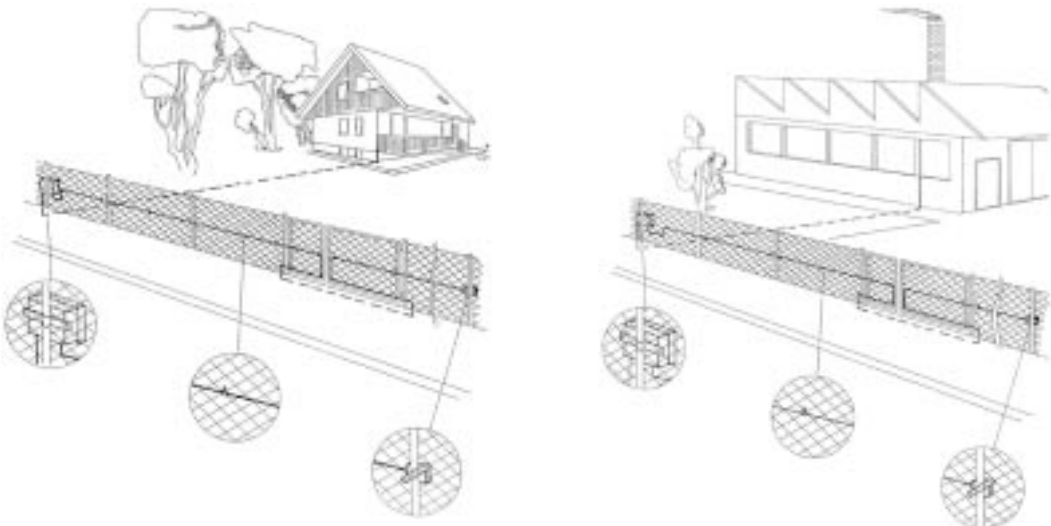
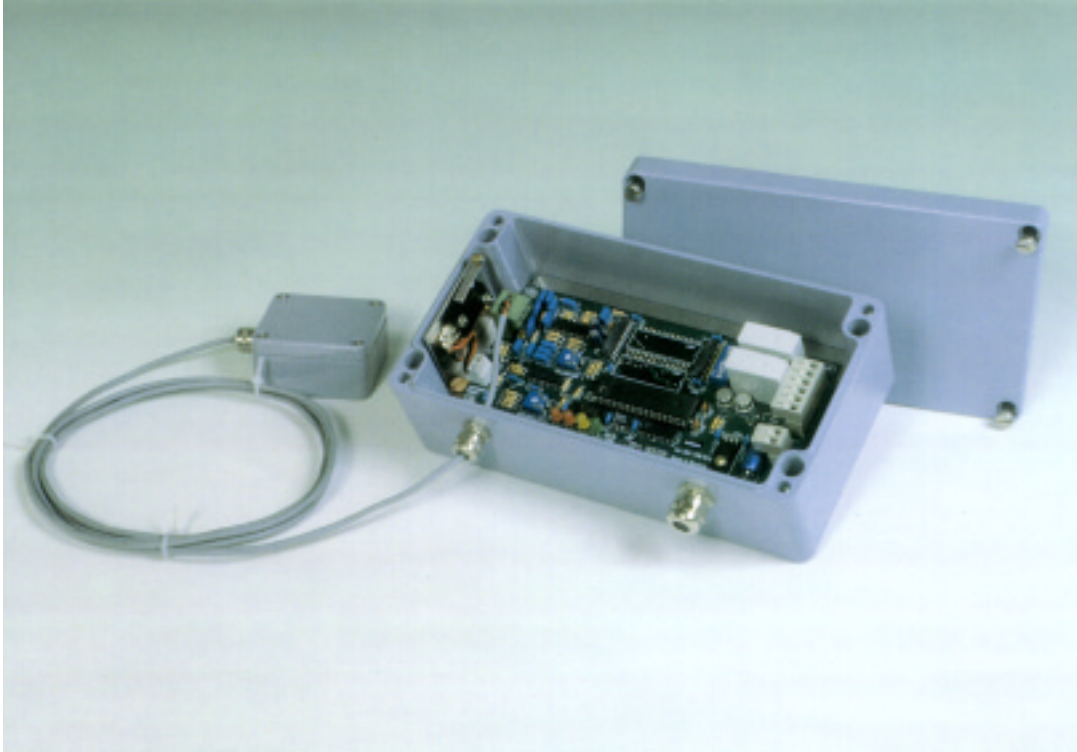


DETECTOR AN-300



USERS GUIDE

Anikom

Anikom

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1. PURPOSE

It is used for protection of a wired fence in length of 300 m.

A sensor cable, specially sensible for mechanical vibrations, should be fastened on a fence. The cable ends by an end module on one side. The other cable end is connected to electronic system (main unit), perceiving the activities taking place on a wire.

The AN-300 main unit has no its own supply unit and therefore must be connected to an integral system (alarm panel) with additional battery supply.

The principle of getting information out of the sensor cable is patented.

