## VD 400 VIBRATION DETECTOR
## Mounting instructions

### Application
The vibration detector VD 400 provides reliable protection against attack with mechanical and thermal tools to metal cases and concrete walls.

### Operation and planning rules
The VD 400 is a selectively sensing, vibration detector. It has 3 separate sensing channels, one integration channel for low signals with long duration, one counting channel sensing strong impacts towards the protected surface and one explosion channel sensing very high signals from explosives. It senses and analyses the vibrations generated when a burglar tries to force his way through the protected surface with mechanical or thermal tools. The highly sophicated signal processing takes into consideration the magnitude of the vibration as well as their frequency and duration. The VD 400 is designed to be mounted on steel , concrete and other hard surfaces. Before defining the range of the VD 400 several factors need to be taken into account.

1. The design and construction of the surface that is to be guarded and the materials from which it is made.
2. The location of the detector relative, joints, hinges, cracks and corners etc.
3. Background disturbances that can influence the detector. Ranges in different materials are tabulated in Fig. 1 below, but they are only intended as guidelines. Practical tests must be conducted.

**Fig. 1**

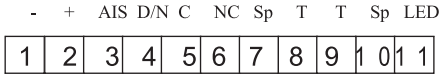
| Material | Steel | Concrete |
|---|---|---|
| Radius | 5 m | 4 m |

### Mounting
1. The standard package contains two self tapping screws, a cable conduit.
2. For mounting on concrete there is a mounting set including mounting plate, screw and anchor to mount the plate and two stainless steel screws M4x12 to mount the detector
3. Select the most suitable mounting location and, mark and drill the fixing holes. Cleaning and smoothing the surface under the detector will make detection more effective.
4. Mount the detector using the screws provided in the package.

### Connection
The detector has 11 screw terminals with wire guard. The illustration in fig.2 and the text presented below explain the functions of the different connections. A similar illustration is printed on the inside of the detectors cover.

| | | |
|---|---|---|
| 1. | - | 0 Volts DC |
| 2. | + | 12 Volts DC |
| 3. | AIS | First alarm and remote TEST |
| 4. | D/N | Day/Night control |
| 5. | C | Alarm Relay |
| 6. | NC | Alarm Relay |
| 7. | Sp | Unused connection |
| 8. | T | Sabotage contact (Tamper) |
| 9. | T | Sabotage contact (Tamper) |
| 10. | Sp | Unused connection |
| 11. | LED | The output has a 10k resistor in series and goes from 5V to 0V at alarm and follow the relay |

**Fig. 2 Connections**




**Important:** Open inputs 3 and 4 are always LOW

**Programming the Jumpers**

There are four jumpers that can be used to program the way in which the detector operates. See fig. 3 which is also printed on the inside of the detector cover.

**Jumper 1** controls the counting channel. Removed jumper is disconnecting this channel. The number of impacts preceding an alarm is 4..

**Jumper2** controls the sensitivity of the counting channel. The sensitivity will be reduced 2 times when removing the jumper.

**Jumper 3** controls the alarm relay and has two modes of operation

A. **AUTO** mode which reset automatically the relay after two seconds. The jumper is inserted
B. **LATCH** mode, the relay remains in alarm state until reset by power down or remotely on D/N input terminal 4. The jumper is removed.

**Jumper 4** controls the LED modes.

A. **Monitor** mode in which the LED lit at alarm and when triggered by vibration signals. Very short blinks when integration channel is triggered, short blinks when counting channel is triggered and 2 sec. long blink when alarm relay is triggered.
B. **AIS** mode in which the LED indication is controlled by the D/N input on terminal 4. The jumper is removed.

On delivery, all 4 jumpers are inserted. As a result, the detector function as follows.

1. Integrates the vibration signals
2. Reacts to 4 impacts.
3. Explosion channel overrules the counter in case of explosion
4. Relay is reset automatically after two seconds in the event of alarm.
5. LED indication is in **Monitor** mode i.e. lit up for each event as above described

Fig. 3 Programming board

| S1 | Sensitivity | S3 | LED mode |
|---|---|---|---|
| ▬ | Normal | ▬ | Monitor |
| . . | Reduced | . . | D/N |
| **S2** | **Relay** | **S4** | **Counting** |
| ▬ | AUTO | ▬ | ON |
| . . | LATCH | . . | OFF |

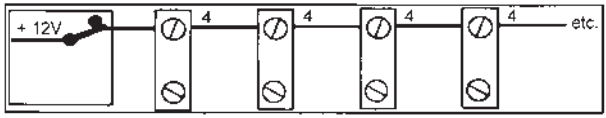
**Fig. 4. Voltage levels when using the AIS and D/N impulse**

