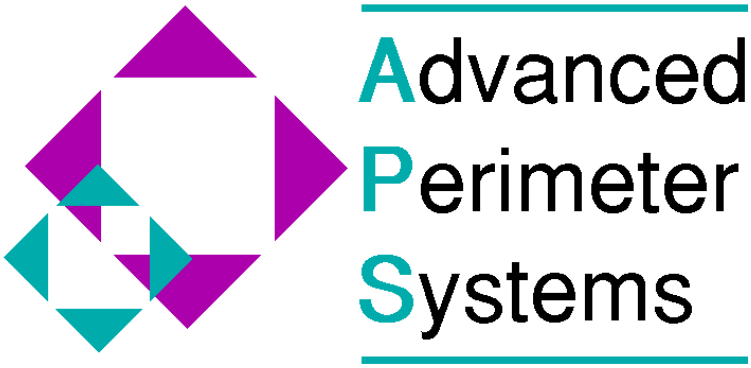

FLEXIGUARD™

Fence Protection System

Installation & Servicing Guide

Analyser Type FS306

High Security Palisade

January 2002

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Important Note

This installation manual applies only to the fence type specified. To install the system for optimum performance on any other fence type, please contact Advanced Perimeter Systems Ltd., Technical Support.

1 System Description

The system operates by means of a Flexiguard sensor cable, which can be attached to fences. The characteristics of the cable enable it to detect vibrations occurring at any point along its full length. The cable has equal sensitivity along its whole length.

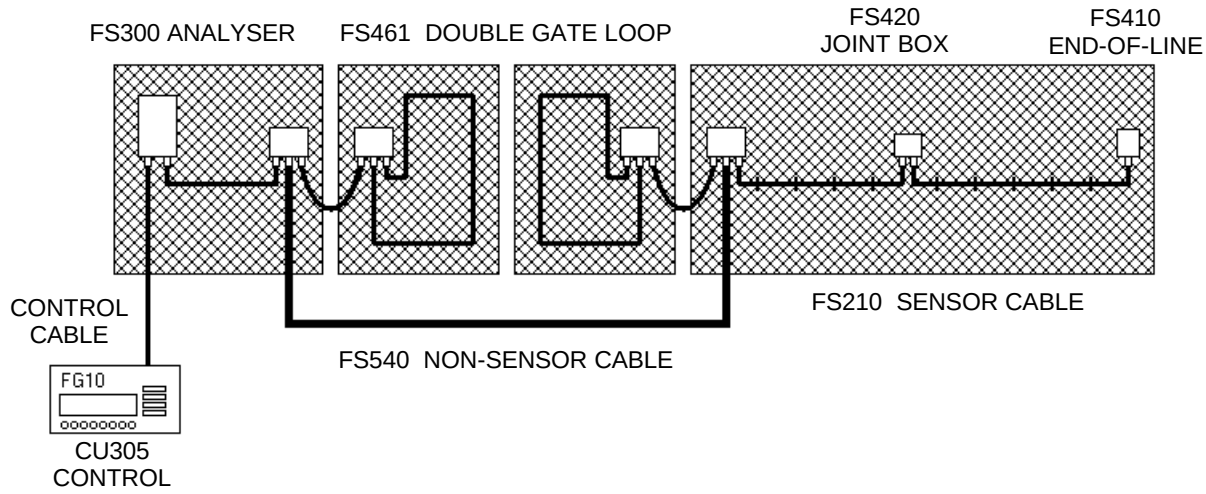
In the event of an intruder attempting to force entry the vibrations caused by this intrusion are detected by the sensor cable and passed to the analyser. The analyser converts the vibrations into alarm and audio signals, which are sent back to the control unit. The maximum zone length is 300m per analyser.

The main control unit upon receipt of a signal from an analyser activates an audio and visual alarm. The operator is able to listen to the vibrations in order to distinguish the nature of the alarm. Any interference with the sensor cable itself will cause an alarm.

The Flexiguard outdoor analyser has a unique Automatic Environmental Control (AEC) which can distinguish between vibrations caused by climatic conditions and an intruder. This dramatically reduces the nuisance alarms caused by wind and rain.

The analysers have built-in test facilities, which allow the installer to set-up, and fault find the analyser without the need for specialised test equipment.