1.1 EXIT UNIT FOR THE ALARM

The AN-300 main unit has got two relay outputs for two different types of alarms: an anti - tamper and a burglary alarm. Both relay outputs are made in a normal close system (NC). In normal situation (no alarm condition), they are operating. The anti - tamper alarm goes on in different conditions: cutting the sensor cable, short circuit on the sensor cable, switching - off the sensor cable and opening up the top of the main unit casing. The burglary alarm goes on in case of non-allowable activities on the wire fence (climbing over the fence, bumping into the fence, cutting the sensor wire...). It does not go on in case of the wind blowing (except if the fence is broken and it bumps into something because of the wind blowing), hard raining or snowing. It also does not go on if the birds are sitting on the fence.

Both alarms go on in case of disconnection of the power supply.

1.2 FALSE ALARMS

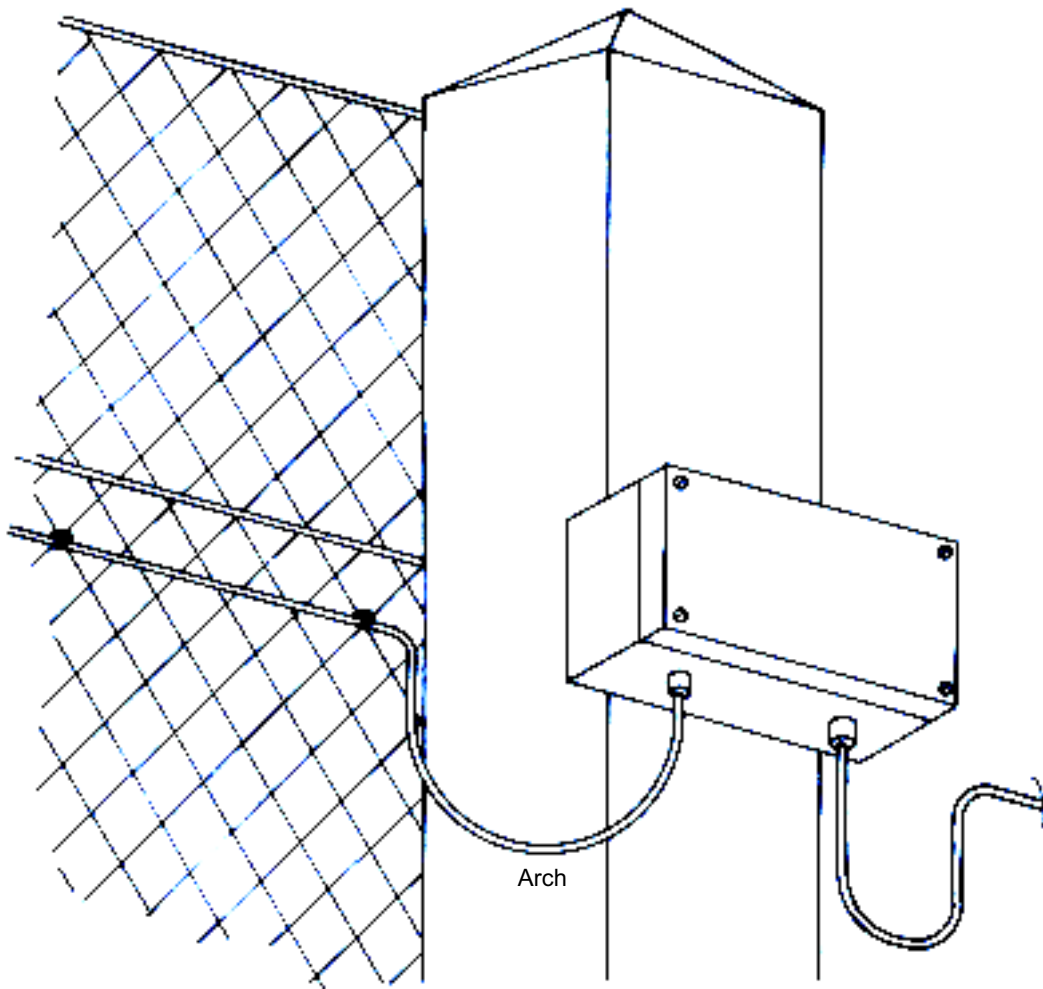
False alarms do not appear due to weather conditions or other electromagnetic causes (high tension wires, power transforming stations), because of the new technology built-in it. Differentiation of an operating system eliminates the electromagnetic disturbances on the spot. Other possible disturbances are eliminated by the DSP processor and its digital filters.

2.0 INSTALLATION

Cable AS257 which works as a sensor is installed on a wired fence about 1m above ground level. Cable is fastened onto a fence in length of 40 - 60 cm by plastic clips. On one side the cable ends by an end module while on the other end it is connected to the main unit. Main unit has got two relays on exit, one for the burglary alarm and the other for the anti - tamper. Main unit must be connected onto an integral system (an alarm panel with additional battery supply and alarm condition information). Maximum security is provided only when these instructions are followed.

