58Khz
Pro-Guard™ & Uni-Guard™
Instruction Manual

[24vac Low Voltage with 110.220vac Transformer]

Version 2004 April

Manual Part Number: WG-PRG-IM

(042004A)

WG SECURITY PRODUCTS INC.

3031 Tisch Way, Suite 602, San Jose, CA 95128 (USA)
http://www.wgspi.com

WARRANTY DISCLAIMER

TECHNICAL SUPPORT CONTACT INFORMATION	
North America South America	Tel: 818-763-9186 Fax: 818-255-0514 Email: svc@sensorsense.com
Rest of World	Tel: 408-241-8000 Fax: 408-241-8082 Email: support@wgspi.com

Important Notice!

Due to regulations of **FCC 15.21**, any changes or modifications not expressly approved by the party responsible for compliance will void the user's authority to operate the equipment.
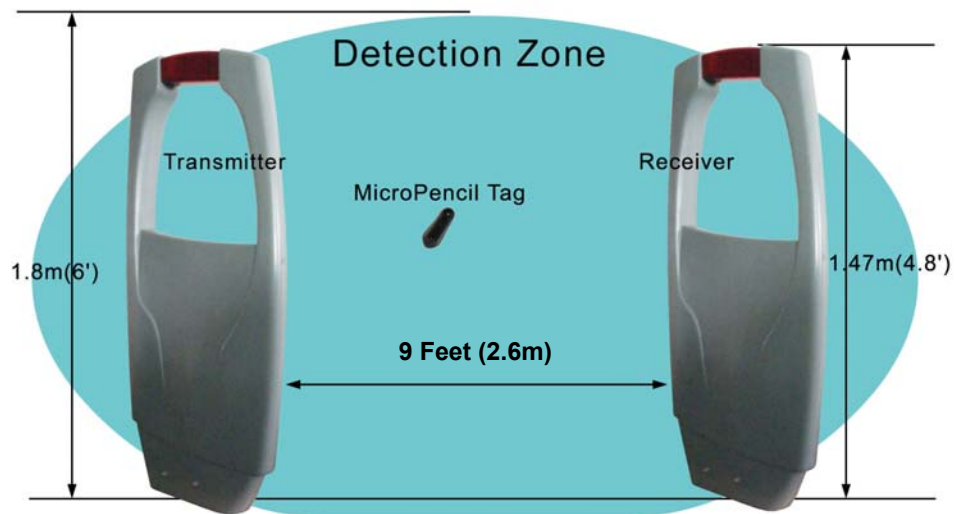
TABLE OF CONTENTS

CHAPTER ONE

System Overview

Pro-Guard and Uni-Guard Electronic Article Surveillance systems operate with any 58Khz acousto-magnetic tag. Both systems are plug-and-play, eliminating the need for expensive technicians. Pro-Guard is a dual pedestal system whereas Uni-Guard is a single pedestal transceiver system.

The fully digital Pro-Guard and Uni-Guard systems are today's most technically advanced 58Khz pedestal systems on the market. Both systems are fully digital, software driven, and have the latest DSP technology that constantly checks the environment, eliminating false alarms that are common with competing systems.

Technical Data	Europe	USA
Height	1470mm	58"
Width	710mm	28"
Thickness	120mm	7.1"
Weight	10Kg	22lbs
Power	220-240vac	100-120vac
Operating Frequency	58Khz	58Khz
Micro Pencil Tag Detection	2.6 meters	9 feet
Operating Temperature	0º C to 30º C	32º F to 86º F

Technical Data	Europe	USA
Height	1470mm	58"
Width	710mm	28"
Thickness	120mm	7.1"
Weight	10Kg	22lbs
Power	220-240vac	100-120vac
Operating Frequency	58Khz	58Khz
Micro Pencil Tag Detection	1.2 meters on either side.	4 feet on either side.
Operating Temperature	0º C to 49º C	32º F to 120º F

Features & Benefits

- Self tuning electronics
- Software driven
- Network Access for remote tuning
- Built-in alarm
- Port for driving an external alarm
- Constructed of strong, light ABS fire retardant molding
- Compatible with all 58Khz acousto-magnetic labels and hard tags.
- Greater detection in all tag orientations

Pro-Guard System Parts List

Base (2)

Pedestal Power Cable & Connector (2)
Transformer Primary Power Cable (1)

Installation Tool (1)

24vac
Transformer (1)

Clear Alarm Cover

Interconnection Line
& Connector (2)

Transmitter & Receiver
Pedestals (2)

Bolts (8)

Remote Control (1)

	Part Name	Order Number
1	Transmitter Pedestal	WG-PRG-PC-T
2	Receiver Pedestal	WG-PRG-PC-R
3	Clear Alarm Cover	WG-PRG-WD
4	Base	WG-PRG-BS
5	Remote Control	WG-MG-RC OLD
6	Interconnection Connector	WG-MG-ICC
7	Pedestal Power Cable Connector	WG-PRG-PLC
8	Installation Tool	WG-MG-IT
9	Field Indicator Pen	WG-MG-FP
10	Interconnection Line	WG-MG-CC
11	Instruction Manual	WG-PRG-M
12	24vac Transformer	WG-PRG-TR

Uni-Guard System Parts List

Installation Tool (1)

Base (1)

Pedestal Power Cable & Connector (1)
Transformer Primary Power Cable (1)

Clear Alarm Cover

24vac Transformer (1)

Pedestal Transceiver (1)

IR Mirror Reflector (1)

Bolts (4)

Remote Control (1)

	Part Name	Order Number
1	Transceiver Pedestal	WG-UNG-PC
2	Clear Alarm Cover	WG-PRG-WD
3	Base	WG-PRG-BS
4	Remote Control	WG-MG-RC OLD
5	Pedestal Power Cable Connector	WG-PRG-PLC
6	Installation Tool	WG-MG-IT
7	Field Indicator Pen	WG-MG-FP
8	Instruction Manual	WG-PRG-M
9	24vac Transformer	WG-PRG-TR
10	IR Mirror Reflector	WG-UNG-MIR

CHAPTER TWO

Installation Procedures

Step-Down Transformer Box

Voltage Switch

230

⚠ **Caution:**
The Voltage Switch is used to set the system for the appropriate AC input.
North America – Set the switch to 115.
Europe – Set the switch to 230.

ON

VOLTAGE SWITCH

AC POWER

230

OFF

⚠ Fuse replacement
Extend fuse (time-delay fuse)
5mmx20mm 3.15A

Equipment shall be electrically disconnected from
the branch-circuit supply when replacing the fuse.
**WARNING - TO REDUCE THE RISK OF DAMAGE. REPLACE
ONLY WITH SAME TYPE AND RATING OF FUSE.**

24VAC OUTPUT 1

0V   GND   24V

24VAC OUTPUT 2

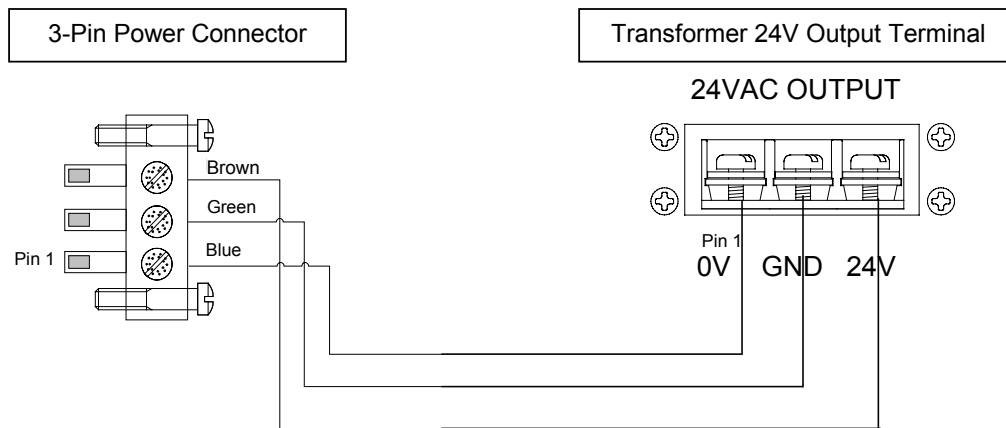0V   GND   24V

Transformer Cable Connection

Connect the three pins of the power connector to the corresponding terminals of the transformer connector. The ground pins from both must be connected, but the 0V and 24V terminals from the step-down transformer can be swapped to change the polarity of the system.