Typical System Layout



2 Fence Condition

In order for the system to work reliably, the fence must be in a reasonable condition so that there are no unwanted sources of vibration.

Undergrowth and tree branches should be cleared away at least 1m from both sides of the fence as this will cause vibrations in the fence in windy conditions.

The most common sources of unwanted vibrations are: -

1) Undergrowth
2) Loose fence posts
3) Barbed wire dangling against the fence
4) Broken strainer wires in chainlink fences
5) Loose fence fabric
6) Loose mounting bolts in weldmesh and palisade fences
7) Rattling gates
8) Loose gate bolts and padlocks
9) Tree branches

If any of the above or any other sources of vibrations are found, they should be corrected before installation commences.

3 Mounting the Analysers

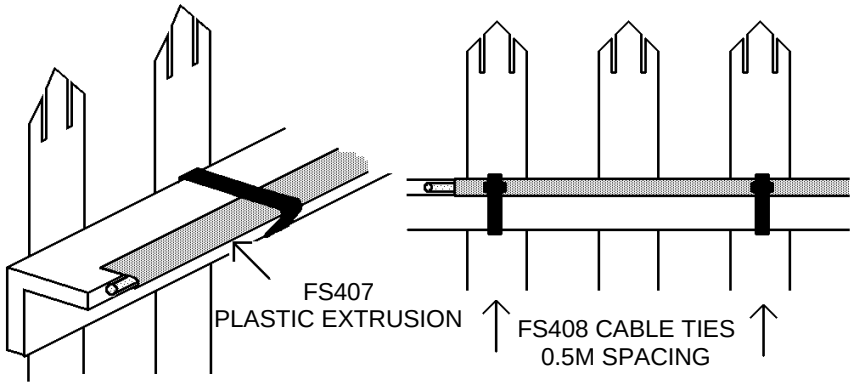
The signal analyser can be fixed to a fence post by the use of an FS-205 mounting kit or in a suitable position off the fence. Counterbored holes outside the gasket area are provided for mounting the analyser.

When two zones meet, it is advisable to mount two analysers together so that each zone runs in opposite directions. This allows one control cable to feed two analysers thus reducing the number of joints in the control cable. It also makes maintenance easier as two analysers can be serviced from one location.

4 Sensor Cable Installation

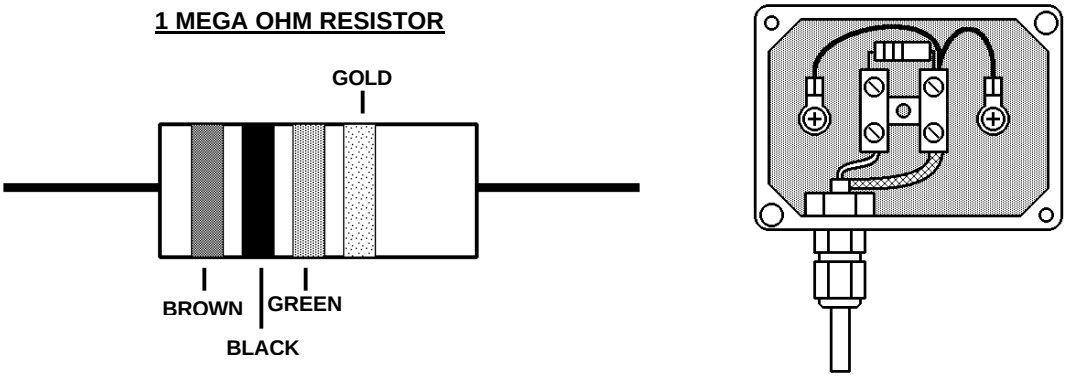
4.1 Installing the Sensor Cable

The cable is fixed to the top and bottom angle irons of the fence using FS-407 plastic extrusion as shown below. The extrusion is pushed on to the angle iron in order to keep the sensor cable in direct contact with the fence. The extrusion is held in place with FS-406 cable ties. The cable ties should be attached behind the pales so they will not be seen from the outside of the fence.



4.2 Terminating Sensor Cable

The sensor cable should be terminated in the FS-410 termination box. The termination resistance value is 1 M Ohm.