2.1 INSTALLATION OF THE MAIN UNIT

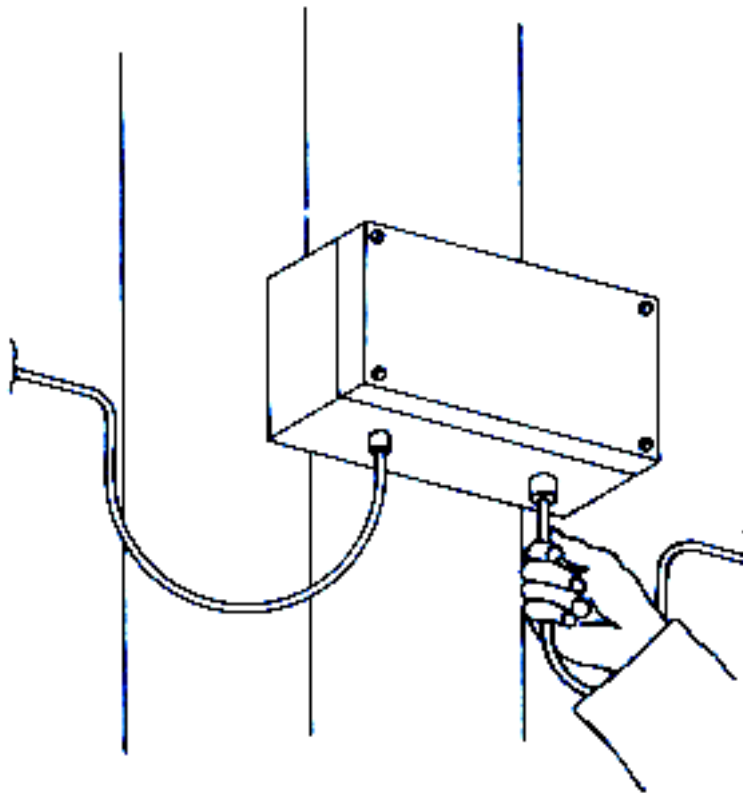
Main unit should be fixed by four screws M5 onto the fence pillar. The main unit should be fixed onto the fence in a way that its casing does not contact the metal parts of the fence. The recommended installation is with cable gland facing to the ground (see picture 1).



Picture 1: The Main Unit.

This protects the casing from invasion of water. Attention should also be given to the arch of a cable leading into main unit (see picture 1). Arch must have at least 5 cm radius which protects the lower part of the arch from water and ice.

The introduction cables must be properly thick (radius 5 mm for a sensor cable and 8 mm for supplying and signal cable). When cable gland is installed properly, the rubber must embrace and hold the cable. Cable should be fixed strong even when we try to pull it out of the casing (see picture 2).

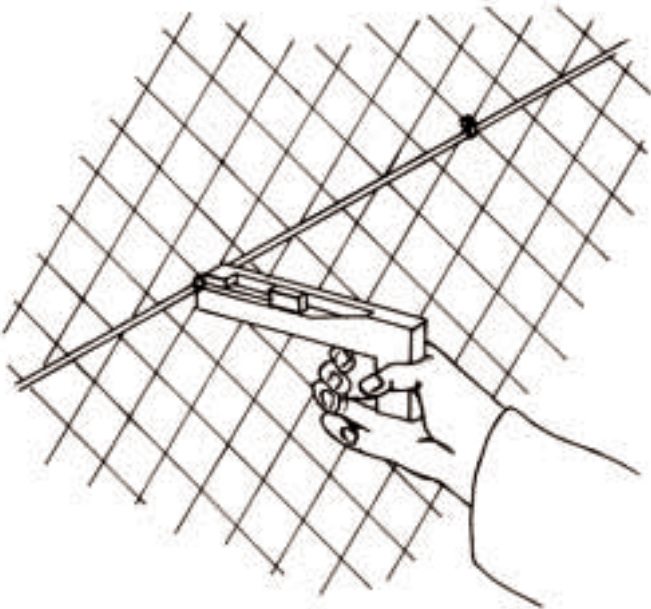


Picture 2: Check the cable strength.

