ALARMTECH

Industry Leading Acoustic Glass Break Detectors

AD 800
AD 800-AM

EN 50131-2-7-1:2013, grade 2 & 3

www.alarmtech.se

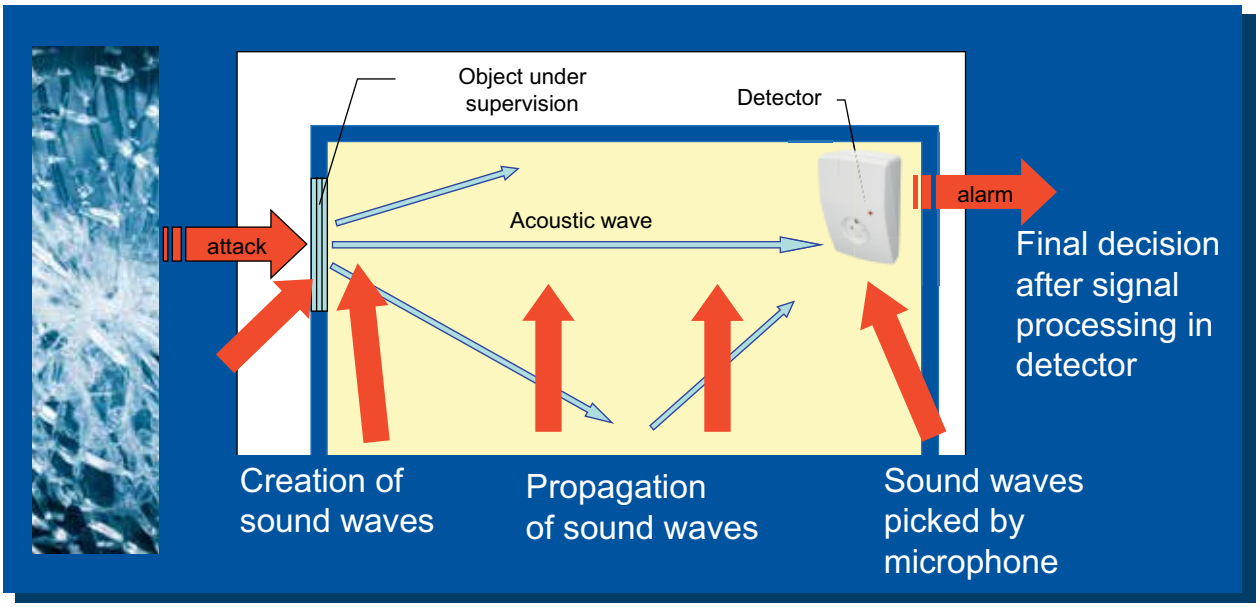
What is GLASS?

Definition (Webster Dictionary):

> A collection of materials with **highly variable mechanical** and optical properties that solidify from the molten state without crystallization, [..] and that are regarded physically as super-cooled liquids rather then true solids.

The glass persists in thermodynamic **unstable state.**

Basic detection principle



Important issues:

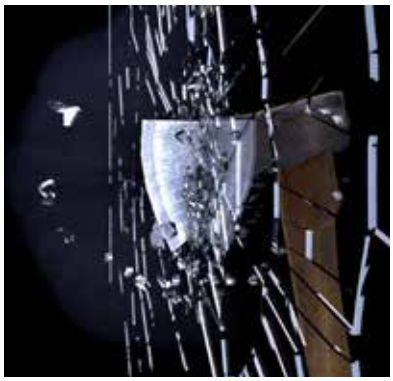
1. Glass break
2. Room acoustics
3. Signal recognition

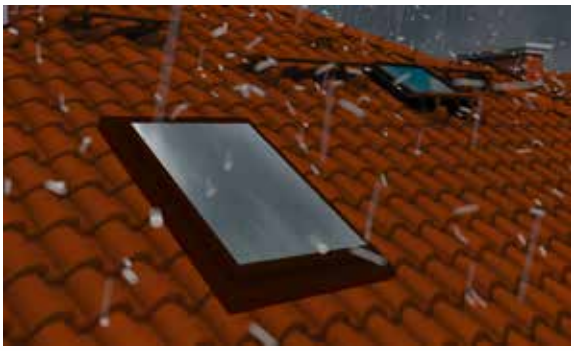
ALARMTECH

Basic development problems of Grade 3 acoustic glass break detector

RELIABLE ACOUSTIC DETECTION OF GLASS BREAK

- Complexity and uncertainty of glass break phenomena
- Minimum of 90% detection rate required, 100% in practice
- Formal testing involves few tens of glass breaks





