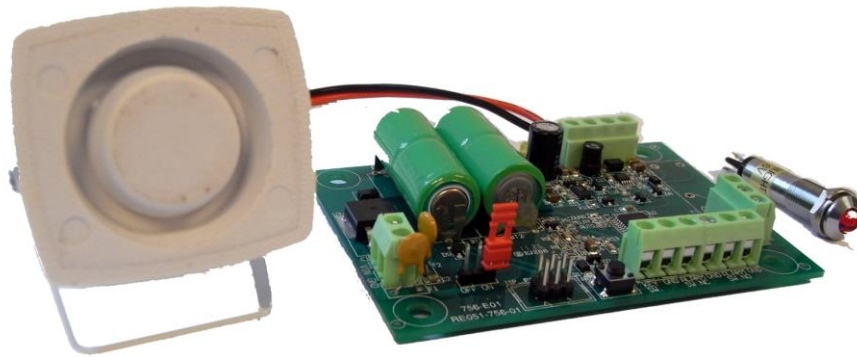# Protec Alarm System

Model: 189-1000
Product Manual
Version 0.5 / Sept 2011

SUZO HAPP®

GAMING, AMUSEMENT AND INDUSTRIAL COMPONENTS

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1. <u>Connections and Jumpers</u>

J2

Fig. 1: PCB Layout

J1

J4
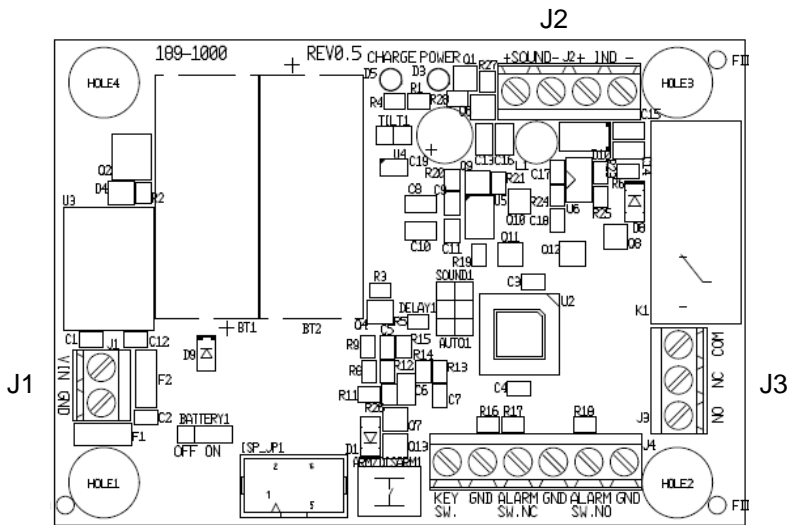
Led's	Color	Description
Charge	Green	On when battery is being charged.
Power	Yellow	On when power supply is higher than 8V.

Table 1: Led's description

J3

Note: Led's will only lit up if power is present. When only the battery is used, the lads are always off in order to conserve battery energy.
The alarm unit runs about 1 week on a fully charged battery.

Component article numbers:
Alarm System Unit: 189-1000
Siren: 189-0201
Led Indicator: 189-0202
Battery (2 needed): 189-0203
Optional Relay: 189-0204

Connector	Pin	Description
J1	VIN	Power supply input 12 - 24Vdc
	GND	Power supply 0V
J2	SOUND +	Connect to the + wire of the siren
	SOUND -	Connect to the - wire of the siren
	IND +	Connect to the + wire of the led indicator
	IND -	Connect to the - wire of the led indicator
J3	COM	Relay alarm output, common pin
	NC	Relay alarm output, normally closed pin (open when alarm is active)
	NO	Relay alarm output, normally open pin (closed when alarm is active)
J4	KEY SW.	Alarm on/off switch. If closed, then the alarm is disabled. If open, the alarm is enabled.
	GND	Alarm switch ground.
	ALARM SW. NC.	Alarm trigger input normally closed. Connect to the door switch (when door is closed, the switch must be shorted).
	GND	Alarm trigger input ground.
	ALARM SW. NO	Alarm trigger input normally open. Connect to the tilt switch (when tilt is active, the switch is shorted).
	GND	Alarm trigger input ground.