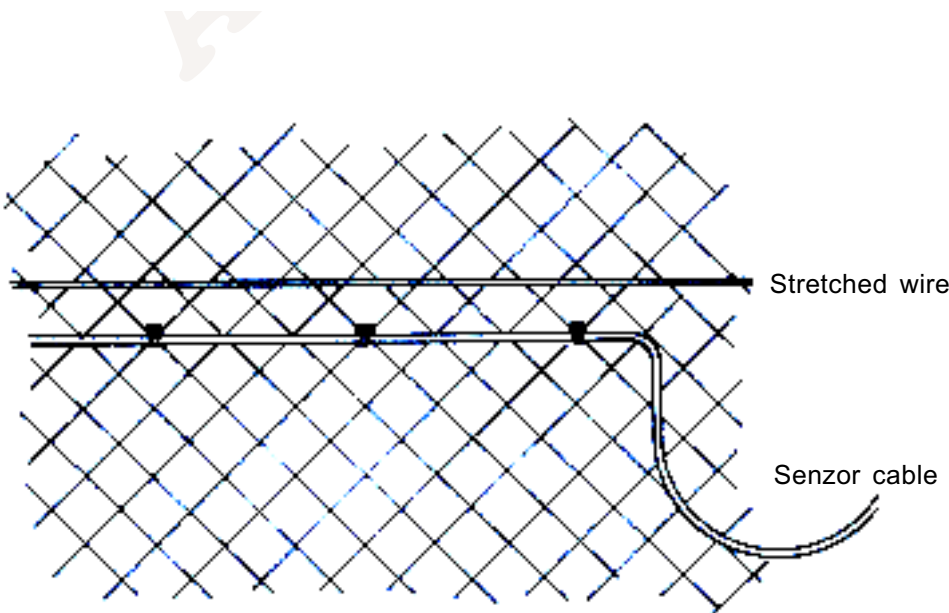
2.2 INSTALLATION OF THE CABLE

Cable is fixed onto a wired fence by plastic clips (PLT 2 IM 100). Plastic clips are UV rays resistant and made for an outdoor installation. By using these clips we avoid changing the clips due to moldering. For fixing the clips special tool can be used (see picture 3).

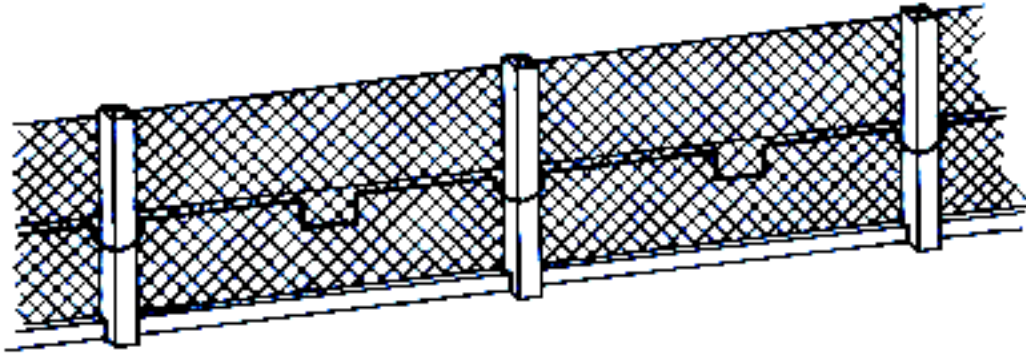
Cable should be fixed every 40 - 60 cm. It must be fixed on the fence and not on the stretched wire that is usually installed at the middle of the fence (see picture 4). An arch should be made every 5 - 10 meters in order to achieve better sensitivity (see picture 5). A smaller arch should also be made at the pillars (radius 10 cm). This arch is made because in case of an error a sensor cable should sometimes be bound up. It also disables wire damages due to extensions of the materials caused by high or low temperatures.



Picture 3: Special tool for fixing clips.



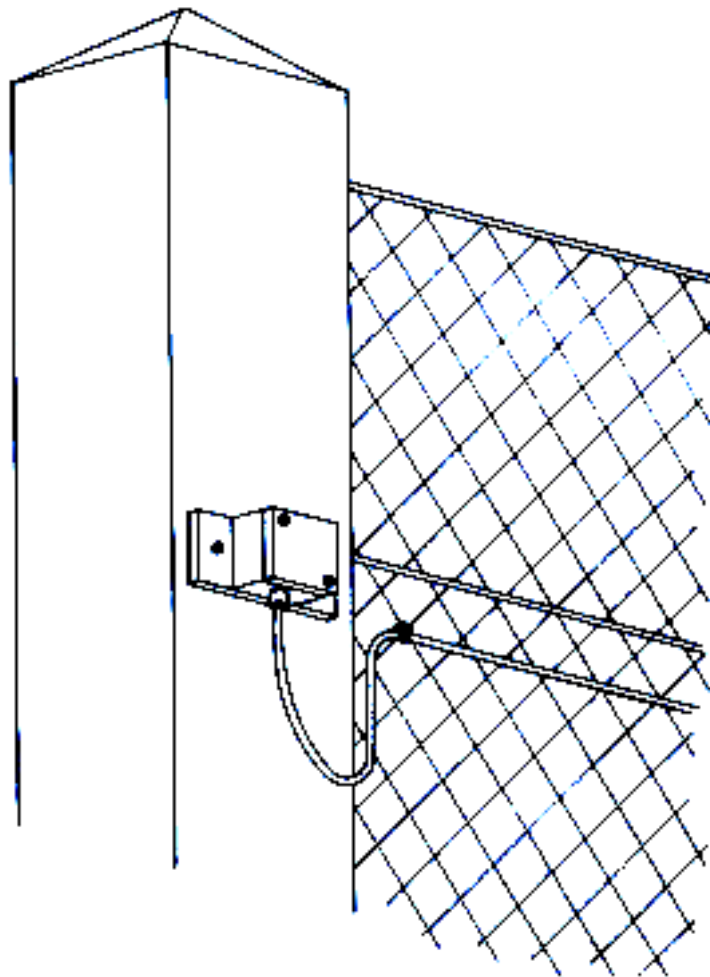
Picture 4: Fixing cable with plastic clips.



Picture 5: The wire fence.