3-Pin Power Connector Layout		
Pin	Function	Color
1	"N or L" *	Blue/Brown
2	Ground	Green w/Yellow Stripe
3	"L or N" *	Brown/Blue

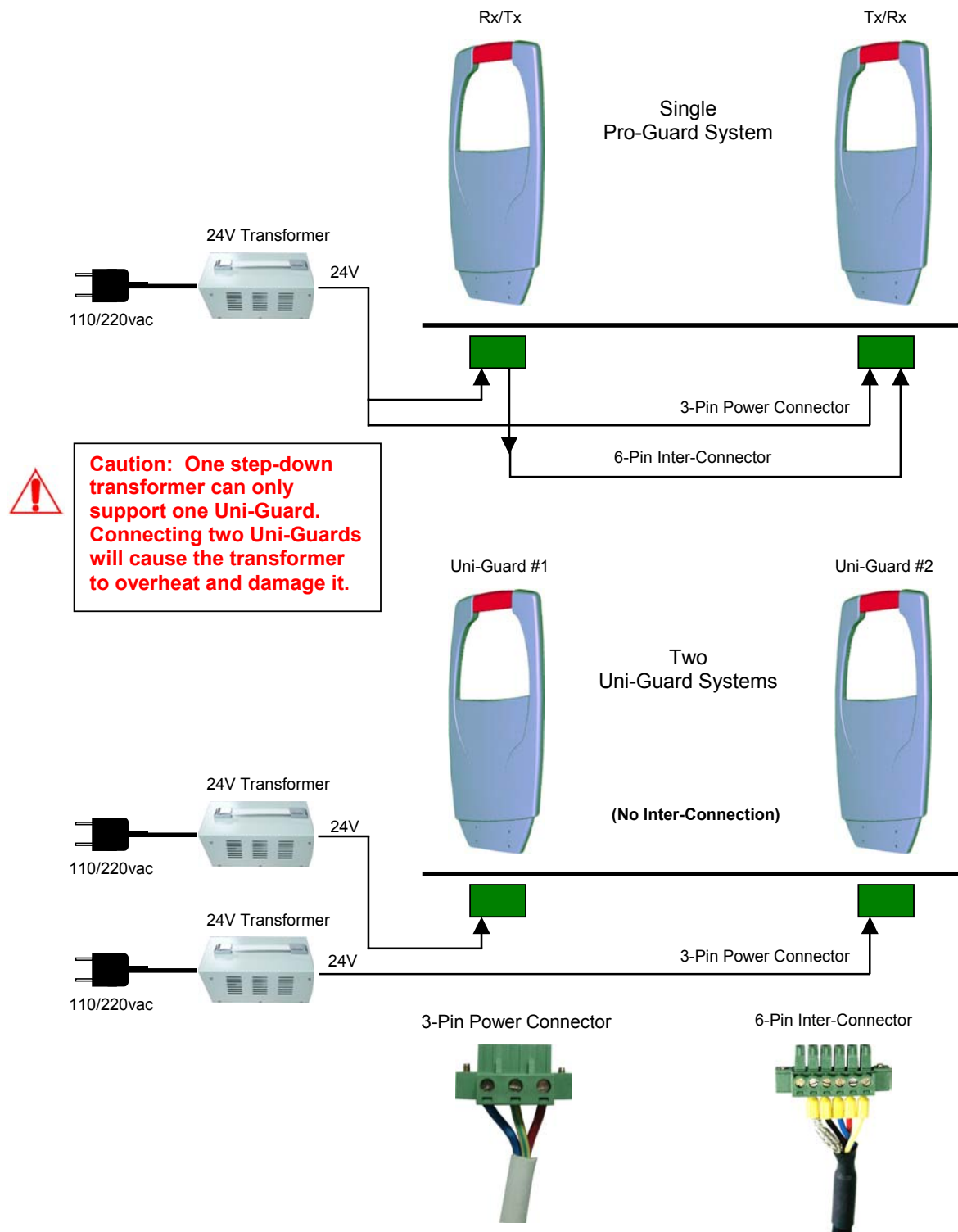| 3-Terminal Transformer Connector Layout		
Pin	Function	Color
1	0V	Blue/Brown
2	Ground	Green w/Yellow Stripe
3	24V	Brown/Blue

(180 degrees phase switch)

*** Note: Pin 1 and Pin 3 of the power connector are equivalent to former N and L terminals for 110/220vac systems. Switching them will switch the system's phase 180 degrees; same as former 110/220vac systems.***

3-Pin Power Connector	Transformer 24V Output Terminal

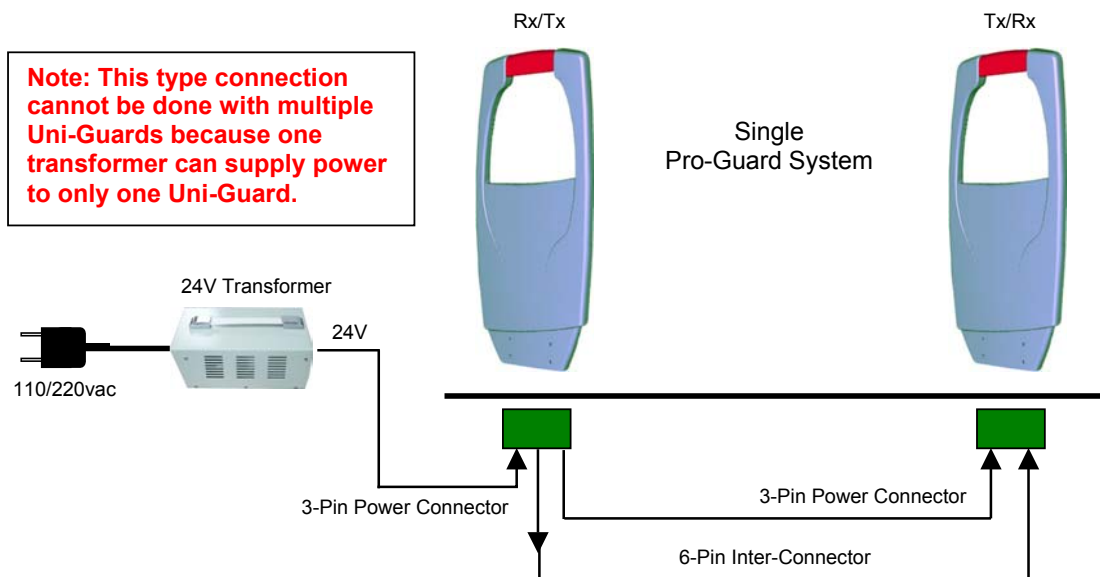## Step-Down Transformer Capacity

- Pro-Guard: Maximum 1 Transformer per Transmitter/Receiver pair.
- Uni-Guard: Maximum 1 Transformer per Uni-Guard.

System Connections (Pro-Guard & Uni-Guard)

Rx/Tx   Tx/Rx

Single
Pro-Guard System

24V Transformer

24V

110/220vac

3-Pin Power Connector

6-Pin Inter-Connector

Caution: One step-down
transformer can only
support one Uni-Guard.
Connecting two Uni-Guards
will cause the transformer
to overheat and damage it.

Uni-Guard #1   Uni-Guard #2

Two
Uni-Guard Systems

(No Inter-Connection)

24V Transformer

24V

110/220vac

24V Transformer

24V

110/220vac

3-Pin Power Connector

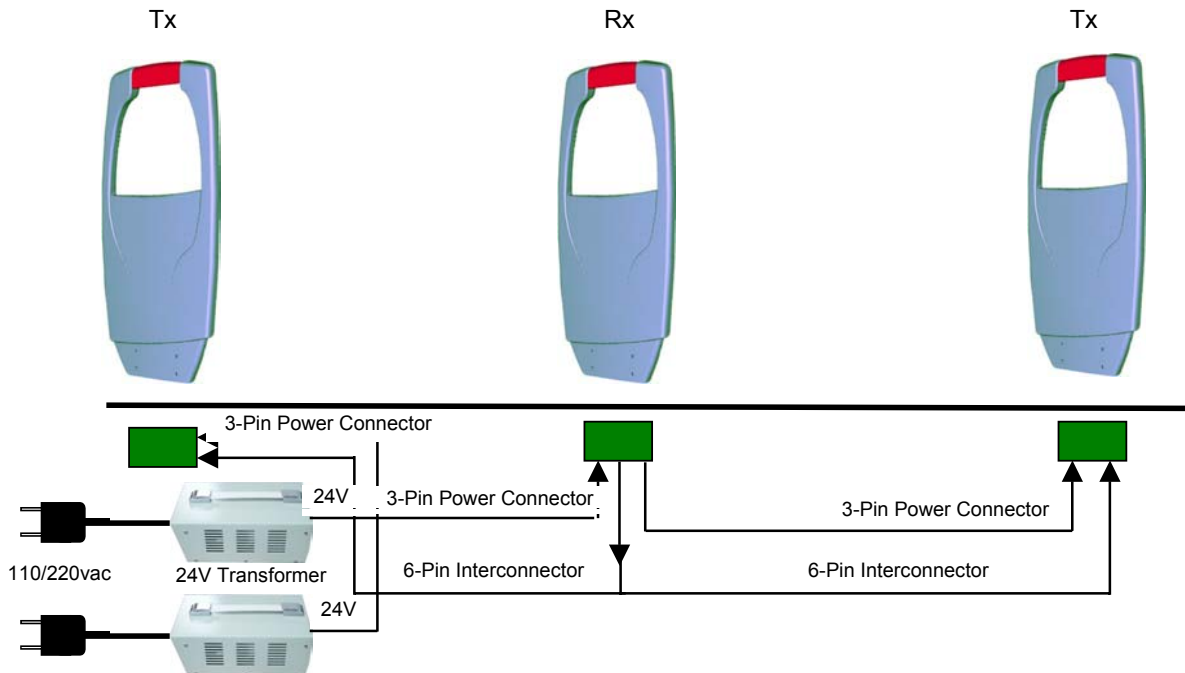3-Pin Power Connector   6-Pin Inter-Connector

Optional Power Connection for Pro-Guard

There is another 3-pin connector (J5) on the bottom of the PC board. This provides a closer and more convenient place to connect power from one of the closer pedestals instead of connecting power directly to the transformer box.

