve (16mm) – GM7xx	VBPZ:5021840001