2.3 INSTALLATION OF THE END MODULE

The end module should be fixed onto the fence in a way that its casing does not contact the metal parts of the fence. It should be fixed by two screws M4 so that introductory is facing the ground. Sensor cable must make an arch before entering the end module in order to provide the water flowing off (see picture 6).



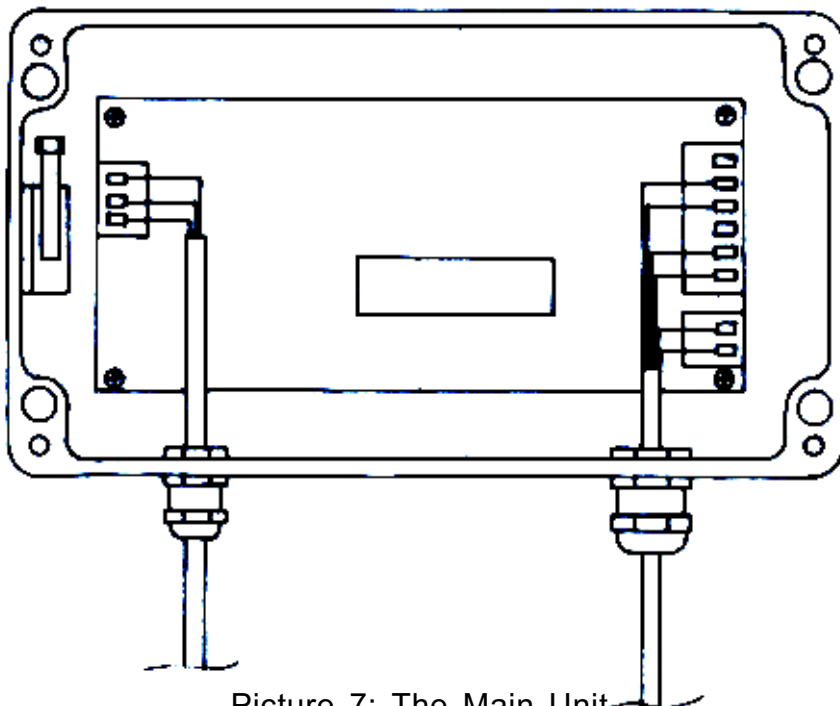
Picture 6: The End Module.

2.4 INSTALLATION OF THE SENSOR CABLE

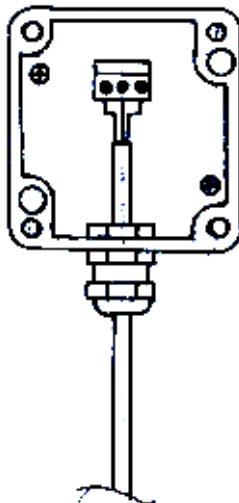
Sensor cable has got a shield and four wires (black, red, yellow and white). Sensor cable is connected at the main unit by a terminal connector FENCE so that black and red are connected to position 1, yellow and white together to position 2 and a shield to position GND.

Cable should be ripped as close as possible to the terminal connector (see picture 7).

On the end module the cable should be connected to a terminal connector: black and red together to position 1, yellow and white together to position 2, a shield to position G. Cable should be ripped as close as possible to the terminal connector (see picture 8).

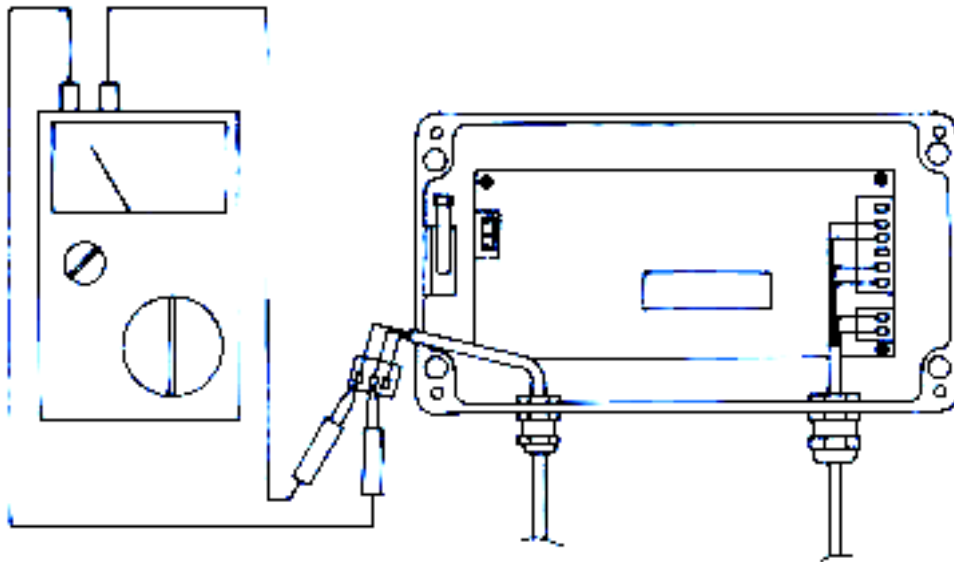


Picture 7: The Main Unit.



Picture 8: The End Module.