Rx/Tx   Tx/Rx

Note: This type connection cannot be done with multiple Uni-Guards because one transformer can supply power to only one Uni-Guard.

Single
Pro-Guard System

24V Transformer

24V

110/220vac

3-Pin Power Connector

3-Pin Power Connector

6-Pin Inter-Connector

Optional Split System Connection for Pro-Guard (two Tx's & one Rx)

There is another split system configuration for Pro-Guard, two transmitters and one receiver. Two interconnections are required to connect two 6-pole connectors from J3 and J12 (see page 14) on the bottom PC board of the receiver to each transmitter. This provides a convenient way for one Pro-Guard receiver to slave two transmitters. *Please note that a second transformer box is required. One transformer box can only power one standard Pro-Guard system (Tx and Rx).*

Tx   Rx   Tx

3-Pin Power Connector

24V   3-Pin Power Connector

110/220vac   24V Transformer   6-Pin Interconnector   3-Pin Power Connector

24V   6-Pin Interconnector

Note: This configuration requires two transformer boxes because one transformer box can supply power to only one Pro-Guard system (Tx/Rx).

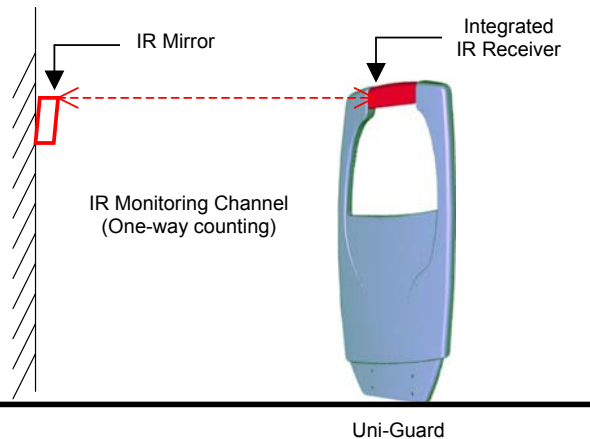## Optional IR Counting System Configuration (Pro-Guard & Uni-Guard)

There is an optional IR people counter feature available when the system is connected to WG's EASNet^{TM} software. Follow the configuration setup described below for using this feature.

System	Configurations	
Pro-Guard	Transmitter Pedestal	Receiver Pedestal
	Integrated IR Transmitter (1pc)	Integrated IR Receiver (1pc)
Uni-Guard	Pedestal	External Reflector
	Integrated IR Transceiver (1pc)	External IR Mirror (1pc)

Note:
This type of configuration only has one IR monitor channel between the pedestals. Please arrange the transmitter and receiver with IR modules face-to-face, otherwise the IR receiver will not be able to receive signals from the transmitter.

Integrated
IR Receiver

Integrated
IR Transmitter

IR Monitoring channel
(One-way counting)

Pro-Guard Rx

Pro-Guard Tx

Note:
This type of configuration only has one IR monitor channel on one side of the pedestal. Please arrange the integrated transceiver and IR mirror face-to-face, otherwise the IR mirror will not be able to reflect the signals back to the transceiver.
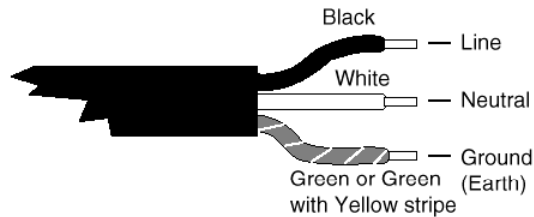
IR Mirror

Integrated
IR Receiver

IR Monitoring Channel
(One-way counting)

Uni-Guard

Power Cord Notices
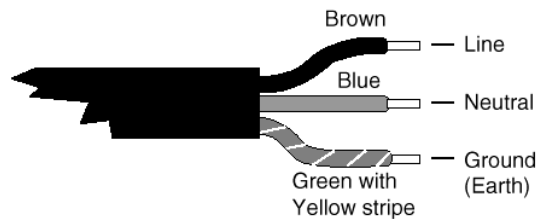
North American Power Supply Cords

This equipment is supplied with an external power line at one end and a molded receptacle terminal block at the other end. Conductors are color coded white (neutral), black (line) and green or green/yellow (ground).

Operation of this equipment at voltages exceeding 130vac will require power supply cords that comply with NEMA configurations.
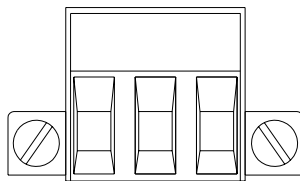


```
                              Black
                                        — Line
                              White
                                        — Neutral
                                          Ground
                                        — (Earth)
                       Green or Green
                       with Yellow stripe
```

International Power Supply Cord

This equipment is supplied with an external power line at one end and a molded receptacle terminal block at the other end. Conductors are CEE color-coded—light blue (neutral), brown (line) and green/yellow (ground). Other IEC 320 C-13 type power supply cords can be used if they comply with the safety regulations of the country in which they are installed.


```
                              Brown
                                        — Line
                              Blue
                                        — Neutral
                                          Ground
                                        — (Earth)
                       Green with
                       Yellow stripe
```
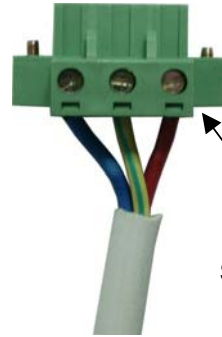
We recommend that you use a CE approved power cord H05 VV-F or H05 VVH2-F2 (Refer to the electrical code which governs your country for installation of an Anti-Theft Unit to the main power supply)

Pipe the power line to where the posts will be mounted. Attach the power cord to the field connector by following the wiring instructions below.

L   GND   N

Black or Brown = Live
White or Blue = Neutral
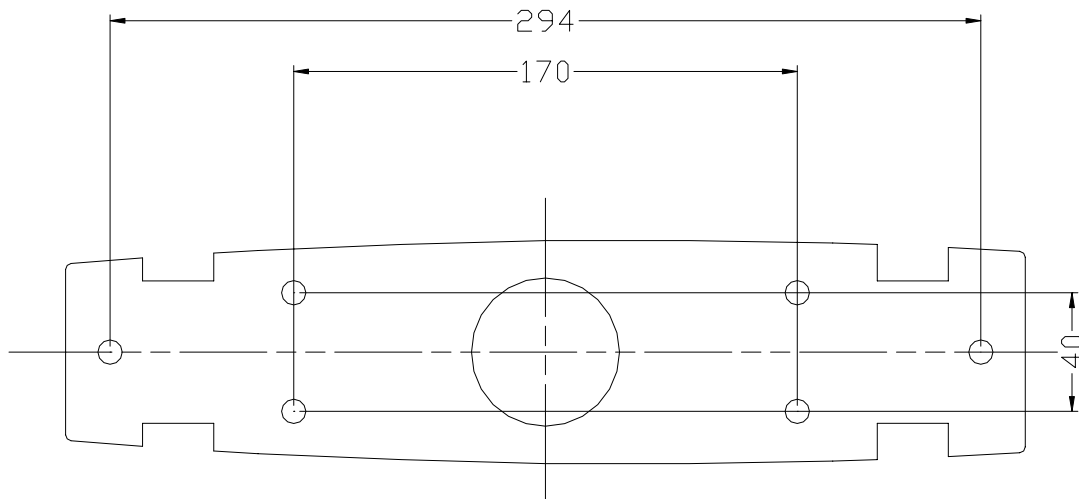**Green & Yellow = Ground**

Screw Torque Specification:
4.5Kg/cm

⚠ **IMPORTANT NOTICE:**

1. Use a torque of 4.5Kg/cm to screw down the wires.
2. The L and N lines can be swapped, but keep all systems wired IDENTICALLY with respect to the order of the three power lines.
3. If the Pro-Guard shuts down other manufacturers 58Khz deactivators or cause them to false alarm, or other systems cause the Pro-Guard to shut down or false alarm, perform the following action:
    SWITCH THE "L" AND "N" TERMINAL POSITIONS OF THE POWER CORD AND THEN TRY SYCHRON ADJUSTMENT (SEE APPENDIX ENTRY B)
4. We recommend using a power cord with a maximum length of 3 meters.

Dig six holes (10mm diameter, 40mm deep) for installing the base.