**Notice:** When there are no connections on terminal 3 and 4 they are Low.

| Functions and indications | Terminal 3 AIS | Terminal 4 D/N |
|---|---|---|
| **DAY**:<br>No indication only<br>When Alarm from night<br>In memory | Low (0 Volt) | Low (0 Volt) |
| **Day + TEST**<br>Indications<br>Very short = integration<br>Short = count<br>Long = Alarm<br>Alarm is placed in memory | High (+12V) | Low (0 Volt) |
| **Reset of relay and memory** | Low (0 Volt) | 0V →12V |
| **NIGHT**<br>Memorise Alarm<br>No indication | Low (0 Volt) | High (+12V) |

**Remote control**

**Fig. 5 D/N in NIGHT position**

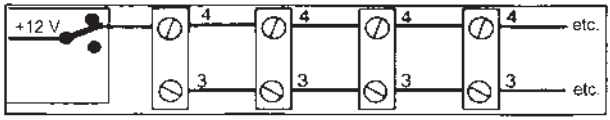



DAY/NIGHT control of alarm indication. One extra wire needed.
This hook up supports two functions. (See fig.5)

1. DAY/NIGHT control of the LED. Day = 0 Volts
   Night = 12 Volts. The LED lit if in Alarm when changeover from NIGHT to DAY occurs. No other indication is obtained in the event of an alarm during the DAY of NIGHT.
2. Remote reset in connection with changeover from DAY to NIGHT.

**IMPORTANT:** Jumper 4 must be removed.

**Fig. 6 D/N in NIGHT position and First to Alarm wired.**

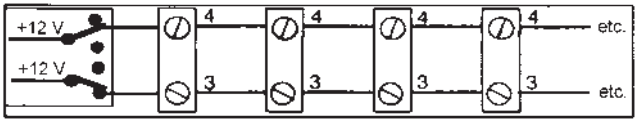



Part operation: one extra wire from contro panel and detectors interconnected. (See fig. 6)
This hook up supports three functions:

1. Alarm memory for the first detector to alarm and subsequent alarms.
2. DAY/NIGHT control of alarm indication
3. Remote control for resetting

**IMPORTANT:** Jumper 4 must be removed.

**Fig. 7 in NIGHT position and connected for First to Alarm indication.**




Complete operation: two extra wires needed. (See fig. 7)
This hook up supports four functions:

1. Alarm memory for the first detector to alarm and subsequent alarms.
2. Control MONITOR function.
3. DAY/NIGHT control of alarm indication.
4. Remote control for resetting.

**IMPORTANT:** Jumper 4 must be removed.

## Adjustment and setting up.

Adjusting and setting up the detector is a simple procedure. Just connect jumper 4. The light-emitting diode (LED) will indicate when the detector is in the alarm mode, and it is automatically reset after about two seconds. If the detector is programmed for multiple impacts, a short light signal is issued for each impact and a long signal for the alarm.

1. Put the detector in the MONITOR mode with jumper 4.
2. The sensitivity potentiometer must be at the max. position. (Turn clockwise)

3. Tap lightly close to the detector while checking to see that the LED provides an indication and that the alarm relay is functioning properly.
4. Turn the potentiometer to the min. position.
5. Activate the testing tool GVT5000 at some of the outermost points in the area being guarded and gradually increase the sensitivity until the LED glows.
6. After final adjustments of the detector, make the connections permanent. Check that both the alarm and the sabotage alarm are tripped at the control unit.

## Technical data

| | |
|---|---|
| Supply voltage (nom. 12 V) | 8 –15 V DC |
| Max ripple | 2 Vpp at 12 V |
| Current drain (quiescent) | 9 mA |
| Current drain (Alarm) | 11 mA |
| Alarm output<br>Max load<br>Reset time<br>Low voltage protection | Relay, NC, 33 ohm in series<br>25V/100 mA<br>2 s<br>7 V |
| Alarm indication | LED |
| Opening and Pry off protection | Micro-switch, NC, 25V/100 mA |
| Control voltage<br>For TEST<br>For D/N | <br>LOW <3V/HIGH > 6V<br>LOW <3V/HIGH > 6V |
| Sensitivity setting | Potentiometer |
| Ambient temperature | - 20°C to + 50°C |
| Relative humidity | Max. 90% |
| RFI o,1 MHz – 1 GHz | <10V/m |
| Dimensions | 91x 31 x 23 mm |
| Weight | 40 gr |