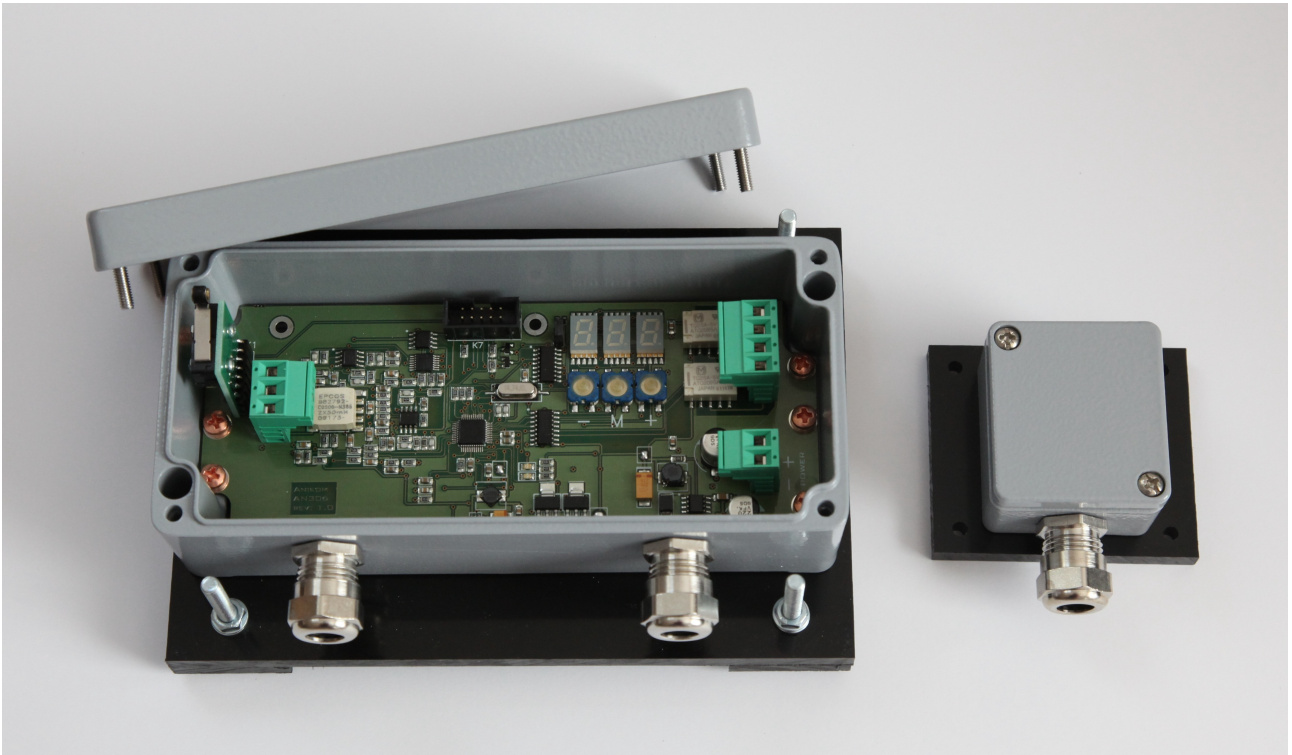


PERIMETER WIRE FENCE VIBRATION DETECTOR

AN306



**USERS GUIDE V1.04
SEPTEMBER 2018**

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AN306

It is used for security of a wired fence in maximum length of one way 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 AN306 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.

DSIGP® TECHNOLOGY

New DSIGP® technology made this product unique. The vibrations of the fence other than normal weather or wind conditions are registered for alarm by new DSIGP® technology. Disturbances caused by external influences, for instance EMF, are successfully eliminated.

TERMINALS FOR RELAYS OUTPUT

The AN306 main unit has got two relay outputs for two different types of alarms: an anti - tamper and a burglary alarm. All relay outputs are made in a normal close system (NC). In normal situation (no alarm condition), they are in connected position. 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.

All relays go to open position in case of disconnection of the power supply.

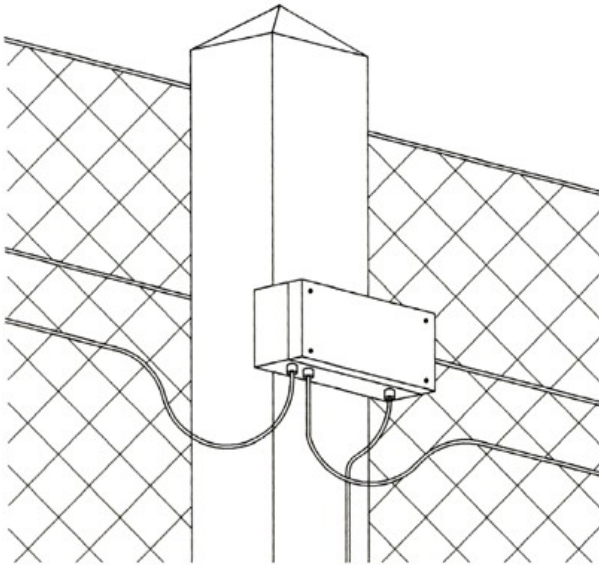
INSTALLATION

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.