IMMUNITY AGAINST DISTURBANCES

- Required 100% immunity against defined classes of disturbances
- Formal testing involves few thousands of tests

RELIABLE DETECTION OF MASKING

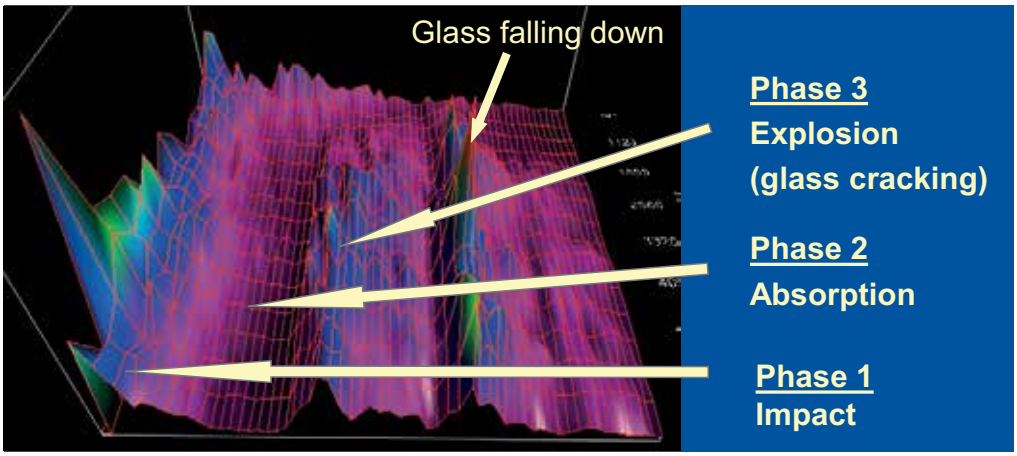
- Time to detect masking – up to 3 min
- 24/24 working mode – in parallel with glass break detection
- Detection of very small signal – below noise level

Glass Break Model

After extensive research and tests Alarmtech evaluated Glass Break Model

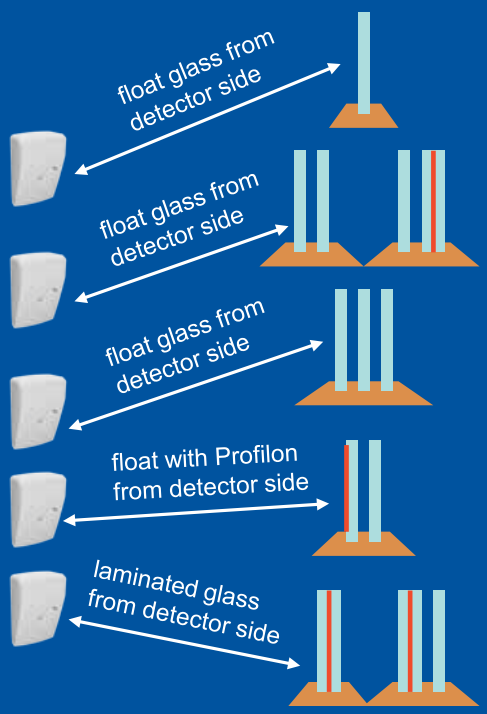
more than 2000 breaks recorded and analyzed …

more than 20,000 disturbing signals recorded and analyzed …



Types of glass & detection zones

Window design		Glass type of pane inside room		Range		
				1 - 2 m	2 - 4 m	4 – 9 m
1	Single glazed	Float & tempered		Zone 3	Zone 2	Zone 1
2	Double glazed	Float & tempered	High disturbances	Zone 3	Zone 2	Zone 1
			Low disturbances	Zone 1		
3	Triple glazed	Float & tempered		Zone 1		
4	Double glazed with Profilon®	Float & tempered covered with Profilon®		Zone 1		
5	Single and multi-glazed	Laminated		Zone 1		