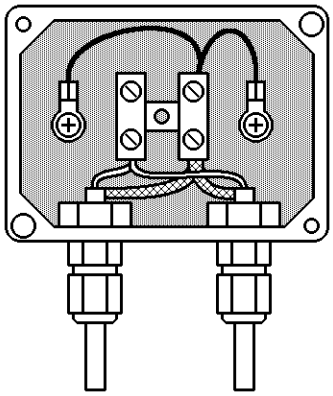


The screen of the sensor cable should be connected into the terminal that is connected to the internal screening of the termination box. This terminal has two black wires connected to it. The termination box can be secured to the fence using the large cable tie supplied or fixed using the mounting holes which are outside the gasket area. Do not drill any holes through the box.

4.3 Jointing Sensor Cable

The sensor cable can be joined using the FS-420 cable jointing box.

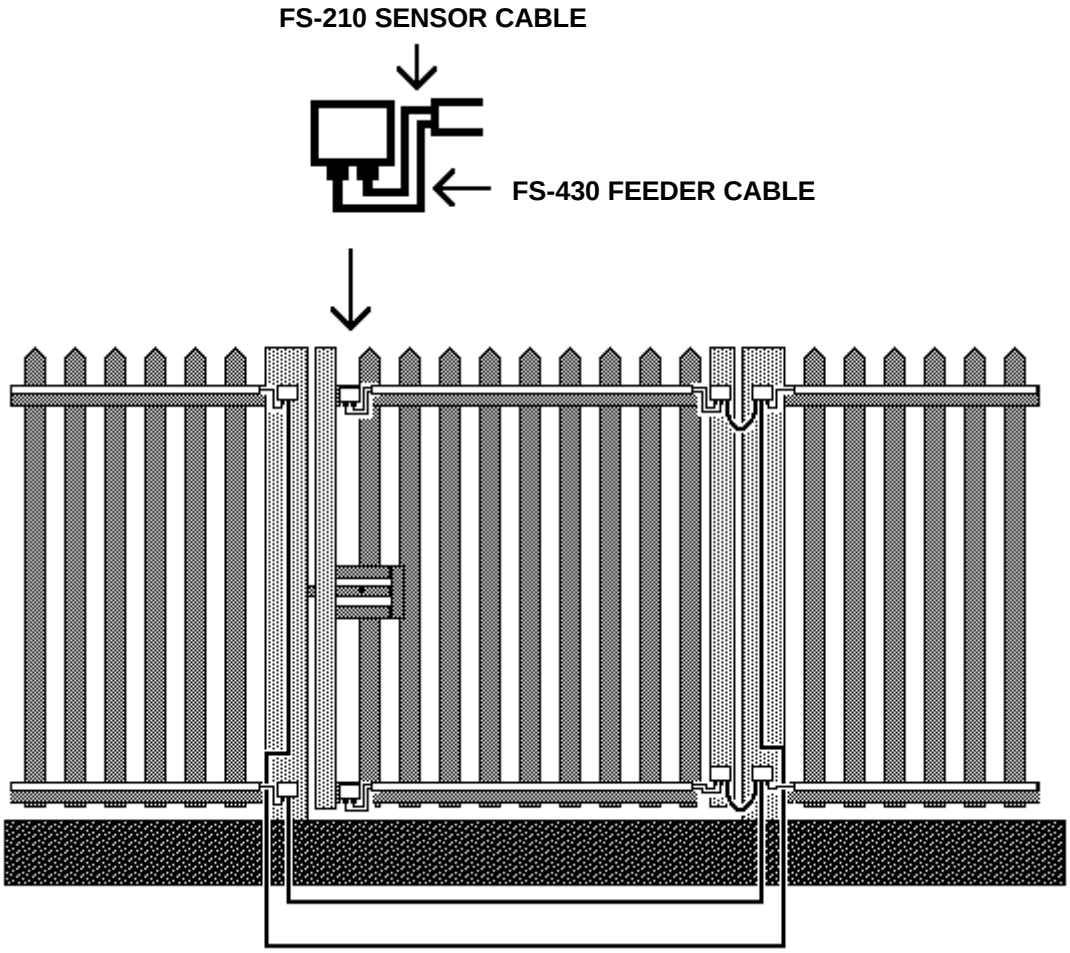
Twist the two screens together and connect them into the terminal that is connected to the internal screening of the jointing box. This terminal has two black wires connected to it. Twist the two centre wires together and connect them into the other terminal. The cable jointing box can be secured to the fence using the large cable tie supplied or fixed using the mounting holes which are outside the gasket area. Do not drill any holes through the box.