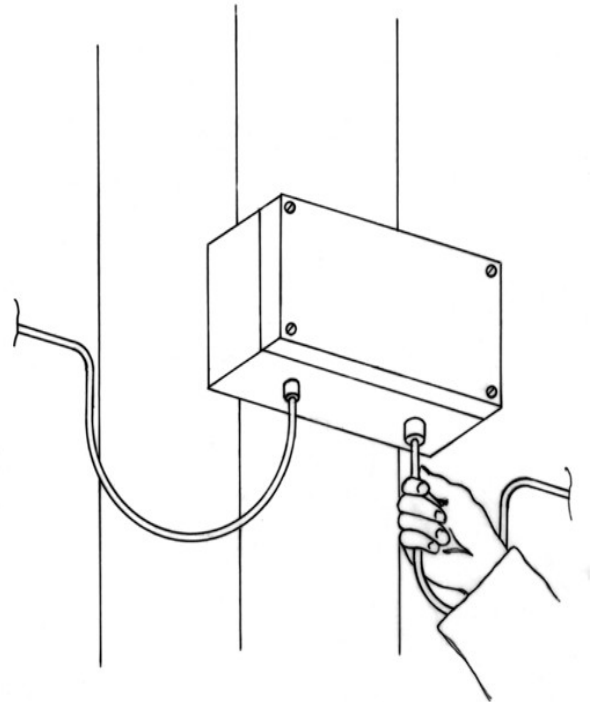
INSTALLATION OF THE MAIN UNIT

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).

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. 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).



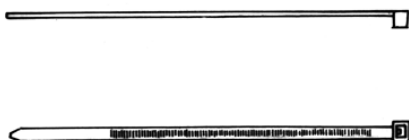
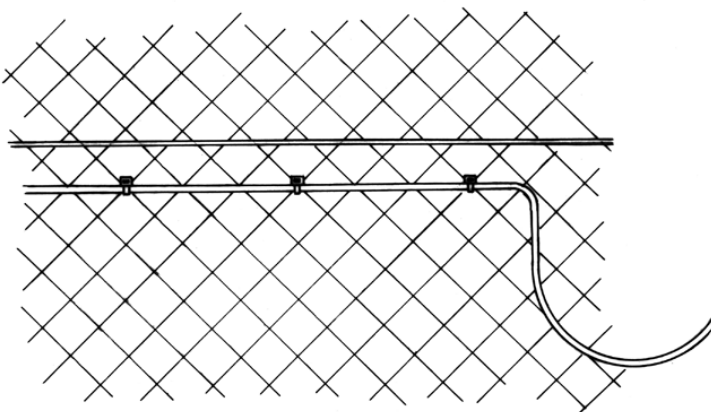
Picture 1: Main Unit