Insert the inflationary spirals into the holes.
Set the base in place, allowing the spiral heads to go through the holes in the base.
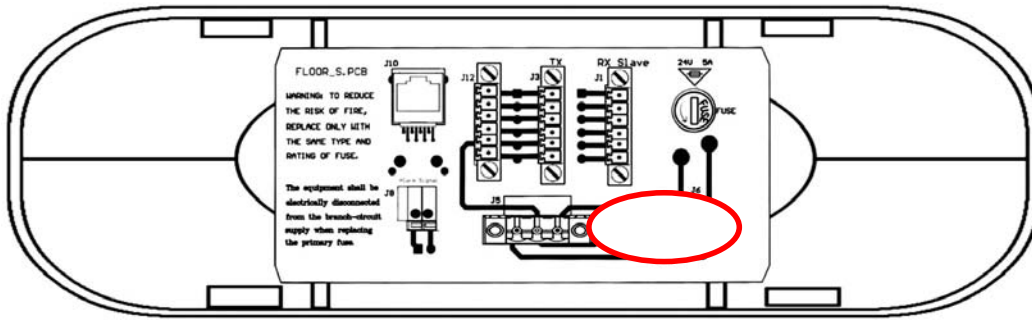Place cushion rings, then spring rings and nuts on the spiral heads, and screw the nuts to fix the base to the ground.
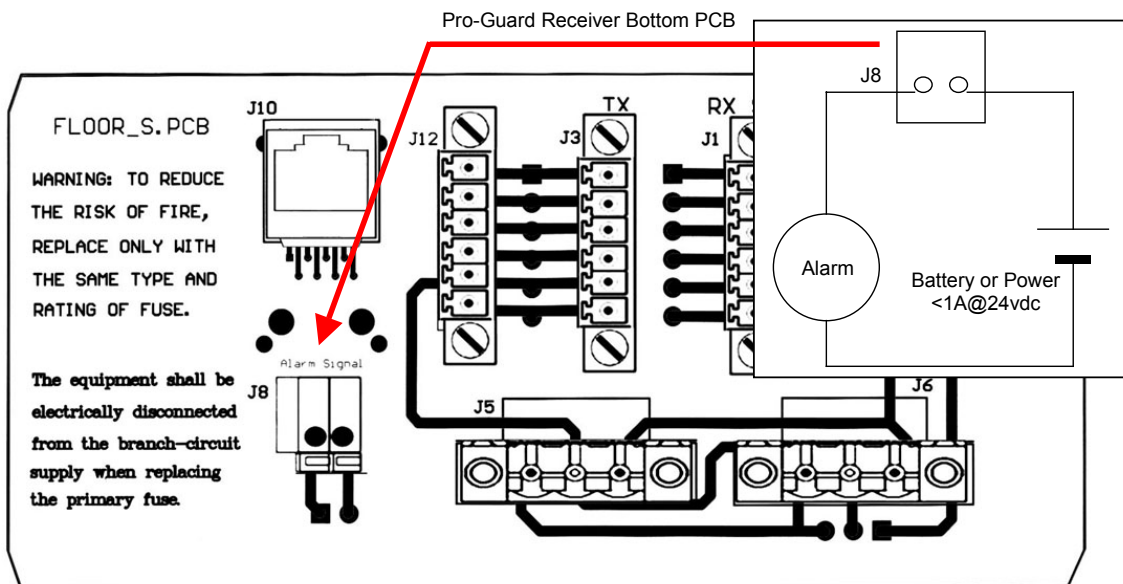

Lift the gate bottom and mount the 3-pin power line plug onto the power socket (J6) on the bottom of the PC board as shown in the following picture (note red circle around the socket).
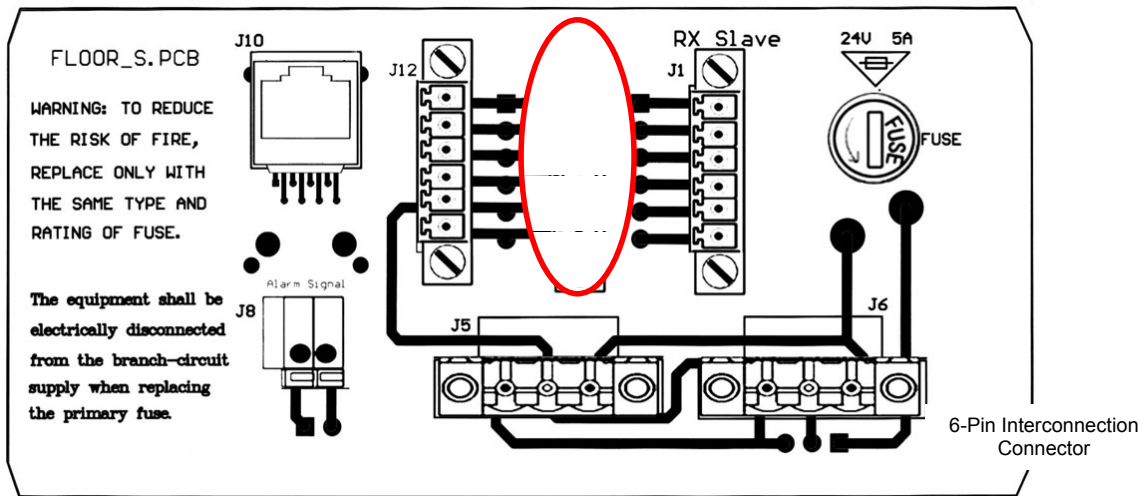

Pro-Guard Transmitter – Bottom View

Pro-Guard Receiver – Bottom View

There is one external alarm switch J8 on the Pro-Guard receiver and Uni-Guard. The switch is closed only when an alarm is triggered by the system. To connect the system to an external alarm, first press down the yellow button, then insert the two ends of the external alarm wire into each of the wire receptacle holes and release the yellow button. The wire will now be held in place by the connector. The external alarm switch has a rating of 1A@250vac/24vdc.
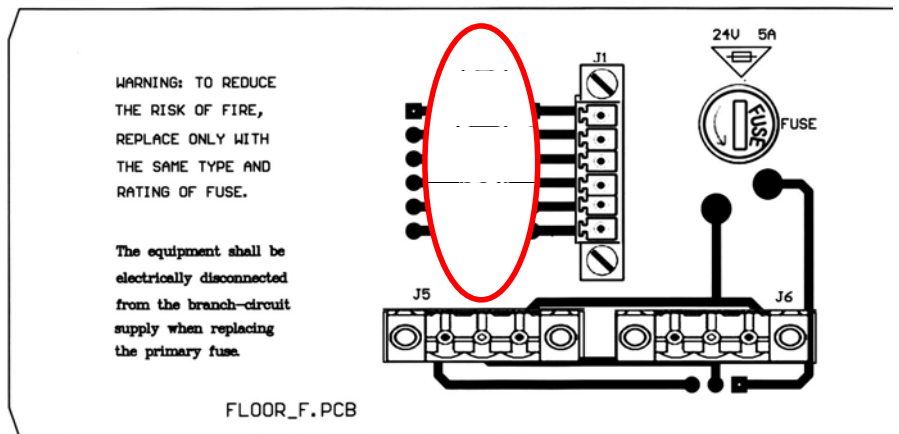
Notes:
1. **Wire length to the dry contact circuit is limited to 20 feet.**
2. **To prevent high voltage noise from being introduced into the Pro-Guard or Uni-Guard and degrading the system's performance, it is highly recommended that you use a 24vdc output relay.**

On Pro-Guard systems there is an interconnection between the receiver and transmitter. Connect the Interconnection Line Plug onto socket J3 (6-pin connector) on the PC Board as shown in the picture below (both transmitter and receiver, circled in red).

6-Pin Interconnection Connector

Pro-Guard Receiver – Bottom PCB

Screw Torque Specifications 1.7Kg/cm

Pro-Guard Transmitter – Bottom PCB

Note: If this is a Pro-Guard installation using two Transmitters & one Receiver, use J3 and J12 to connect the two transmitters. Do not use the J1 (Rx Slave) port.

Fuse Replacement Information

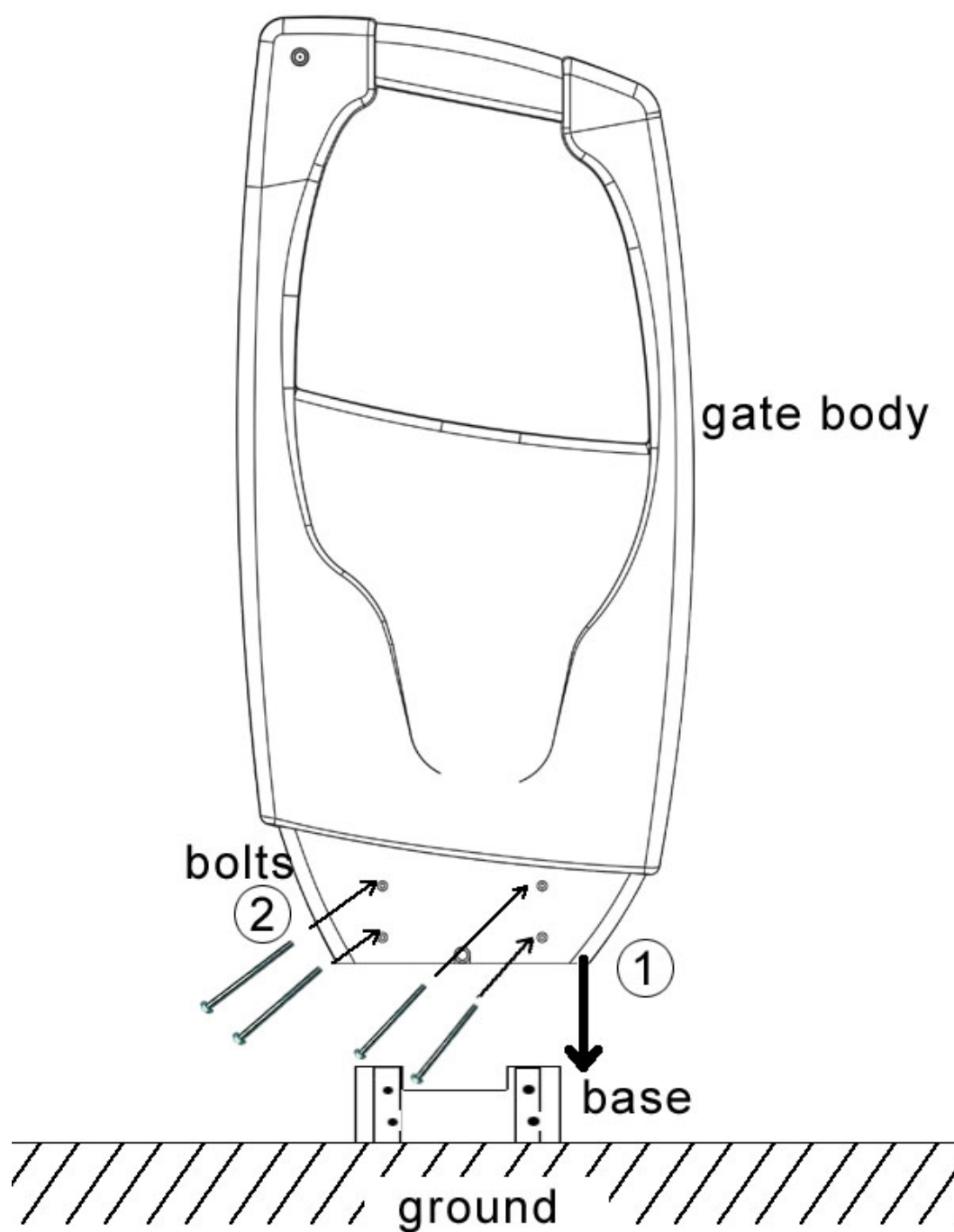The fuse holder is located at the bottom PC board in the pedestal.