5 Gate Wiring Using FS-460/FS-461 Gate Loop Kits

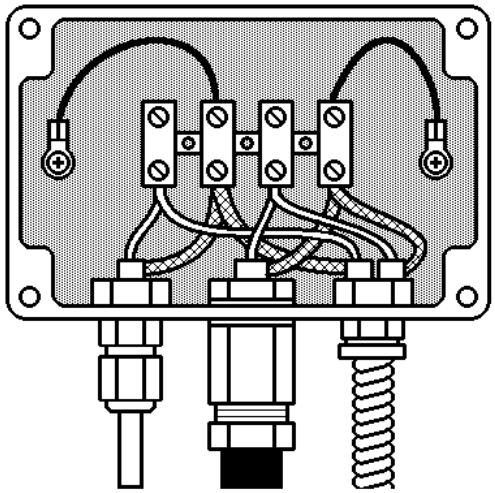
5.1 Installation

Gate loop kits are used to attach the sensor cable to gates as shown below. Palisade gates are wired as shown below. An FS-420 joint box and FS-430 feeder cable are also required in order to have only one run of sensor cable on the gate.



5.2 Gate Loop Junction Box Wiring

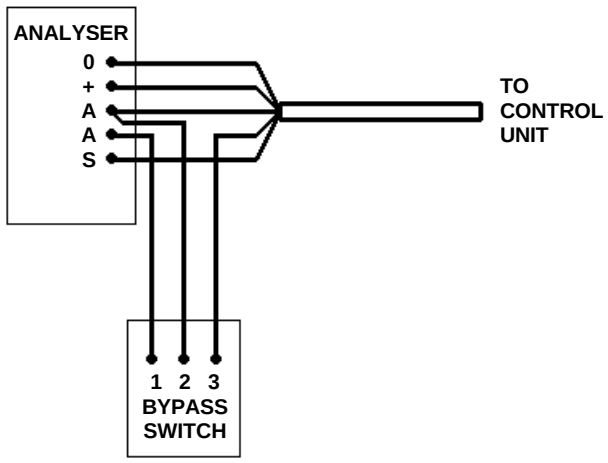
Wire the gate loop junction box as shown below. Make sure that the screens are connected into the terminal that has the two black wires in it. Fix the box using the mounting holes that are outside the gasket area. Do not drill any holes through the box.



5.3 Gate Bypass Switch

Gate bypass switches are used to allow access through a gate while the rest of the fence is still alarmed. It does this by switching off the alarm for the zone that the gate is in. The switch is mounted on the fence post next to the gate. A 3-core cable is required between the switch and the analyser.

GATE BYPASS SWITCH WIRING



6 Wiring The Analysers

A multipair control cable should be run around the perimeter and jointed at each analyser or pair of analysers using an FS-450 joint box. Each analyser needs a minimum of 4 wires to a maximum of 8 wires from the joint box depending on what control system is being used. The wires should be connected as shown in the diagram on page 12. Make the corresponding connections back at the alarm panel.

Strip back the sensor cable by 30mm. Measure the resistance of the cable between the two conductors. You should read 1 M ohm, which is the value of the termination resistor. Also measure the resistance from the screen of the sensor cable and any metal on the fence. It should be completely open circuit. After these checks have been successfully completed connect the sensor cable into the connector.

7 Setting Up The Analyser

7.1 Initially set all controls and switches on the cut and climb boards as follows:

Impulse Count	2
Time Window	2 Seconds
Sensitivity	0
S1, S2	Off

7.2 Apply power to the control unit or power supply unit and check that the voltage across terminals 0 and + is between 15 and 21 VDC. All indicators should be off.

If the Cable O/C or S/C LED's are illuminated there is a sensor cable fault. Disconnect the sensor cable and measure the resistance between the two conductors. The resistance should be 1 M ohm +/- 100K ohm. This is the value of the termination resistor. If it is out of this range, check the termination and also any joints in the cable.