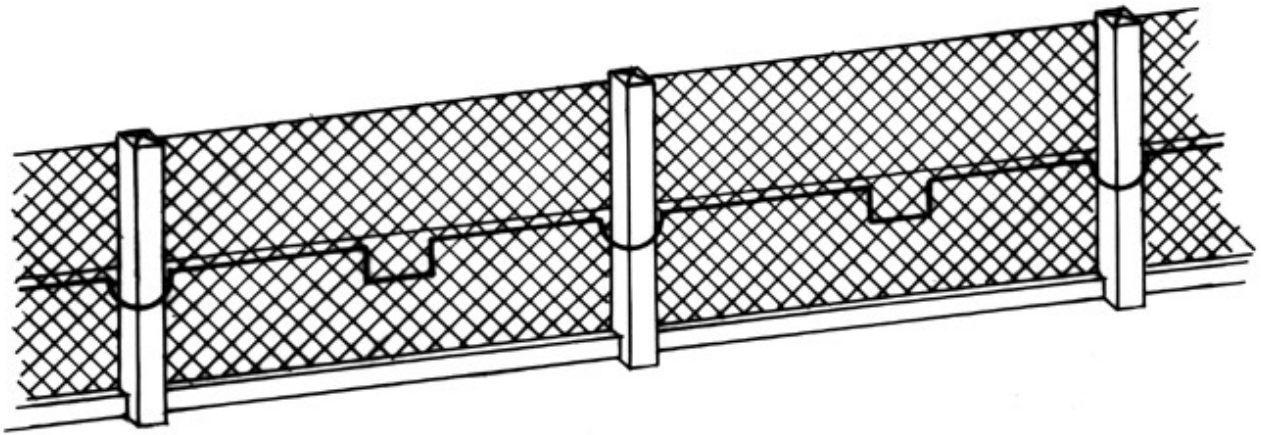
Picture 2: Checking the cable strength

FIXING OF THE SENSOR CABLE TO THE FENCE

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. 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 3). An arch can be made every 5 - 10 meters in order to achieve better sensitivity (see picture 4). 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.



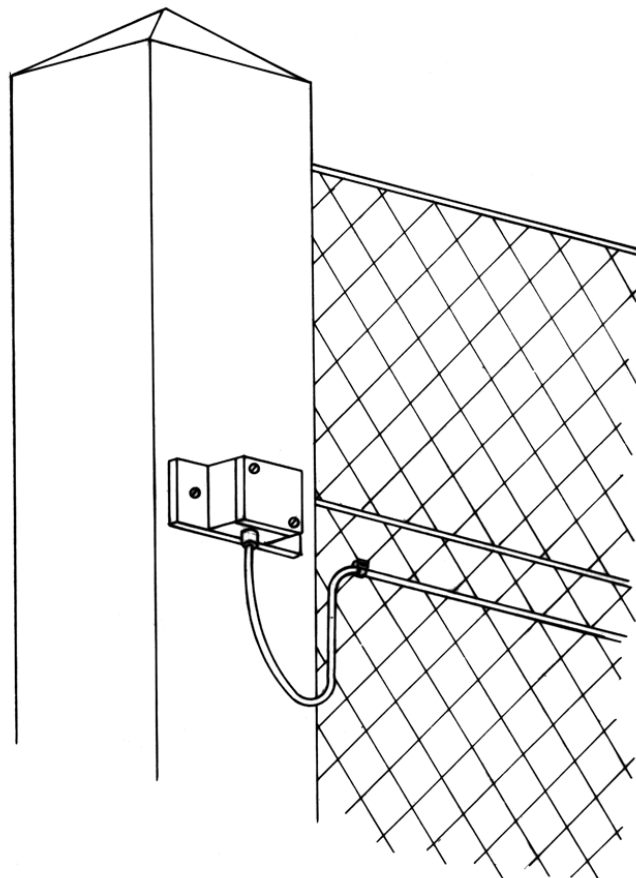
Picture 3: Fixing cable with plastic clips.



Picture 4: The wire fence

INSTALLATION OF THE END MODULE

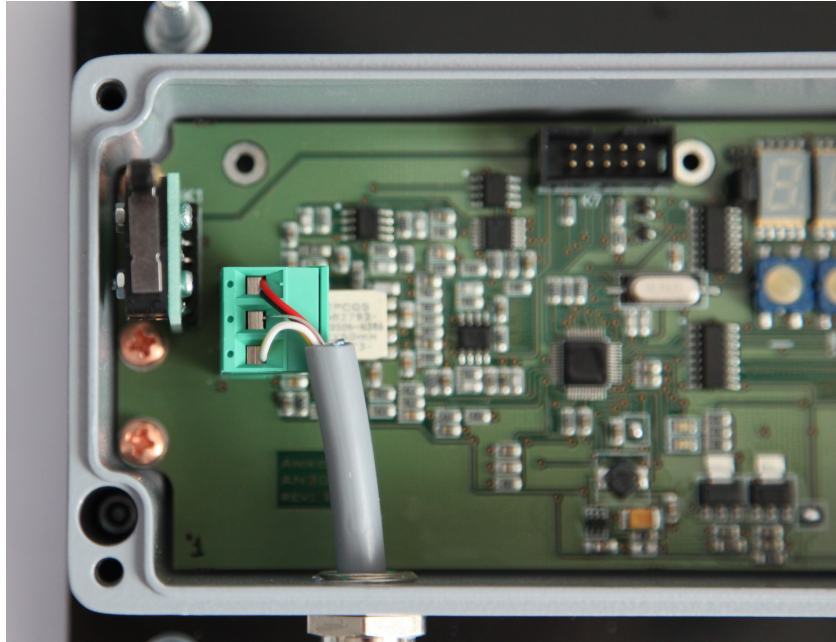
The end module should be fixed onto the fence in a way that its casing does not contact the metal parts of the fence. It should be fixed by two screws M4 so that introductory is facing the ground. Sensor cable must make an arch before entering the end module in order to provide the water flowing off (see Picture 5).