WARNING: TO REDUCE
THE RISK OF FIRE,
REPLACE ONLY WITH
THE SAME TYPE AND
RATING OF FUSE.

The equipment shall be
electrically disconnected
from the branch-circuit
supply when replacing
the primary fuse.

FLOOR_F.PCB

J3   J1   J5   J6

1. **Equipment shall be electrically disconnected from the branch-circuit supply when replacing the fuse.**
2. **Remove the fuse holder with a screwdriver, rotating it in a counterclockwise direction.**
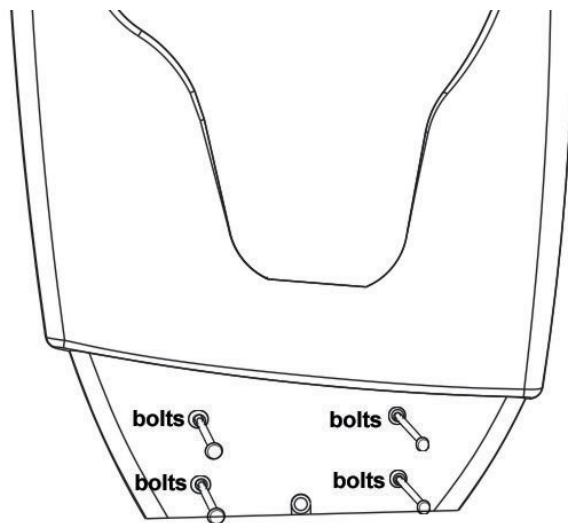3. **Replace the fuse in accordance with the specification noted below.**

24V 5A

Counterclockwise

Fuse Replacement:
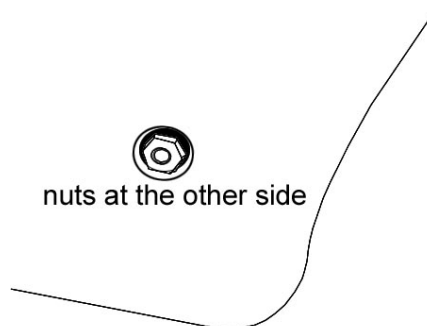**Extended Fuse (Time-Delay Fuse)**
5mm x 20mm 5A

WARNING – TO REDUCE THE RISK OF DAMAGE, REPLACE ONLY WITH THE SAME FUSE TYPE AND RATING.

Insert the gate body slick into the base track and cover the whole base.
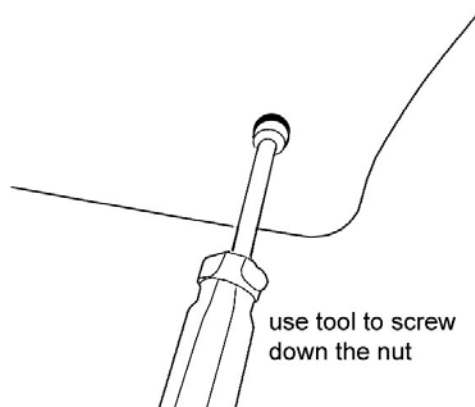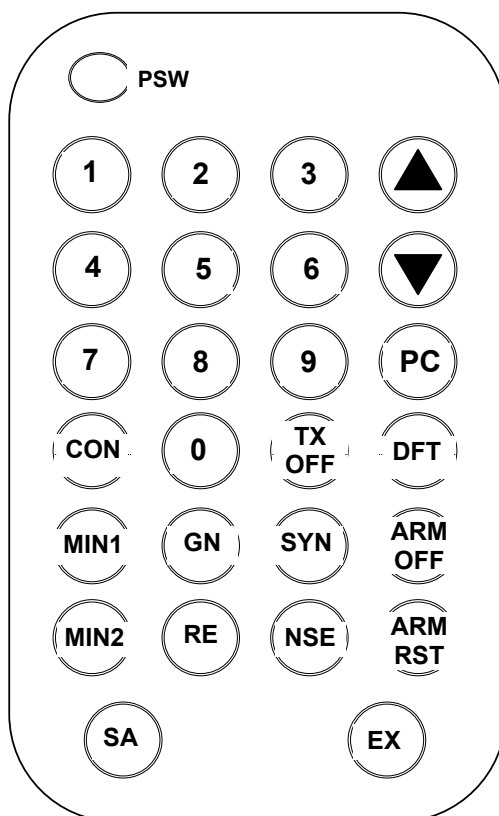Insert the two bolts through the two tunnels at the lower part of the gate body.

gate body

bolts

② ①

base

ground

Insert the nuts into the bolt shafts from the other side.
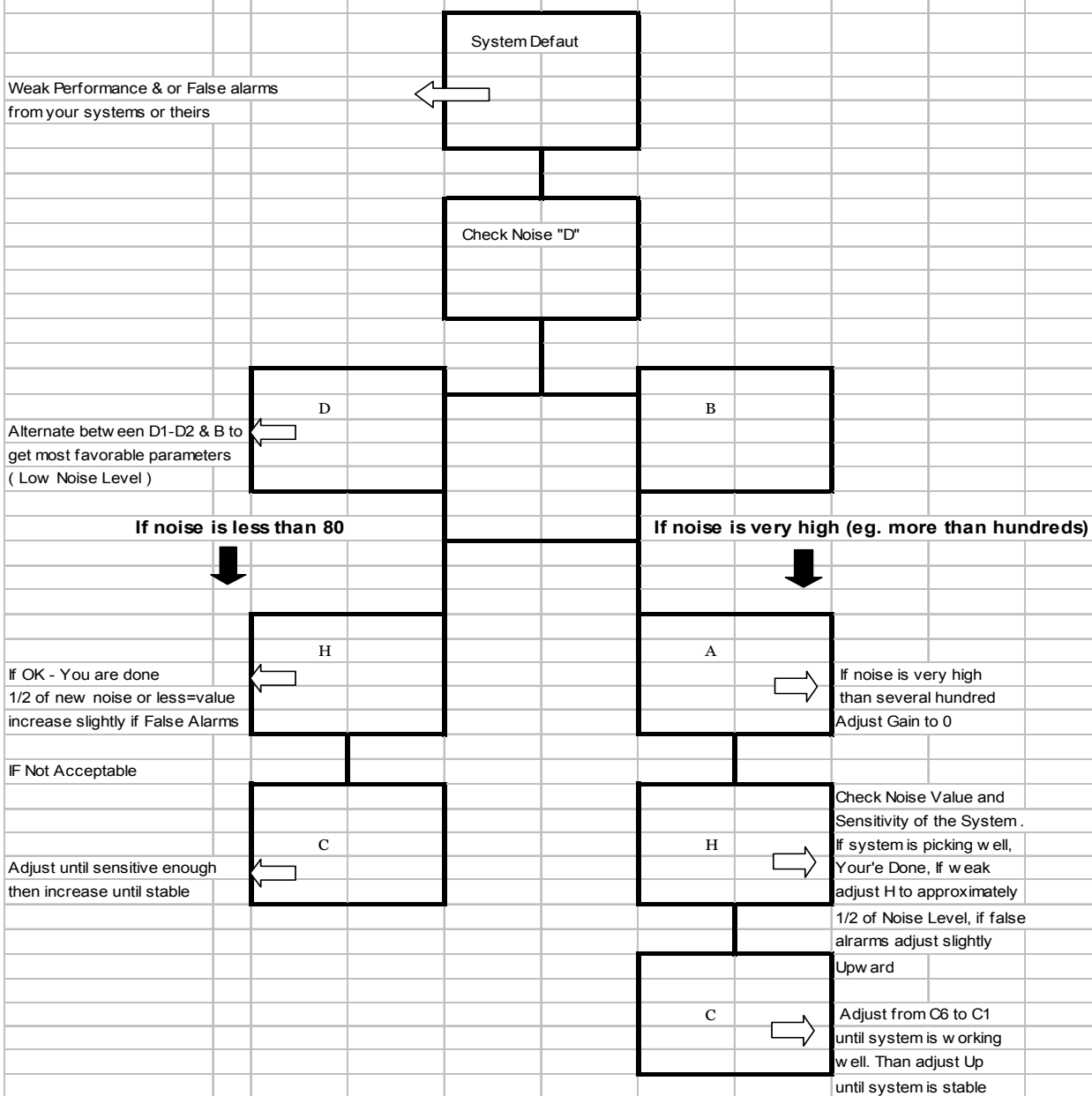
Use the provided tool to screw down the nuts.