If the A.E.C. LED is permanently lit, then disconnect the sensor cable and measure the resistance from the screen of the sensor cable and any metal on the fence. It should be completely open circuit. If there is any reading, check the sensor cable to make sure it has not been damaged during installation. Also check that all joint and end of line termination boxes for correct wiring.

CUT SETTING

7.3 To simulate a cut, tap the fence with a screwdriver or use an impact tester. Tap the fence and increase the Cut Sensitivity until the Cut Impulse LED flashes every time the fence is tapped.

7.4 If the Cut Impulse LED does not flash, increase the gain setting up one level using S1 and S2. Switch the Cut Sensitivity back to 0 and repeat step 7.3

7.5 With the Impulse Counter set to position 2, tap the fence 2 times within the time window indicated by the Time Window LED and check that the Alarm LED lights for approximately 2 seconds. This shows that the alarm has been activated.

CLIMB SETTING

7.6 Climb the fence and increase the Climb Sensitivity until the Climb Impulse LED starts to flash every time the fence is climbed.

7.7 If the Climb Impulse LED does not flash, increase the gain setting up one level using S1 and S2. Switch the Climb Sensitivity back to 0 and repeat step 7.6

7.8 Climb the fence and check that the Alarm LED lights for approximately 2 seconds. This shows that the alarm has been activated. Increase the Climb Impulse Count to 3. Climb the fence and check that the alarm activates. Continue to increase the Climb Impulse Count until the alarm no longer activates then reduce the Climb Impulse Count until the alarm activates once again. This is now the correct setting for the Climb Impulse Count.

7.9 The A.E.C. LED is used to monitor the operation of the Automatic Environmental Control (A.E.C.). Shake the fence, but do not shake it so hard as to set the Impulse LED flashing. The A.E.C. LED should slowly illuminate and extinguish after ceasing to shake the fence. If the A.E.C. LED does not illuminate, the sensitivity may be set too low.

8 Final System Tests

Each zone should now be tested to ensure that the control unit is receiving an alarm and audio signal.

Ensure that the zone to be tested is switched on. Switch the selector switch to that zone and adjust the volume control so that the background noise can be heard.

Listen to the audio while someone attempts to climb the fence. The alarm should be activated and you should be able to hear the person climbing. If there is no alarm or audio, check the operation of the analyser and the cabling. These tests should be repeated for each zone. The system is now ready for use.

9 Maintenance

Each zone should be checked for sensitivity once per week, by the security staff. This can be done by someone attempting to climb the fence and checking that the appropriate alarm is activated at the control unit.

Every three months the fence should be inspected visually to ensure that the fabric of the fence is still secure.

Also check the cable ties and replace any damaged or broken ties.