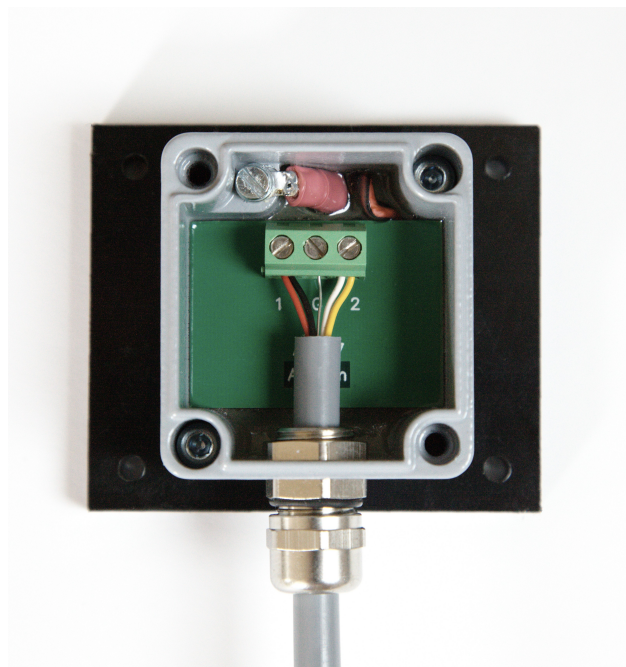
Picture 5: The End Module

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 6). 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 7).

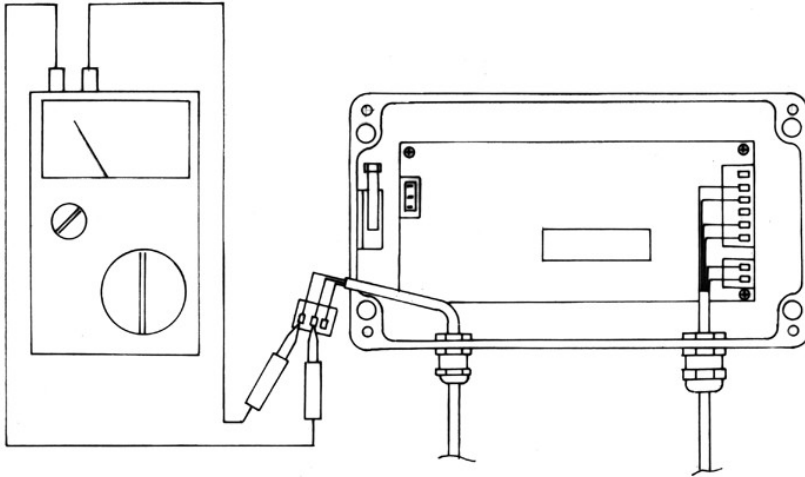


Picture 6: Connecting sensor cable to main unit



Picture 7: Connecting sensor cable to end unit

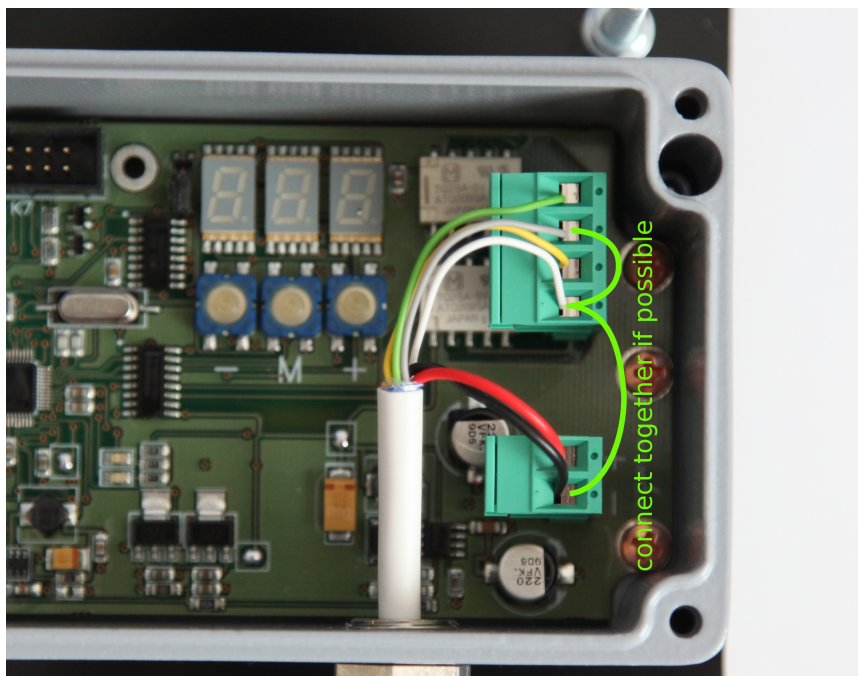
Before connecting the supply it is necessary to check the cable impedance. The end module must be connected. The FENCE connector on the side of the main unit must be pulled out. Between the connector points on the sensor cable resistance of approximately 640 k Ω must be measured by Ohmmeter (Universal tool, see picture 8). 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.



