EVD-1

ELECTRONIC VIBRATION DETECTOR SYSTEM

STOCK #	MODEL
2020290	EVD-1
2020230	EVD-1C SAFE PAK

UL and ULC Listed

Dimensions: 5.10"H x 3.26"W x 1.20"D
(13,0cm H x 8,3cm W x 3,0cm D)

Weight: EVD-1 0.64 lbs. (0,29 kg)

Enclosure: Base: Die-cast aluminum
Cover: Stamped Steel, 22 Gauge

Power Input: 9.0 VDC to 16.0 VDC, 12 VDC Nominal
Maximum 0.1 V ripple

NOTE: If the EVD is going to be powered by the auxiliary power of a burglar panel, and the burglar panel has ground fault detection, it may be necessary to power the EVD from a separate UL listed 12 VDC power supply. Alternately, the safe may be insulated from ground.

Typical Current: (Supply Voltage 12.0 VDC)
Normal Standby Condition: 26 mA
Alarm Condition: 24 mA
Tamper Condition: 34 mA
With model RTA connected, add 10 mA in Tamper Condition and 10 mA in Alarm Condition.

Maximum Current: (Supply Voltage 16.0 VDC)
Normal Standby Condition: 26 mA
Alarm Condition: 24 mA
Tamper Condition: 34 mA
With model RTA connected, add 14 mA in Tamper Condition and 14 mA in Alarm Condition.

Contact Data:
Alarm Relay: Form C, 2.0 Amps at 30 VDC
Tamper Contact: Form A, 2.0 Amps at 30 VDC

Optional Accessories: RTA Remote Test Annunciator
UL Listed High Security Cable

Required for UL safe complete installation.

GENERAL INFORMATION

The EVD-1, Electronic Vibration Detector, is listed by Underwriters Laboratories, Inc. for primary protection of Mercantile or Bank, safe or vault, ATM machines and supplementary protection of interior units such as file cabinets, display cases, walls and ceilings. The detector must be used with an appropriate UL listed control unit.

FEATURES

- Detects all common threats to safes and vaults.
- Sophisticated signal processing provides unprecedented sensitivity without false alarms.
- Low cost, stand alone system.
- Reliable, sensitive piezo sensor technology.
- On board high security safe contact interface.
- Integral, multi-color status LED.
- Built in test circuit.
- Remote test and annunciator capabilities.
- Supervised microprocessor.
- Independent tamper output.
- On board test point facilitates installation and service.
- Built in accumulator.

EVD-1 controller

The EVD-1 controller detects short duration, large amplitude signals like those produced in attacks from explosions, hammering or chiseling. It also detects long duration, small amplitude signals like those produced in attacks from torches, thermic lances, drills, grinders or cutting discs. As soon as the EVD-1 detects a large amplitude alarm source it signals an alarm.

SAFE CONSTRUCTION REQUIREMENTS

Table 1. Maximum Linear Distances from Detector to Any Point on the Protected Surface

Safe Construction	Maximum Linear Distance from Detector to Any Point	Local Pickup Minimum Sensitivity setting, RV1
Steel Safes Body: Minimum 1/4" Door: Minimum 1/2"	96 inches	Fully Counterclockwise
Composite Safes Body: Minimum 16 Gauge Steel over 3" Composite Material Door: Minimum 1/4" Steel over 3" Composite Material	110 inches	Fully Counterclockwise

DETERMINING THE NUMBER OF DETECTORS FOR A SAFE APPLICATION

Refer to column one in Table 1 for the type of the safe in the application. In column two find the maximum linear distance from a detector to any point on the protected surface. This distance is the **detector range**. Next, refer to column one, (for steel safes), or column two, (for composite safes), in Table 2. Find the range of distances based upon the detector range that corresponds to the safe in the application. Using the row of this range of distances, determine the number of detectors from column three, (if safe has a single door), or from column four, (if safe has double doors). For applications with a larger distance than that shown in Table 2, consult Potter's technical support for assistance.

Table 2.

Maximum Linear Distance from Detector to Any Point on Protected Surfaces of Steel Safes*	Maximum Linear Distance from Detector to Any Point on Protecte Surfaces of Composite Safes**	Number of Detectors Required for Complete Coverage of Single Door Safes	Number of Detectors Required for Complete Coverage of Double Door Safes
D<=96"	D<=110"	1	2
96"<D<=192"	110"<D<=220"	2	2
192"<D<=288"	220"<D<=330"	3	3
288"<D<=384"	330"<D<=440"	4	4
384"<D<=480"	440"<D<=550"	5	5

NOTE: D=Maximum Linear Distance

*Steel Safe Construction:
Body: Minimum 1/4" Steel
Door: Minimum 1/2" Steel

**Composite Safe Construction:
Body: Minimum 16 Gauge Steel over 3" Composite Material
Door: Minimum 1/4" Steel over 3" Composite Material

DETERMINING THE MAXIMUM LINEAR DISTANCE ON A SAFE

A rule of thumb for estimating the maximum linear distance from the recommended detector location to any point on the protected surface is:

	Example: h = 62" w = 55" d = 29"
1. Compute X1 = h + w	1. X1 = 62"+ 55" (X1 = 117")
2. Compute X2 = 2d + w	2. X2 = (2 x 29") + 55" (X2 = 113")
3. Find X = minimum (X1, X2)	3. X = 113"
4. Compute J = w + d	4. J = 55" + 29" (J = 84")
5. Find D = maximum (X, J)	5. D = 113"

Where: h = Safe Height
w = Safe Width
d = Safe Depth
D = Maximum Linear Distance

This rule of thumb is valid for **most** available safe sizes. However, if any one dimension is very large or very small when compared to the other two dimensions, the safe may not follow this rule. In those cases, contact Potter's technical support for assistance. Table 3 lists some common safe dimensions and their maximum linear distances when detectors are installed in recommended locations.