Before connecting the supply it is necessary to check the cable impedance. The end module must be connected. The FENCE connector on the side of the main unit must be switched off. Between the connector points on the sensor cable resistance of approximately 640 k Ω must be measured by Ohmmeter (Universal tool, see picture 9). Maximum tolerance should not be more than 50 k Ω in any of the three measuring. In case of a higher impedance value we must make sure that end module has been connected properly and check if the sensor cable is damaged.



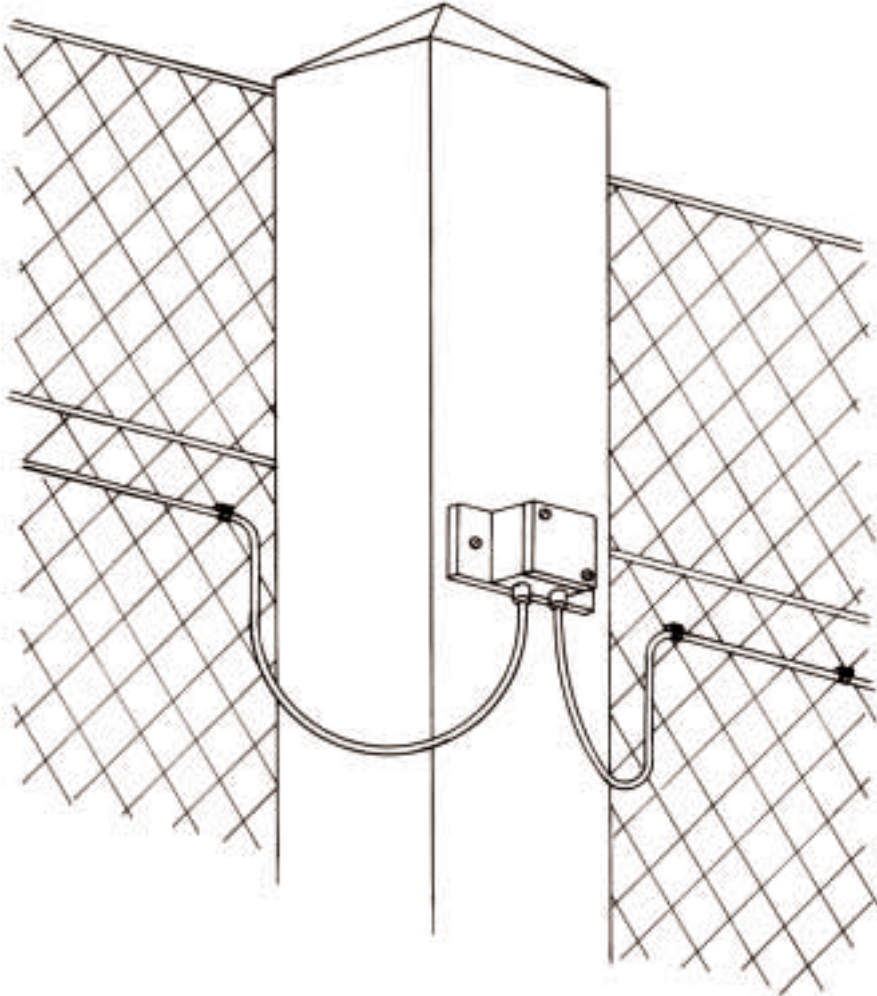
Picture 9: Measuring the sensor cable with Ohmmeter.

2.5 INSTALLATION OF THE SUPPLY AND THE ALARM OUTPUTS

Supplying and the output signal should be connected to the main unit by a shield alarm cable with six or more wires (2 x 0,4 + 4 x 0,22). Supply is 12 V DC. Positive potential (+ 12 V) is connected to the terminal connector "+ 12V" by a red wire, negative potential (GND) is connected to a GND terminal connector by a black wire. The burglary alarm output is on the terminal connector ALARM on the position 1 and 2 (NC). The anti - tamper alarm output is on the terminal connector ANTI - TAMPER on the positions 4 and 5 (NC) (see picture 11).