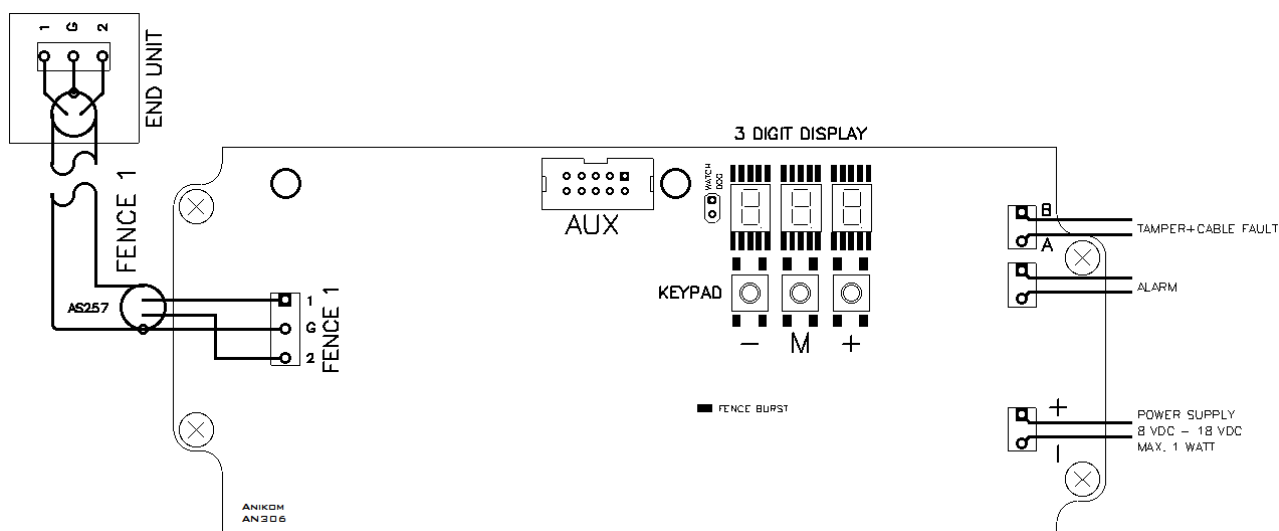
Picture 8: Measuring the sensor cable with Ohmmeter

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 eight or more wires (2 x 1,5 + 4 x 0,22). Supply is 12 VDC. Supply voltage can swing between 8 and 18 volts (See Picture 11 and Picture 9).



Picture 9: Connecting power cable to main unit.