IR Control Keyboard Function Description & Default Parameters Table

Key ID	Button	Parameters Description	Default Value	Valid Range
A	GN	Gain Adjustment	1	0, 1
B	SYN	Sync Adjustment	1	0 to 250
C	RE	Receiving Window Delay	8	0 to 15
H1	MIN	Minimum signal adjustment for antenna Channel 1	40	0 to 999 (Practical range 0-200)
H2		Minimum signal adjustment for antenna Channel 2		
D	NSE	Noise Display (2 channels)	0	0 to 2
F	TX OFF	Turn off transmitter	1	0 to 1
E	DFT	Return to default settings	0	0 to 1
P	PC	Password change	689 (see note)	0 to 999
G	ARM OFF	Turn off alarm sound	1	0 to 1
L	ARM RST	Alarm count reset	0	0 to 1
S	SA	Save the parameters to Flash ROM	0	0-1
	CON	Confirm the parameters input	NA	NA
	EX	Exit	NA	NA

Note: Default password is 689. After changing, the system will use the new password as default. The new password will remain saved at power off.

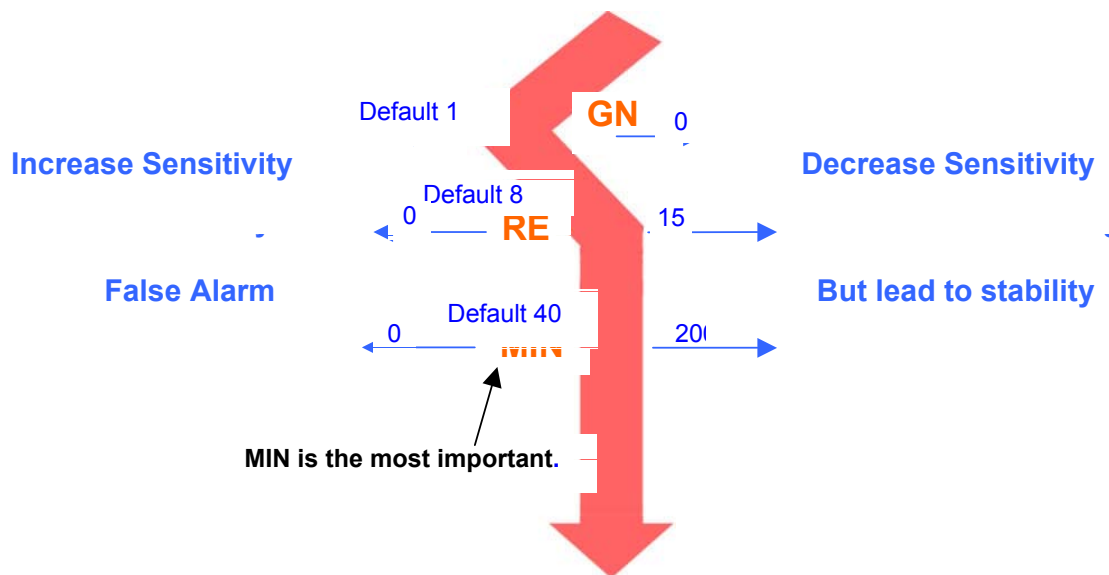**FLOW CHART OF SUGGESTED TUNING PROCEDURES**

System Defaut

Weak Performance & or False alarms
from your systems or theirs

Check Noise "D"

D

Alternate between D1-D2 & B to
get most favorable parameters
(Low Noise Level)

B

If noise is less than 80

If noise is very high (eg. more than hundreds)

H

If OK - You are done
1/2 of new noise or less=value
increase slightly if False Alarms

IF Not Acceptable

A

If noise is very high
than several hundred
Adjust Gain to 0

C

Adjust until sensitive enough
then increase until stable

H

Check Noise Value and
Sensitivity of the System .
If system is picking well,
Your'e Done, If weak
adjust H to approximately
1/2 of Noise Level, if false
alrarms adjust slightly
Upward

C

Adjust from C6 to C1
until system is working
well. Than adjust Up
until system is stable

*Always Watch the system for about an Hour to ensure that you have chosen stable paramaters

Tuning Procedures & Tips

There are mainly two problems that affect system's functioning and performance. One is that system picks up tags and labels poorly. The other is that system false alarms (or causes other system to do so) without tags or labels in detection zone.

PROBLEMS   ● Low Pick up Rate   ● Interference with or by other systems

SOLUTIONS
1. Check noise "D" (ranging from 0-999, >400 or so is heavy noise).
2. Adjust MIN, GN, RE, (see diagram below).
3. Shorten pedestal separation.

1. Swap L & N terminals on power plug.
2. Adjust SYN "B" step by step.

The diagram below explains how the major three tuning parameters influence system performance.

Default 1   **GN**   0

Increase Sensitivity   **Decrease Sensitivity**

Default 8
0 ─── **RE** ───── 15 ──→

False Alarm   **But lead to stability**

Default 40
0 ─── MIN ─── 200 ──→

MIN is the most important.

Please open and tune the system   re are multiple pedestals working together. It will help determine which system is causing the problem.

Remote Control Programming

Without receiving remote control signals, the panel displays the alarm count, indicating the number of times the system has alarmed. See Figure 1.
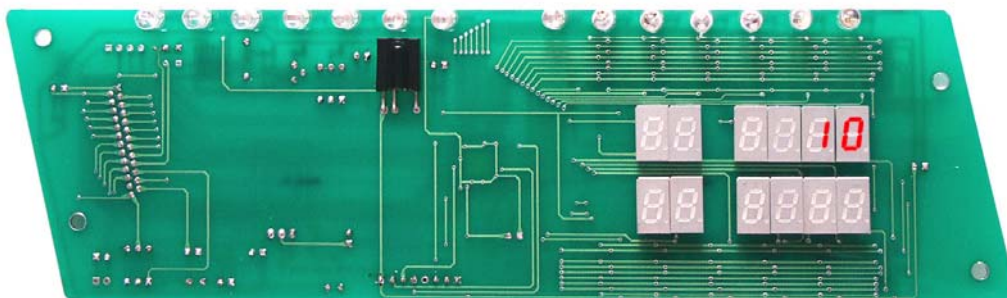

Figure 1. Alarm Count

Press [PSW] button to open the remote control, then enter the password. The default password, if not previously changed, is 689.
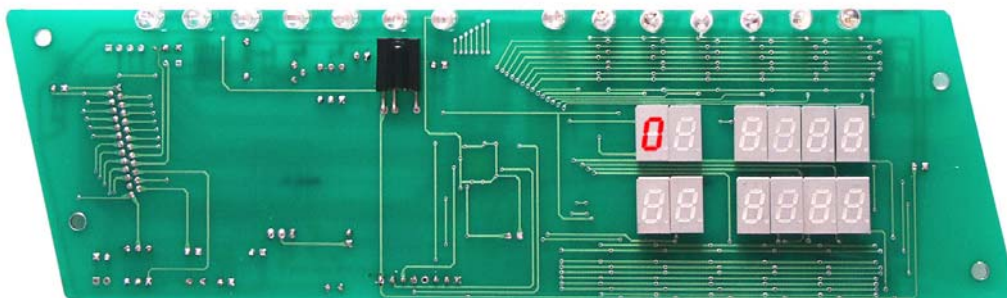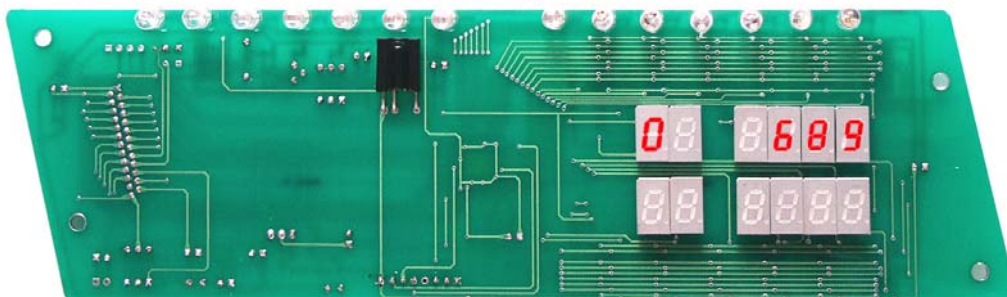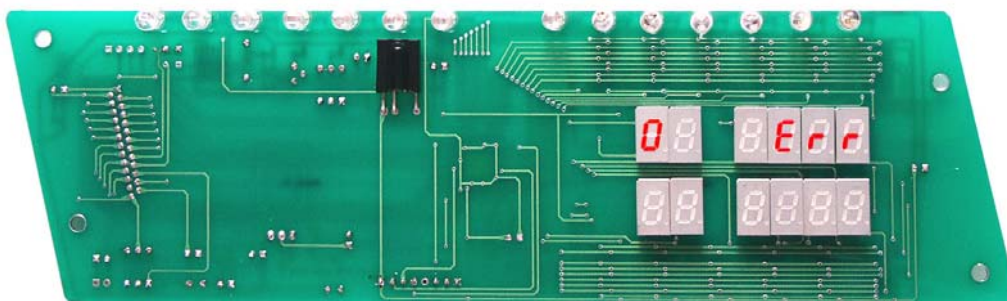
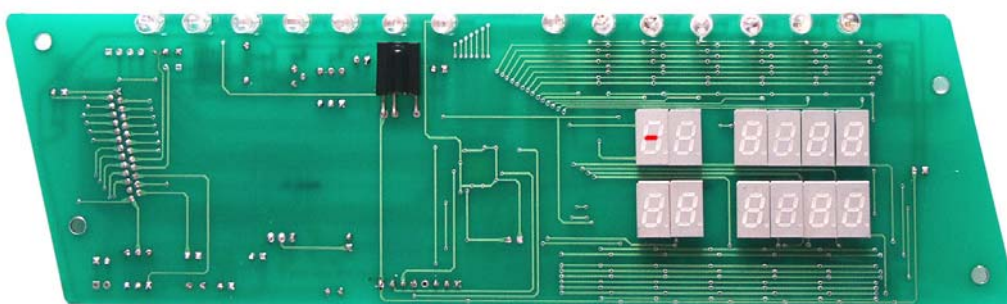