2.6 HOW TO REPAIR A CUT OFF CABLE

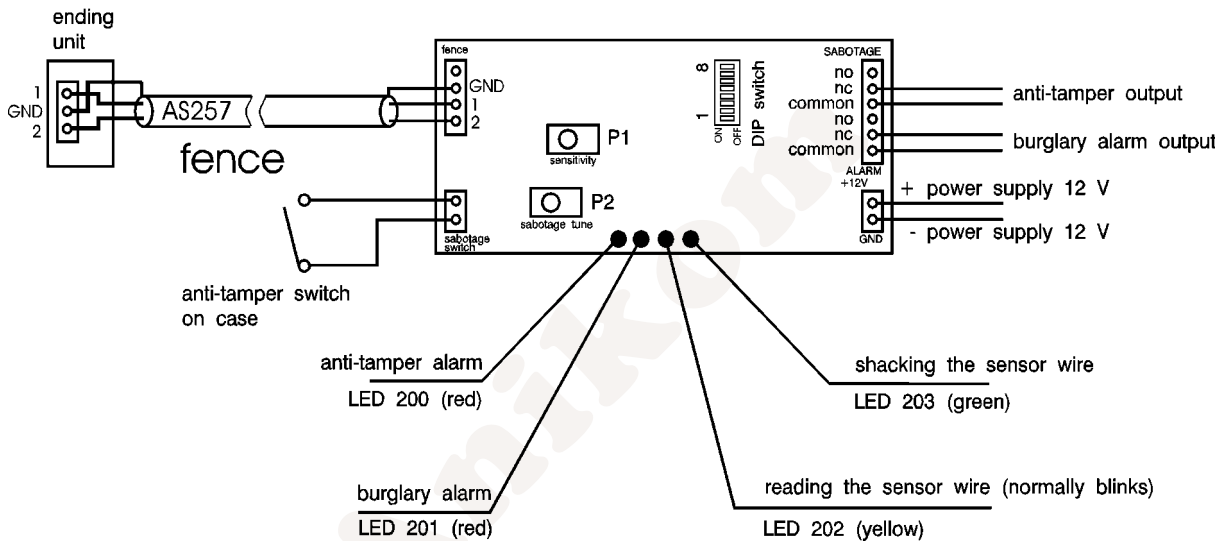
It has to be connected with a connecting module AC-300. Installing of the connecting module is shown in picture No. 10. Generally the installation is the same as installation of the end module (see 2.3). AC-300 connecting module has two cable glands and two connectors with three positions marked as 1, 2 and G. Cable must be connected to a terminal connector so that black and red go together on position 1, while yellow and white go together on a position 2, shield on position G. Cable should be ripped as close as possible to the terminal connector. This should be so for the both cables.



Picture 10: The Connecting Module AC-300.

3.0 OPERATION BALANCE AND CONTROL

Main unit should be balanced by two trimer potentiometers and a DIP switch. Number 1 means that the switch is in ON position, while 0 means that it is in a OFF position. All operation controls are seen in 4 LED on the PCB.



Picture 11: Connections The Main Unit.

3.1 FUNCTIONS OF THE LED DIODES LED

On the PCB have got additional functions:

LED200 (red) - the anti - tamper of the cable or electronics

LED201 (red) - alarm

LED202 (yellow) - detecting of the wire, normally it must be blinking

LED203 (green) - it blinks, when impulse appears on a wire.

3.2 SETTING THE P2 POTENTIOMETER FOR A ANTI - TAMPER

- P1 potentiometer (sensitivity) should be turned extremely left
- P2 potentiometer (anti - tamper of the cable) should be turned extremely left
- the wire that is fixed on a fence should be connected (on the other end there has to be an end module, see picture 1).
- a anti - tamper switch entry should be shortly connected
- power supply has to be connected (a yellow LED202 switches on, immediately followed by a red LED200)
- P2 potentiometer must be turned right until the yellow LED202 starts blinking (red LED200 switches off). At this point we turn P2 potentiometer for additional 5 - 10 degrees to the right. Now the anti - tamper cable is set. If we disconnect the wire now, a yellow LED200 and a red LED202 will flash. If we cause a short circuit, the yellow LED200 must switch off, while the red LED200 is still flashing.

3.3 SENSITIVITY SETTING

- A number of middle strong beats should be set on a DIP switch. Their aim is to turn the alarm on (see table 1).

SWITCH 5	6	7	8	AVERAGE BEATS NUMBER
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	0	0	0	8
1	0	0	1	9
1	0	1	0	10
1	0	1	1	11
1	1	0	0	12
1	1	0	1	13
1	1	1	0	14
1	1	1	1	15

Table 1: Setting average beats number.

The average number of middle strong beats should be set on switches 5, 6, 7 and 8. The beats are necessary to turn the alarm on. (Combinations are made in binary system, 5 is MSB, 8 is LSB, MSB=most significant bit, LSB=less significant bit). Combinations and the number of beats are given in the table. We set the desired sensitivity by the P1 potentiometer.

3.4 THE TIME WINDOW SETTING FOR THE SAMPLING

It is set by switch 4. Position ON is set to 10 seconds, position OFF is set to 5 seconds.

3.5 SETTING THE DURATION OF THE BURGLARY ALARM RELAY OUTPUT

Switches 1, 2 and 3 are used to set the duration of the relay activity when the burglary alarm is activated (see table No. 2).

SWITCH 1	2	3	TIME OF ALARM RELAY OUTPUT
0	0	0	0,6 sec
0	0	1	1,7 sec
0	1	0	2,5 sec
0	1	1	5 sec
1	0	0	10 sec
1	0	1	20 sec
1	1	0	40 sec
1	1	1	80 sec

Table 2: Setting the time of burglary alarm relay output.

3.6 RECOMMENDED SETTING OF DIP SWITCHES WHEN SWITCHED FOR THE FIRST TIME

We recommend that when you switch the alarm system for the first time, the DIP switch setting should be 00100001.