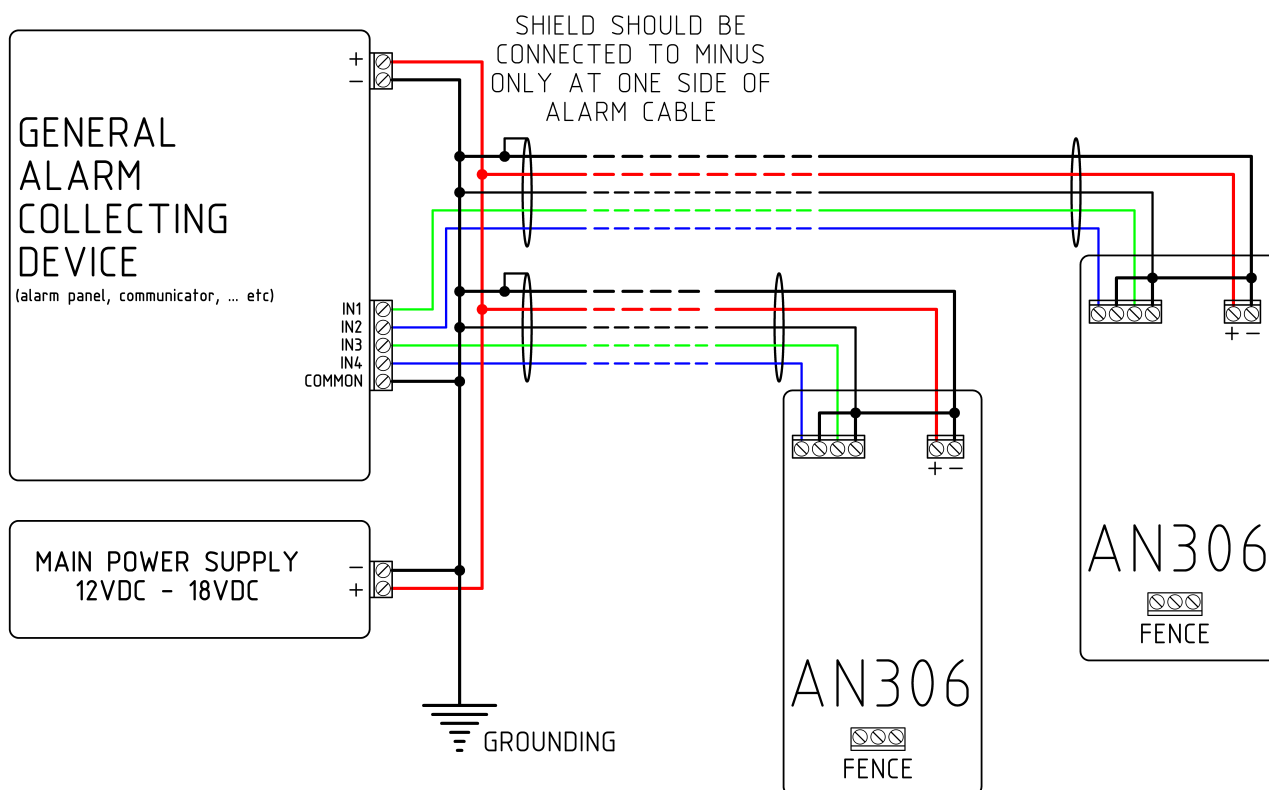


Picture 10: Connecting of the Main Unit

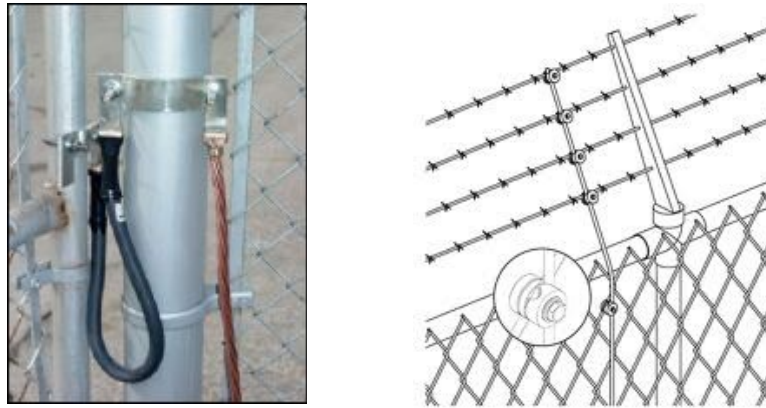
WIRING RECOMENDATION AND LIGHTNING PROTECTION

One of the possibilities to connect AN306 system to the back end is shown on Picture 11. Each AN306 is connected with shielded alarm cable containing six wires (2 x 1,5 + 4 x 0,22). Due to possibility of lightnings we must hung on to some rules:

- Shield of the alarm cable should be connected to minus (enclosure) just at **General Alarm Collecting Device - GACD** (which can be alarm panel, communicator ... etc). At AN306 site shield should be left open.
- Minus terminal at AN306 and terminals of relays, which are on the same potential (minus power supply) should be connected together inside AN306, if this is possible (please see Picture 9 and Picture 11). Before do this, it must be checked if common terminal and minus terminal on GACD is on the same potential (resistance between those terminals must be less than 0.1 Ohm).
- If separate power supplies for AN306 and GACD is used, minus terminals from both power supplies should be connected together.
- Grounding should be always made at one place, usually near GACD or main power supply. Never use spatial grounding due to lost currents at strong lightnings occur. In other words, if more spatially separated devices are used in system, only one should be connected to grounding, and this is usually power supply unit.
- If some additional protection for communication or relay wires is used at AN306 site, ground of the protection device should be connected to the minus terminal of AN306. Never connect ground of protection device to the shield of alarm cable!
- Fence itself should be grounded! See the picture 15. Resistant to the ground should be less than 20 Ohm. Consult manufacturer of the fence how to make grounding of the fence. Consider also valid regulations in your country about grounding protection of electrical equipment and buildings.