Tests results

Window design:
- single glazed
- double glazed
- triple glazed

Glass type:
- float
- foiled (Profilon®)
- laminated (P2, P4)

Test results based upon 52 detectors monitoring each attack

Greater than 7,000 tests of the detection algorithm

Window design		Glass type of pane inside room	Type of break	
			Single break	Sequential break making opening in glass pane (Glass Break acc. to VdS)
1	Double glazed & Triple glazed	Float	99.6%	100%
2	Double glazed with Profilon®	Float with Profilon®	99.4%	100%
3	Single and multi-glazed	Laminated	99.4%	100%

ALARMTECH

AD 800-AM

Acoustic glass break detector

Grade 3
EN 50131-2-7-1:2013

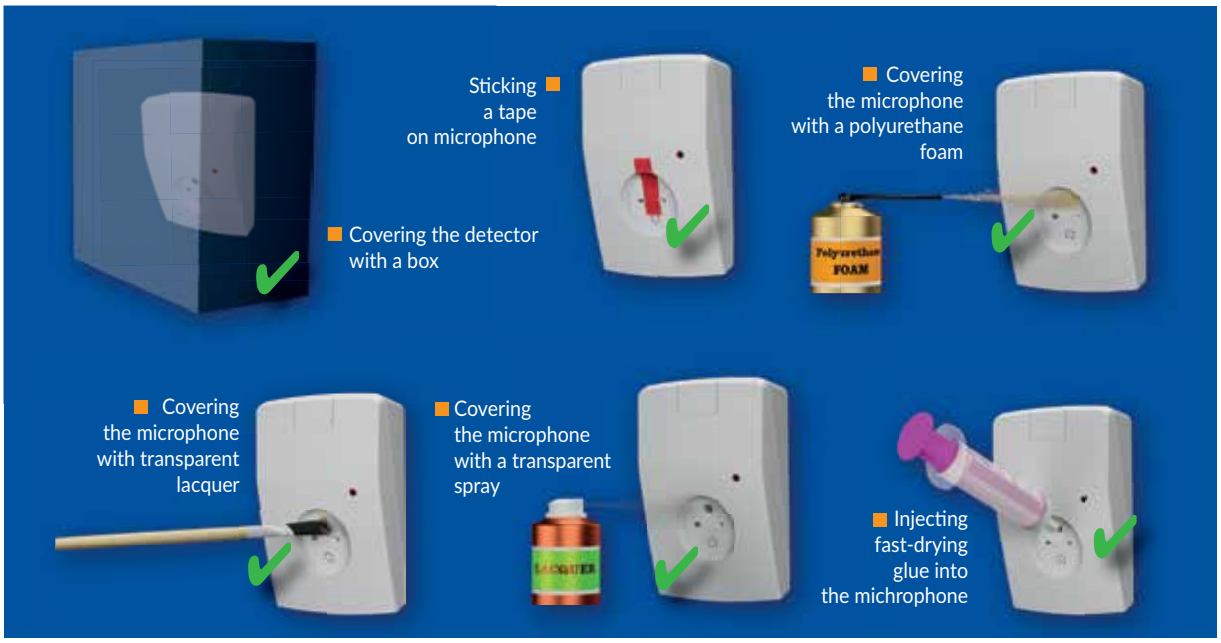
Features:

- First-class monitoring of various glass types including standard glass, tempered glass, laminated glass and foiled glass
- Advanced signal handling with microprocessor
- High immunity to false alarms
- DRC, Digital Room Compensation
- Integrated event memory
- Test functionality with the acoustic tester ADT 700
- Easy set up using DIP switches
- **Anti-Mask**
- Wide voltage range, low current consumption, increased operating temperature range,

The AD800-AM, based upon the solid foundation of the AD800, is the new generation of acoustic glass break detector, with the added functionality of anti-mask. The AD800-AM is the only acoustic glass break detector to pass the rigorous requirements of EN50131-2-7-1:2013, Grade 3 for high security installations.

The AD800-AM's anti-mask function provides unique tamper protection, which is signalled via a separate relay.