4.0 TECHNICAL SYSTEM CHARACTERISTICS

- main unit in a waterproof aluminium casing IP 65 (220 x 120 x 80 mm)
- main unit weight: 1720 g
- end module in a waterproof aluminium casing IP 65 (55 x 55 x 35 mm)
- end module weight: 210 g
- sensor wire: outside radius: 5 mm
- electronics with DSP microprocessor
- temperature limitations: from minus 30 degrees to plus 70 degrees
- dynamic of the system > 70 dB
- power supply 12 V DC
- power consumption at 12 V is cca. 120 mA
- Outputs are made with two relays, one for the alarm condition and the other for the anti - tamper.

5.0 PARTS AND ADDITIONAL PARTS OF THE AN-300 DETECTOR

Parts of the AN-300 detector are:

- main unit in a waterproof aluminium casing (IP 65) 220 mm x 120 mm x 80 mm
- sensor cable up to 300 m length
- plastic clips for fixing the sensor cable
- ending module in a waterproof aluminium casing (IP65) 55 mm x 55 mm x 35 mm.
- in addition to these parts there is also a connecting module AC-300, used for connection of the cut off sensor cable (AC-300 is additional part).
- PS300 unit can be mounted inside AN300 if the problem with power supply exists. This is situation when long power supply cables is used and the drop of power supply voltage is too high. In this case power supply voltage can be between 15 and 28 V DC or AC. (PS300 unit is additional part).

6.0 ERRORS

ERRORS	POSSIBLE CAUSE	HOW TO FIX IT
1.) Yellow LED 202 is not blinking.	P2 potentiometer is not set.	Set P2 potentiometer (see 3.2).
	Sensor cable is not connected.	Connect the cable to the main unit. Connect the ending module.
	Sensor cable is cut off or in short circuit.	Fix the error on the cable. Check resistance on the main unit part - input of the sensor cable (see 2.4).
2.) Red LED 200 is flashing all the time (the anti-tamper alarm is on).	If the yellow LED202 does not blink, see error No.1.	
	The anti-tamper switch is opened.	Close the main unit casing in a way that the anti-tamper switch inside is closed.
3.) Green LED 203 is blinking, the burglary alarm turns on all the time, although there are no activities on the fence.	The ending module is not galvanically detached from the metal fence.	Fix the ending module galvanically detached from the metal fence (see 2.3).
	Isolation and shield in sensor cable are damaged.	Connect the cable by AC-300 module. If a long part of the cable is damaged, use two AC-300 modules and add a new piece of a sensor cable in between.
	Water in an ending module.	Open the ending module and dry it in warm air.
	Water in main unit.	Open the main unit and dry it in warm air.
	Sensor cable, connected to the main unit is more than 300 m long.	Shorten the sensor cable to 300 m and repeat the measuring.

ERRORS	POSSIBLE CAUSE	HOW TO FIX IT
4.) The alarms turn on all the time, although there are no activities on the fence.	See error No. 3.	
	Error on the main unit.	Service repair is needed.
5.) None of the LED diodes is flashing, there is no activity.	There is no supply.	Switch on the supply (see 2.5).
	Polarization of the supply is changed.	Check the polarization of the supply and change it if necessary (see 2.5).
	Error on the main unit.	Service is needed.
6.) Everything works correctly, but relay outputs are not operating.	Signal wires are connected on a wrong terminal position.	Check the connection of the signal wires (see 2.5).
	Relays are out of order.	Relays have to be changed. Service needed.

7.0 QUICK TEST PROCEDURE FOR STARTING AN300

1. For mechanical assembling please see chapter 2 INSTALLATION of manual.
2. Disconnect power supply and sensor cable (relays output may be connected).
3. Set **DIP switch** to 00100001 (1:OFF,2:OFF,3:ON,4:OFF,5:OFF,6:OFF,7:OFF,8:ON).
4. Set potentiometer **SENSITIVITY TUNE** to middle position.
5. Set potentiometer **SABOTAGE TUNE** to right end position.
6. Connect power supply (without connecting sensor cable). If everything is normal, **D200** (red) and **D202** (yellow) are lighting.
7. (This step make without connecting sensor cable.) Turn **SABOTAGE TUNE** slightly to left to have yellow led blinking. Then turn **SABOTAGE TUNE** more to left for small step to have yellow led constantly lighting.
8. Connect sensor cable. In this step Yellow led must blinking (!). If no, disconnect sensor cable and repeat step number 7. (If sensor cable is normally connected then yellow led must blinking, if sensor cable is not connected then yellow led must constantly light.)
9. Test if tamper (sabotage) works fine: If tamper switch is pressed, then **D200** is not lighting, if tamper switch is release then **D200** is lighting.
10. Whit **SENSITIVITY TUNE** set the sensitivity of the fence: (turn right is more sense, turn left is less sense). With hand make double middle strong stroke to the fence about 40 cm from sensor wire (above or bellow). Set **SENSITIVITY TUNE** to position to make this event alarm (**D201** is light for short of period and relay release). If alarm is not launch, turn **SENSITIVITY TUNE** slightly to right, if alarm is launch at first stroke then turn **SENSITIVITY TUNE** slightly to left.
If you are not sure about this step please leave **SENSITIVITY TUNE** in middle position (**AN300** will do the final adjustment himself).

8.0 DISTRIBUTION AND SERVICE

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