Picture 11: Connecting several of AN306-s to the back end



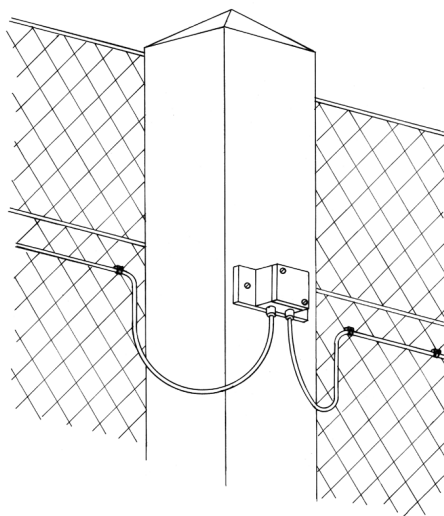
Picture 12: Fence grounding examples

WATCH DOG

AN306 has double watch dog (mechanism which reset the device if something unexpected happens). One watch dog is in software level, other one is on hardware level. Hardware watch dog can be enabled and disabled with jumper (jumper is located in PCB between 3 digit display and AUX terminal). If jumper is attached, then watch dog is enabled. Make sure that always jumper for watch dog is attached (enabled).

HOW TO REPAIR A CUT OFF CABLE

Repairing of the broken cable can be done with special connection module AC300. Installing of the connecting module is shown in Picture 13. Generally the installation is the same as installation of the end module. AC300 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 13: The connecting module AC300

OPERATION BALANCE AND CONTROL

Detector AN306 is balanced by three keys on keypad and three digit display. Parameters for adjust are: sensitivity (input FENCE), beat number and acquisition period.

All other parameters are preset by Anikom.

Each time M key (menu) is pressed and hold, display shows function. When M key is released, value of that function is shown. At that moment adjusting (with + key and – key) of the value is possible. After that pressing and hold M key takes step to next function according to Table 1.

For faster value adjusting + or – key can be hold. Value is increased/decreased first moment slowly, and each moment further key is hold, changing of the value is faster.

If for 4 seconds key is not pressed, display become blank and AN306 leaves program mode. In that moment values are stored in nonvolatile memory.

Function	Display	Possible Values	Changeable by \pm Keys	Comments	Default value
SENSITIVITY OF FENCE	FE	0 – 150	YES		60
BEAT NUMBER OF FENCE	bE	1 – 9	YES		3
ACQUISITION PERIOD	PEr	2 – 60	YES	seconds	7
ALGORITHM	ALG	0-2	YES		1
COUNTER OF ALARM	CA	0 – 999	NO		0

Table 1: Programing functions.

SENSITIVITY SETTINGS (FE)

When the first time (when display is blank) key M is pressed, the function SENSITIVITY FENCE is entered. The display shows FE (see Table 1). In the moment the M key is released, display shows for example 032 . With keys + and - value of "SENSITIVITY FENCE" can be changed between values 0 (minimum sensitivity) and 150 (maximum sensitivity).

BEAT NUMBER SETTINGS (bE)

The MENU key is pressed three times. Display shows bE (function BEAT NUMBER FENCE). This value can be between 1 and 9. With keys + and - value of "BEAT NUMBER FENCE 1" can be changed.

If the beat number is set to 1, alarm is launched after first beat on the fence, if the beat number is set to 2, alarm is launched after second beat on the fence etc. This function is very useful when for example playground is nearby and often happen to beat ball to the fence. If beat number is set for example to 3, then first beat (in this case the ball) will not launch alarm.

ACQUISITION TIME PERIOD SETTINGS (PEr)

Acquisition time period is sampling window time, in where AN306 counts beat number. For example, if this parameter is set to 7, and beat number is set to 3, that means, that alarm will launch if in time period of 7 seconds will triggered 3 beats (3 times FENCE BURST LED is blinked). The acquisition time period can be set between 2 and 60 seconds.

ALGORITHM (ALG)

Three types of detection algorithm can be set.

The description of the value is as follows:

0 - legacy algorithm (the same algorithm as in firmware version V2.16 or earlier).

1 - few times more sensitive algorithm than legacy one.

2 - even more sensitive algorithm than 1, it works adaptively.

ALARM COUNTER (CA)

Counter CA is increased every time ALARM is launched.

Counter can not be adjust by user. If counter reach 999, it takes value 0 at next alarm.

LED DIODES FENCE BURST

LED FENCE BURST lit for the moment in case of shake sensor wire. This is indication for beat (see Picture 9).

SUPPLY VOLTAGE MEASUREMENT

By pressing tamper switch (at left side of AN306 box) power supply voltage is measured. Voltage is displayed on display (for example if supply voltage is 12,3 V, display displayed value 12.3).