Examples of detector Masking



AD 800

Acoustic glass break detector

Features:

- First-class monitoring of various glass types including standard glass, tempered glass, laminated glass and foiled glass
- Advanced signal handling with microprocessor
- High immunity to false alarms
- DRC, Digital Room Compensation
- Integrated event memory
- Test functionality with the acoustic tester ADT 700
- Easy set up using DIP switches
- Tamper protection
- Wide voltage range, low current consumption

Grade 2
EN 50131-2-7-1:2013

The AD800 is a state of the art acoustic glass break detector for monitoring one of more areas of glass. Developed with the latest microprocessor technology, which incorporates advanced algorithms monitoring the room acoustics (Digital Room Compensation, DRC). These algorithms distinguish between glass breaking and other internal noises.

The detectors holds EN and VdS approval.

The AD800 is for internal use and can be ceiling or wall mounted facing the direction of the glass being protected.

Multiple window monitoring is achievable due to the 9 metre detection distance over a range of 165°.

The detector should have a clear view of the monitored area and corners should be avoided.

ALARMTECH

ADT 700

Acoustic Tester for the AD series (700/800-AM)

Features:

- Acoustic calibration and on-the-spot testing
- Remote test without contact with detector
- 3-minute timeout to conserve battery
- Internal battery with external mains charger.

The ADT 700 is a unique tester for use with the AD 800 detectors series as well as AD 800-AM. The tester emits a spectrum of signals at certain frequencies and sound levels. The acoustic sound from the ADT 700 that enters the room is received by the AD 800 / AD 800-AM detector via broadband microphone. The signals are filtered, processed and evaluated. The microprocessor compensates for early reflections and selects the best algorithm based on the detector location to ensure maximum detection capability. Audio signals undergo dramatic change from the broken window through the room to the detector. As a result, the AD 800 / AD 800-AM has three separate settings, each with its own algorithm.

With the ADT 700 tester it is possible to test which setting is most suitable for each installation. The detector measures the characteristics of the signal and the processor gives the installer a recommendation of which setting is preferable. If several glass panes are protected by one detector, the ADT 700 repeats the test for every window to create an overview of the detection zone. The detector calculates an average value for the detection zone and provides a recommended adjustment.

Digital Room Compensation DRC

TECHNICAL DATA

Acoustic Glass Break Detectors

Detector type	AD 800	AD 800-AM
Type of protected glass (thickness)	Float (4 mm), laminated P2, P4 (4 mm + 4 mm)	
Size of protected glass	Min 40x40 cm	
Max range	9 m radius/165°	
Range settings	Zone 1 = 4-9 m | Zone 2 = 2-4 m | Zone 3 = 1-2 m	
Supply voltage	7-30 V DC	
Max. voltage ripple	2 Vpp at 12 V, 4 Vpp at 24 V	
Voltage monitoring	Alarm at < 7 V ± 0,5 V	
Current consumption quiescent/alarm state	12 mA @ 12 V, 7,3 mA @ 24 V (quiescent state)	
D/N signal levels	DAY = D/N open or < 2.5 V, NIGHT = D/N > 2.5 V	
Alarm output	Relay NC (max 50 mA, 50 V DC/peak AC, Rs ≤ 30 Ω)	
AM output (fault)	--	Relay NC
Adjustments	DIP switches	
Tamper contact	NC (max 50 mA/50 V DC/peak AC)	
Connection	Screw terminals	
Operating temperature	+5° C to +40°C	-25°C to +40°C
Air humidity range	Max 93% RH	
Housing protection class	IP 31	
Environmental class	EN50130-5:2011, Class I	
Housing material	White ABS plastic	
Dimensions [WxHxD]	68 x 109 x 40 mm	
Security grade	EN50131-2-7-1:2013 Grade 2	EN50131-2-7-1:2013 Grade 3
Approvals	VdS G116508 Class B, SBSC Alarm Class 2	VdS G117504 Class C, SBSC Alarm Class 3/4

Alarmtech Sweden AB
Staffansväg 6 A
SE19278 Sollentuna

Tel: +46 8 631 06 11
e-mail: info@alarmtech.se
www.alarmtech.se