10 Analyser Fault Finding

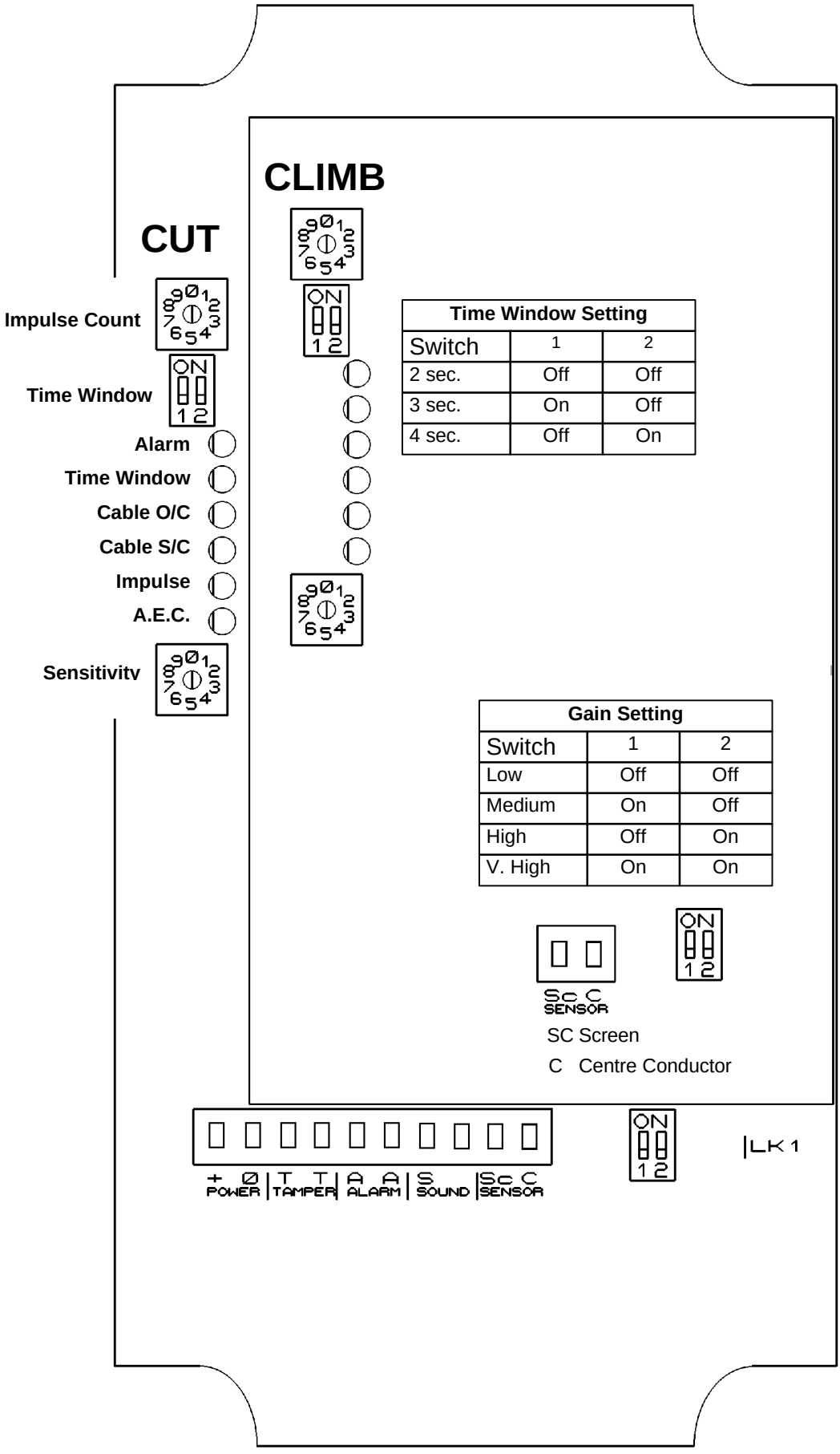
Check that the voltage across the 0 and + connection is between 15 and 21 VDC. The unit may not operate correctly if the voltage is below 15 VDC.

Check that the Cable O/C and S/C LED's are extinguished. If either are illuminated check the cable resistance is 1M ohm. To test the operation of Cable O/C and S/C LED's apply a short across the fence cable. The Cable S/C and Alarm LED should light showing that the cable is short and the alarm has been activated. On disconnecting the sensor cable from the connector the Cable O/C and Alarm LED should light and go out when the cable is reconnected.

To test the alarm output, disconnect the wires connected to the Alarm terminals A and A and connect an ohm meter across the A and A terminals. The reading should be 0 ohm. Short the sensor cable so that the Cable S/C and Alarm LED's are lit. The resistance should now be greater than 10M ohm. The resistance should return to 0 ohm on removing the short.

The audio output of the analyser can be tested by removing the wire from the Sound terminal and connecting an earpiece or telephone handset across the S and 0 terminals. The audio signal can then be heard when someone climbs the fence. The audio output level should be approximately 1V p.p.

If any of the above tests fail, replace the analyser.


CUT
CLIMB
Impulse Count
Time Window
Alarm
Time Window
Cable O/C
Cable S/C
Impulse
A.E.C.
Sensitivity
ON
1 2
Time Window Setting
Switch 1 2
2 sec. Off Off
3 sec. On Off
4 sec. Off On
Gain Setting
Switch 1 2
Low Off Off
Medium On Off
High Off On
V. High On On
Sc C
SENSOR
SC Screen
C Centre Conductor
+ Ø
POWER
T T
TAMPER
A A
ALARM
S
SOUND
Sc C
SENSOR
LK 1