Table 3. TYPICAL SAFE EXTERIOR DIMENSIONS AND MAXIMUM LINEAR DISTANCES

Height (Inches)	Width (Inches)	Depth (Inches)	Volume (cu. ft.)	Maximum Linear Distance (Inches)
25.00	21.00	21.00	6.38	46.00
32.00	25.00	25.00	11.57	57.00
42.00	31.00	29.00	21.85	73.00
52.00	31.00	29.00	27.05	83.00
62.00	31.00	29.00	32.26	89.00
62.00	55.00	29.00	57.23	113.00
64.00	31.00	29.00	33.30	89.00
72.00	35.00	29.00	42.29	93.00
79.00	43.00	33.00	64.87	109.00

ORDERING INFORMATION

Description	Stock No.
EVD-1 DETECTOR	2020290
EVD-1C SAFE PAK	2020230
Includes: EVD-1 Detector	
HSC-High Security Safe Contact	
OPTIONAL EQUIPMENT:	
RTA Remote Test Annunciator	2020270
High Security Cable ("B" Cable)	5210408

NOTE: The EVD-1 is a stand-alone detector. For applications requiring more than one detector, the EVD-2 may be more appropriate. For more information on the EVD-2 system, see bulletin no. 8870015.

TYPICAL UL COMPLETE SAFE INSTALLATIONS

1. Install in accordance with Underwriter Laboratories' standard UL 681.
2. Install EVD-1 detectors in recommended locations at recommended spacings.
3. Install UL listed, high security contacts on the exterior of the safe or UL listed, ordinary use contacts on the inside of the safe.
4. Wire detectors and safe door contacts as shown in installation instructions using high security cable.
5. Listed power supply or control unit must provide at least 4 hours of standby power for mercantile alarms and 72 hours of standby power for bank vault alarms.

TYPICAL UL COMPLETE VAULT INSTALLATIONS

1. Install in accordance with Underwriter Laboratories' standard UL 681.
2. Install EVD-1 detectors on interior walls, ceilings, and floors, spaced as shown in Figure 1. Refer to Table 4 for maximum spacing on various materials.
3. A detector must be installed on the vault door if the net steel thickness is less than 1 1/2 inches.
4. Wire detectors and door contacts as shown in installation instructions.
5. Listed power supply or control unit must provide at least 4 hours of standby power for mercantile alarms and 72 hours of standby power for bank vault alarms.

EVD-1 WALL PROTECTION

Figure 1 shows the rectangular areas of 100% coverage when detectors are installed adjacent to one another. The detector spacing is the sensor center point distance between adjacent detectors. The detector spacing is the same as the width of the rectangular area of 100% coverage. Table 4 lists the dimensions of the rectangular areas of 100% coverage on continuous surfaces for several materials and sensitivity settings. When a surface extends around a corner via a solid connection, detector coverage extends into that surface, but the coverage is reduced to 3/4 of the remaining detector range. All joints, cracks, and corners dampen structure borne vibrations. Vibration transfer across these imperfections must be tested to ensure complete coverage within the detector's range. Modular constructions require one detector per panel and must be constructed of the materials listed in Tables 1 and 4.

Figure 1. WALL PROTECTION DIAGRAM

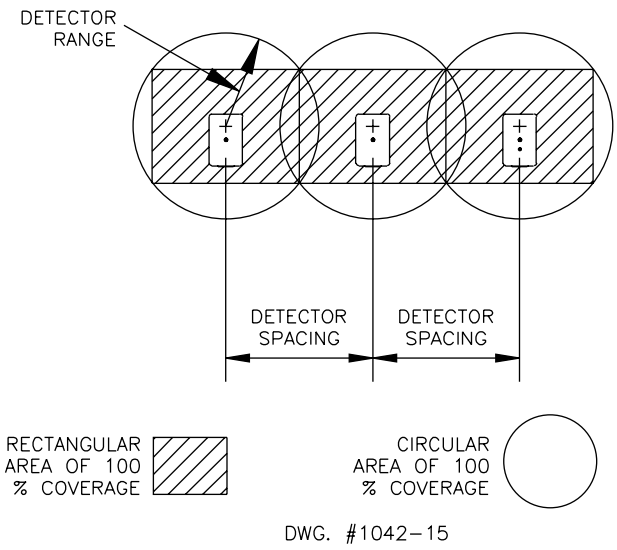

Table 4. RECOMMENDED MAXIMUM EVD-1 SPACING FOR WALL PROTECTION

Material	Sensitivity Setting	Detector Range	Rectangular Area of 100% Coverage				
Steel Plate at Least 1/4" Thick	Minimum	8.0'	11.3 x 11.3'	8' x 13.9'	10' x 12.5'	15' x 5.6'	-
	Half	15.0'	21.2' x 21.2'	8' x 28.9'	10' x 28.3'	15' x 26'	20' x 22.4'
	Maximum	20.0'	28.3' x 28.3'	8' x 39.2'	10' x 38.7	15' x 37.1'	20' x 34.6'
Monolithic Concrete at Least 6" Thick	Minimum	16.0'	22.6' x 22.6'	8' x 31.0'	10' x 30.4'	15' x 28.3'	20' x 25.0'
Concrete Block at Least 6" Thick	Minimum	16.0'	22.6' x 22.6'	8' x 31.0'	10' x 30.4'	15' x 28.3'	20' x 25.0"