This function is very useful in case of very long supply cables from Power Supply Unit to AN306 unit. The voltage drop on power supply cables can be so high that input voltage on AN306 is too low.

The voltage must be between 8.0 V and 18.0 V. If the voltage is bellow 8.0 V, instability can be expected in work of AN306.

Also voltage higher than 18.0 V should be avoided.

SOFTWARE VERSION

By pressing and holding + (plus) key and simultaneously pressing tamper switch, software version is displayed (at the time of writing this manual version is 2.17).

RESET PARAMETERS TO DEFAULT VALUES

To reset the parameter, the power supply must be switch off. By pressing and holding – (minus) key and switch on the power, all parameters are set to default value. Counter CA is set to 0. On display rSt is shown for few seconds. Values are set according Table 1.

EVENTS SHOWING ON DISPLAY

If nothing is happened, display is blank. Display has two main functions: to show parameters (see Table 1) in program mode and to show events (see Table 2). Every show on display lasting 4 seconds. After that time display becomes blank.

Display	Event	Comment
AL	Alarm on input FENCE.	Alarm launched.
OP	Open wires on FENCE.	Sensor cable is not connected.
CL	Short wires on FENCE.	Sensor cable is in short circuits.
OL	OK on FENCE.	Sensor cable is connected right way.
CAS	Open of AN306 box.	
12.0	Measurement of supply voltage.	Power supply voltage is displayed.

Table 2: Events showing on display.

TECHNICAL CHARACTERISTICS

Master unit:	waterproof IP65 aluminum casing
Wight of master unit:	970 g
Dimensions of master unit:	175 mm x 80 mm x 60 mm
Ending unit:	waterproof IP65 aluminum casing
Dimensions of ending unit:	50 mm x 45 mm x 30 mm
Weight of ending unit:	140 g
Type of sensor cable:	AS257
Diameter of sensor cable:	6 mm
Working temperature:	from -30°C to +70°C
Technology:	new unique DSIGP®
Supply voltage:	from 8.0 VDC to 18.0 VDC
Supply protection:	with 600W transient voltage suppressors
Power consumption:	less than 1 W
Relays:	2 relays, NC
Relays max current:	2 A
Relays max. switching voltage:	30 VDC
Relays protection:	protected with 600W/36V transient voltage suppressors
Tuning:	menu system with 3 keys and 3 digit display

Table 3: Technical characteristics

PARTS AND ADDITIONAL PARTS OF THE AN306 DETECTOR

Parts of the AN306 detector are:

- Main unit in a waterproof aluminum casing (IP 65) 175 mm x 80 mm x 60 mm.
- Ending unit AE307 in a waterproof aluminum casing (IP65) 50 mm x 45 mm x 30 mm.

Additional parts of the AN306 detector:

- Sensor cable up to 300 m length.
- UV protected plastic clips for fixing the sensor cable type V-01 UV.
- Connecting module AC300, used for connection of the cut off sensor cable.

WARRANTY AND DISCLAIMER

The product is constructed to all the enforced electro technical norms second and corresponds to the regulations of the electromagnetic compatibility (UL RS Slovenia, 64/2001). The product is adapted to the connection the source of feeding to low voltage of up to 18 V, therefore it does not introduce any danger of electroshock. The product is not adapted to the assembly in rooms where the gas presence is possible exploded (plants or loads with storage cells, boilers.). The producer guarantees the sure operation of the product and it is engaged to eliminate all the defects and breakdowns fates on the product in the period of normal usage, in the repair of the product have on condition that not taken part personal non-authorized and that they have been uses pieces of reciprocation originates them. If the product will not come repaired in 45 days, it will be replaced. The product is guaranteed for a period of one year from the purchase date. The guarantee is not valid in case of damages caused from bad electrical workers or atmosphere cause (blow of directed or indirect lightning, caused static electricity from the thunderstorm.).

The fence should be grounded. Resistant to the ground should be less than 20 Ohm. Manufacturer of the fence should be consulted, how to make grounding of the fence. Consideration must be also taken about valid regulations in your country about grounding protection of electrical equipment and buildings. The guarantee is valid only for the product himself. The producer does not assume the responsibility for eventual other damages because of malfunctioning or wrong operation of the product. The producer, moreover, does not assume the responsibility for whichever type of damages caused from thirds party protected with this product. For cases of this kind the plant must adequately be assured from the insurance agency.

The guarantee is valid if the date of purchase on the guarantee certificate is proven from the stamp and from the company of the authorized dealer and if it is accompanied from the fiscal receipt originates them. The period of guarantee comes extended for the repair time. Assistant and pieces of reciprocation for the product are assuring for the period of 7 years.