Table 2: Connector pin description

Jumper	Description
BATTERY1	If placed on pins 1-2, the battery is disabled. If placed on pins 2-3, the battery (and alarm unit) is enabled.
TILT1	If shorted, the on board accelerometer is enabled and used as a movement (tilt) detector.
SOUND1	If shorted, the siren will beep shortly twice per second as a warning that the door was closed while the alarm unit was not (automatically) armed yet.
DELAY1	If shorted, the door entry interval time will change from the normal value of 8 sec into 3 sec.
AUTO1	If shorted, the alarm unit will arm automatically after 10 sec as soon as the door is closed.

Table 3: Jumper settings

The alarm unit has a small push button (ARM/DISAMR1) that allows users to enable and disable the alarm without using an external key switch. The on board accelerometer can be used as a tilt switch without using an external tilt switch if jumper TILT1 is shorted.

2.   Configurations

The alarm unit is equipped with an accelerometer, allowing movement detection without using an external tilt switch (TILT1 jumper must be shorted).
If no power is applied, the alarm unit will run on the on board battery. The battery can be disabled with the BATTERY1 jumper.
When an alarm is active, the attached siren will be powered with 9Vdc, giving a loud signal. The optional relay on the board can be used to attach other alarming devices. The alarm sound is turned off automatically after approximately 2 min, and the armed state is entered again.
During arming, when the key switch is opened, the attached led indicator flash approx. twice per second. When the armed state is entered, the led indicator remains on, indicating that the unit is armed. When the alarm system is armed without external power supply, the indicator led will remain flashing approx. twice per second to save energy. When the alarm unit is disarmed, by closing the key switch, the attached led indicator will be switched off, and the door and tilt switches and accelerometer are disabled.
Note that after the unit goes into the armed state (led indicator on), the tilt and movement sensor are monitored 2 min later, to allow some repositioning of the machine. After this 2 min delay, the siren will beep twice shortly to indicate that the tilt inputs are active now.
The unit can be installed in different ways, depending on the application.
Two applications will be explained below.

2.1. Minimal installation

The minimal installation uses no door switch, no tilt switch and no key switch.
The door switch input is shorted to GND via a link at the connector.
The tilt and key switch input are left open.
Jumper AUTO1 must be shorted to enable automatic arming.
As soon as the unit is powered, either by placing the battery jumper or using a power supply, the alarm unit will go into alarm state 10 sec later. The tilt and movement sensor are monitored 2 min later, to allow some repositioning of the machine.
If the alarm unit is moved, the on board tilt detector will generate an alarm.
The alarm is reset by pressing the key switch button on the board momentarily. As soon as the switch button is released, the unit will go into alarm again 10 sec later. When the unit goes into alarm state, the current position of the movement detector is stored. Any new movements will generate an alarm again.
Typical applications using minimal installation include movement detection like opening doors, windows, etc. The alarm unit is mounted on the door itself.

2.2. <u>Normal installation</u>

If no automatic arming is used (AUTO1 jumper open), the key switch is used to arm (switch open) or disarm (switch closed) the alarm unit.
A door switch is used to detect door opening and closing. A tilt switch may be connected to detect movements. As soon as the key switch is opened, the arming timer starts and 10 sec later the unit is armed. If the door is still open, an alarm will sound. Close the key switch to disarm the unit, and silence the siren. The tilt and movement sensor are monitored 2 min later, to allow some repositioning of the machine.
Some applications have no alarm key switch or have their alarm key switch located behind the door. In these cases, open the door, arm the unit by opening the key switch or pressing the small push button. If no automatic arming is used, close the door within 10 sec, and the alarm unit is armed 10 sec after the door was closed. If automatic arming is used (jumper AUTO1 shorted), the unit will start arming when the door becomes closed. If the door is opened, the alarm will not go off immediately, but after a door entry delay of 8 sec (3 if the DELAY1 jumper is shorted). During this delay, the user may disarm the unit by closing the key, preventing a door alarm occurring.
If the door is closed without closing the key switch, the alarm unit is not armed. To warn the user in this situation, jumper SOUND1 may be shorted. Then the sounder will beep twice per second in this situation.
Applications include slot machine security, changing machines, etc.

2.3. <u>Automatic arming</u>

If the AUTO1 jumper is shorted, the alarm unit will go into arming state as soon as the door is closed. This installation is used, when no external key switch for arming and disarming is desired.
Once the door is closed and the unit is armed, then if the door is opened, the alarm unit may be disarmed within the door open entry time, by pressing the ARM/DISARM1 pushbutton on the PCB.
During the 10 sec arming time, the indicator led flashes.

Revision History

Revision	Date	Comment	By
0.2	march 2011	Initial release	R.T.
0.3	sept 2011	Added some component article numbers	R.T.
0.5	Sept 2011	Corrections and picture frontpage	E.S.

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