Figure 2. Display after [PSW] is Pressed

Input Password 689 and press [CON] to confirm/accept the password.

Note: Inputting the wrong password will cause an error message to be displayed as per the following picture. After three successive times of inputting an incorrect password, the remote will be disabled. You will need to turn system power off/on and input the password again.

When the correct password is verified, the panel will display the following and is now ready for receiving configuration inputs.
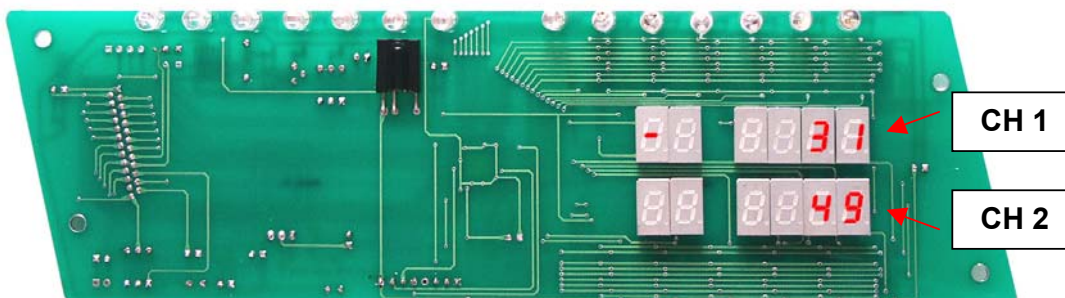

There are three basic steps to inputting a programming parameter:
- Press function button.
- Input parameter number.
- Press [CON] to accept the parameter.

After parameter confirmation, the panel will display the tag window signal. If there is no tag in the detection zone, the value reflects the noise level in the receiving window without a tag.

The upper value reflects the signal level in the tag window from antenna channel 1. The lower value reflects the signal level in the tag window from antenna channel 2. (See NSE noise display entry; it's the same value with D1)

Key ID A: Gain Adjustment (Range: 0-1)
- Press [GN] – panel displays as per Figure 3.
- Input parameter number.
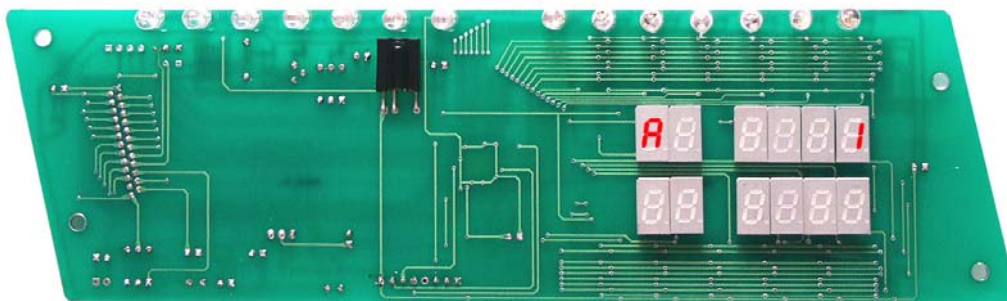- Press [CON] to accept the parameter.

Figure 3.

Key ID B: Sync Adjustment (Range: 0-250; increment: 1)
This sets the time from zero crossing point to the start point of transmitting burst. It is important to eliminate crosstalk between different systems. Setting the default value to b-1 will in most cases not interfere with other AM products.
- Press [SYN] – panel displays as per Figure 4.1.
- Input parameter number.
- Press [CON] to view the nose conditions. Display will be as per Figure 4.2.
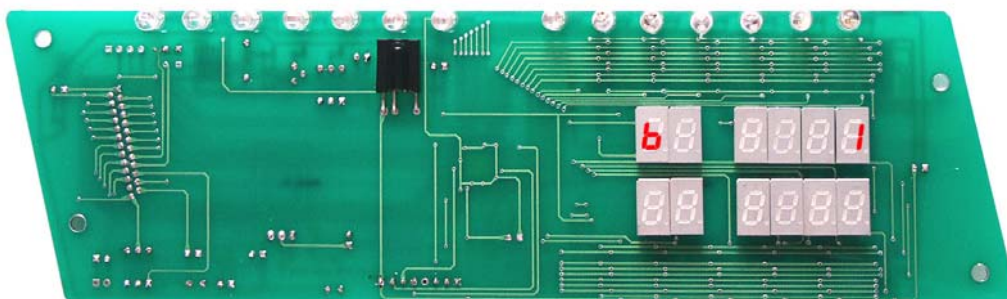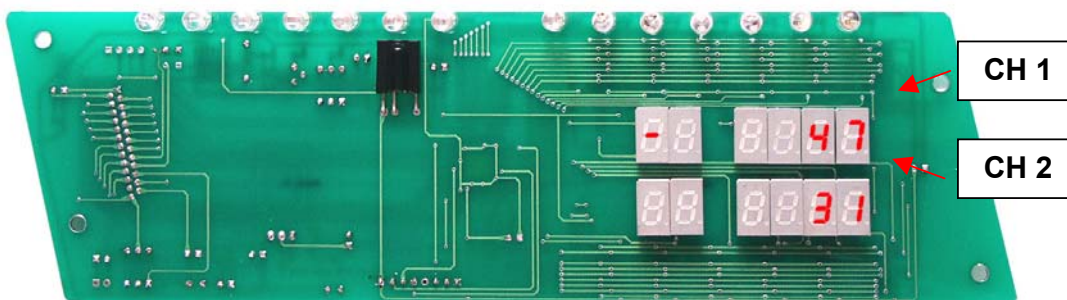

Figure 4.1

Under this entry, you can also see the different noise condition (from the light segment display and number indicator) at a different phase when the adjustment is applied. It will help you select a relatively "clean" phase environment for the system.

CH 1

CH 2

Key ID C: Receiving Window Delay (Range: 0-15; increment: 1)
You can input a number from 1-15. The larger the number, the later the receiving window will be opened.

- Press [RE] – panel displays as per Figure 5.
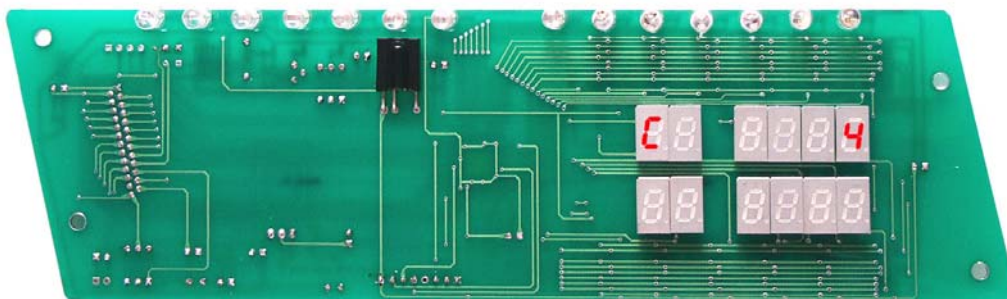- Input the parameter number.
- Press [CON] to accept the parameter.

Figure 5.

Key ID D: Noise Condition Display (Range: 0-2)
The LEDs indicate the signal level by value figures. The upper value reflects the nose level from antenna channel 1; the lower value reflects the noise level from antenna channel 2.
Note: If the noise condition display is open, the alarm will be deactivated unless you input 0 to shut down the display.

- Press [NSE] – panel displays as per Figure 6.1.
- Input the parameter number.
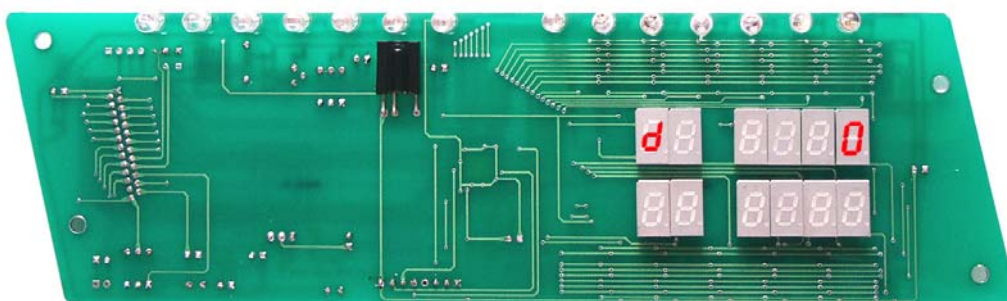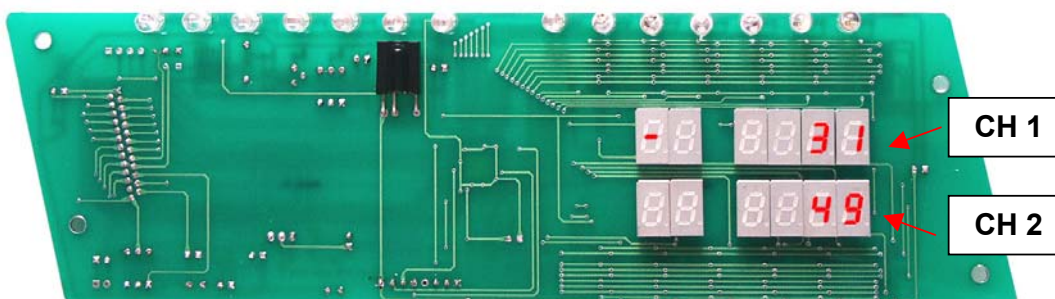- Press [CON] to accept the parameter – panel displays as per Figure 6.2.

Figure 6.1

CH 1

CH 2

Figure 6.2

Noise Condition Display Configuration Table		
Value	Function Description	Detection Purpose
0	Shut down tag or noise window display.	
D1	Tag window display for channel one.	Detect tag entering vertically.
	Tag window display for channel two.	Detect tag entering horizontally.
D2	Average noise window display for channel one.	Monitor average noise.
	Average noise window display for channel two.	

Note: The average noise level is also weighted by the Minimum Signal Adjustment value. The D2 value will show the maximum value between average noise and MIN value.

Key ID H: Minimum signal Adjustment (Suggested increment: 20; practical range: 0-200) Decreasing this number will increase system sensitivity but also at the risk of false alarming. Vice versa, increasing the value will lower system sensitivity to avoid false alarms caused by uncontrollable environment noise.

There are two antenna channels. Channel 1 is related to vertical orientation and Channel 2 is related to horizontal orientation. H1 sets the minimum signal of Channel 1, and H2 sets the minimum signal of Channel 2.
- Press [MIN] – panel displays as per Figure 7.
- Input the parameter number.
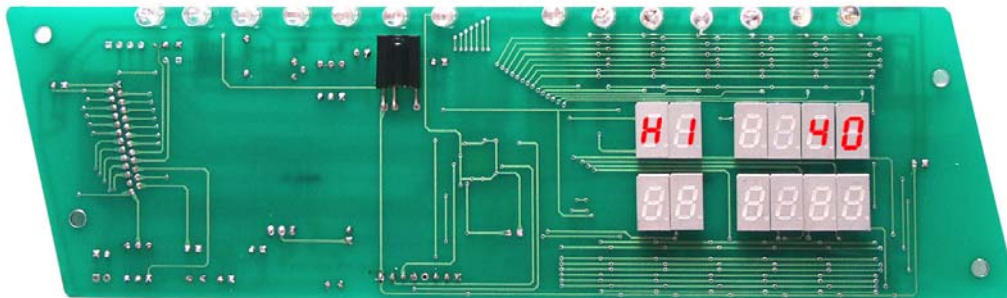- Press [CON] to accept the parameter.
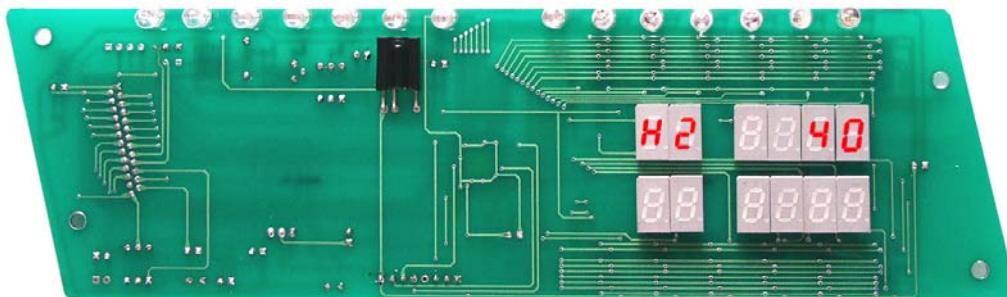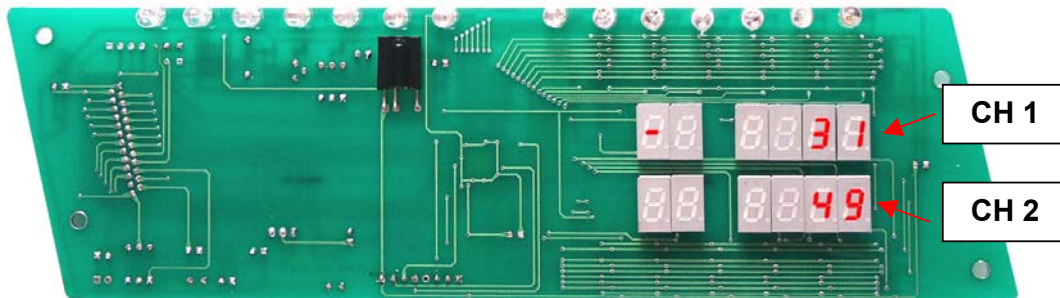

Figure 7.1. Antenna Channel 1

Figure 7.2. Antenna Channel 2

After confirmation of H1 or H2 values, the panel will display the average noise level weighted by the minimum signal adjustment for both antenna channels as follows. **(See NSE noise display entry. It's the same value with D2)**

The upper value reflects the average noise level weighted by H1 in antenna channel 1. The lower value reflects the average noise value weighted by H2 in antenna channel 2.

Key ID F: TX Off (Default value: 1; valid range: 0-1)

Value	Action
0	Turn off Tx
1	Turn on Tx

- Press [TX OFF]
- Input the parameter number.
- Press [CON] to accept the parameter.

Input 0 will turn down the transmitting burst via software control. If system power is reapplied, the system will return to default state of 1.

Key ID G: Alarm Sound Off (Default value: 1; valid range: 0-1)

Value	Action
0	Turn off alarm sound.
1	Turn on alarm sound.

- Press [ARM OFF]
- Input the parameter number.
- Press [CON] to accept the parameter.

Input 0 will turn down the alarm sound via software control. If system power is reapplied, the system will return to default state of 1.

Key ID L: Alarm Count Reset (Default value: 0; valid range: 0-1)

Value	Action
0	Initial state.
1	Reset alarm count.

- Press [ARM OFF]
- Input the parameter number.
- Press [CON] to accept the parameter.

Input 1 will reset the alarm count to 0.

Key ID E: Load Default Settings (Default value: 0; valid range: 0-1)

Value	Action
0	Initial state.
1	Load default settings.

Input 1 will load default settings. See Default Parameters Table.

Key ID P: Password Change (Default value: 689; valid range: 0-999)
You can input customer-defined passwords with this entry. Press [CON] button after inputting to activate the new password.
Note: Please SAFEGUARD the new password if you have changed from the default. Once the new password is activated, the system will no longer recognize the 689 default password.

Key ID EX: Exit
Press [EX] to return to the alarm counter display status.

Key ID SA: Save
This button will save all current parameters to flash ROM and are saved, even after power shutdown. When the system is rebooted, it will load all previously saved parameters from flash ROM.
- Press [SA] – panel displays as per Figure 8.
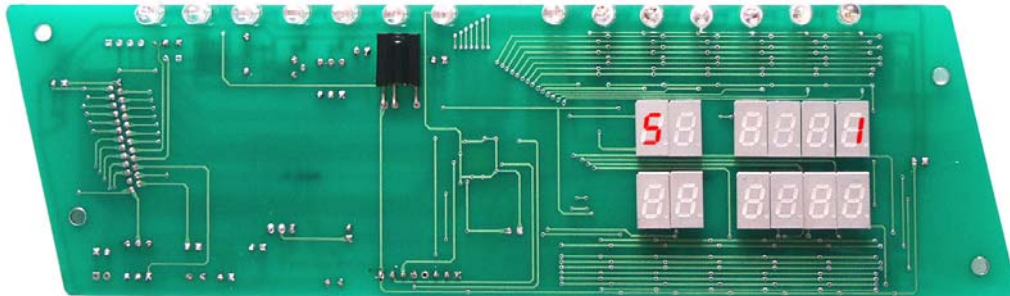- Input 1
- Press [CON] to accept the current parameters.

Figure 8.

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