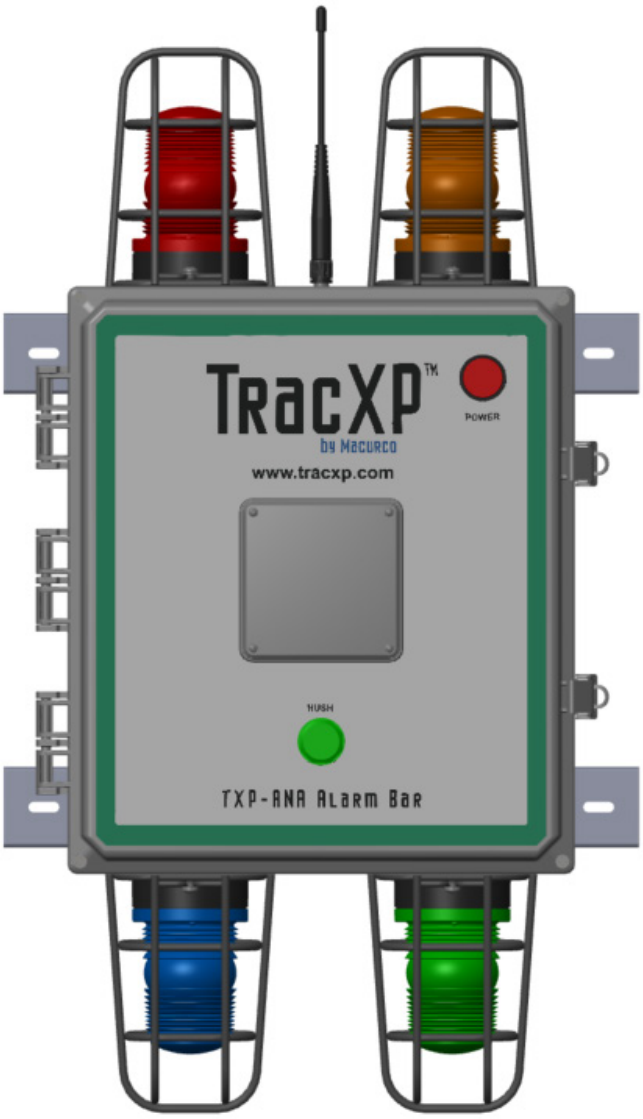
TracXP™
Industrial Gas Solutions
by Macurco

Northside Sales, Co.
Safety & Industrial Products
800-467-9005

TracXP™ ANA

Alarm Notification Assembly
Instruction Manual



IMPORTANT: Read and understand contents of this manual prior to operation. Keep these user instructions for reference.

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1 General Safety Information

1.1 Read Before Installation and Operation

IMPORTANT

AVERTISSEMENT: Lire attentivement les instructions avant de metre en marche.

CAUTION

CAUTION: FOR SAFETY REASONS THIS EQUIPMENT MUST BE OPERATED AND SERVICED BY QUALIFIED PERSONNEL ONLY. READ AND UNDERSTAND INSTRUCTION MANUAL COMPLETELY BEFORE OPERATING OR SERVICING.

ATTENTION: POUR DES RAISONS DE SÉCURITÉ, CET ÉQUIPEMENT DOIT ÊTRE UTILISÉ, ENTRETENU ET RÉPARÉ UNIQUEMENT PAR UN PERSONNEL QUALIFIÉ. ÉTUDIER LE MANUE D'INSTRUCTIONS EN ENTIER AVANT D'UTILISER, D'ENTRETENIR OU DE RÉPARER L'ÉQUIPEMENT.

CAUTION: KEEP EXPLOSION PROOF COVER TIGHT WHILE CIRCUITS ARE ALIVE.

ATTENTION: GARDEZ LE COUVERCLE ANTI-EXPLOSION SERRÉ PENDANT QUE LES CIRCUITS SONT VIVANTS.

CAUTION: USE SUPPLY WIRES SUITABLE FOR 40°C ABOVE SURROUNDING AMBIENT.

ATTENTION: UTILISER DES FILS D'ALIMENTATION QUI CONVIENNENT A UNE TEMPERATURE DE 40°C AU-DESSUS DE LA TEMPERATURE AMBIANTE.

CAUTION: A CONDUIT SEAL MUST BE INSTALLED WITHIN 18 INCHES OF THE ENCLOSURE.

ATTENTION: LE CONDUIT DOIT ÊTRE INSTALLÉ À MOINS DE 18 POUCES DU BOÎTIER.

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1.2 WARNINGS

- Shock Hazard - Disconnect or turn off power before servicing this instrument.
- WARNING- EXPLOSION HAZARD- DO NOT REPLACE FUSE UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.
- WARNING- EXPLOSION HAZARD- DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.
- Use a properly rated CERTIFIED AC power (mains) cable installed as per local or national codes
- A certified AC power (mains) disconnect, or circuit breaker should be mounted near the controller and installed following applicable local and national codes. If a switch is used instead of a circuit breaker, a properly rate CERTIFIED fuse or current limiter is required to be installed as per local or national codes. Markings for positions of the switch or breaker should state (I) for on and (O) for off.
- Clean only with a damp cloth without solvents.
- Equipment not used as prescribed within this manual may impair overall safety.

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2 Use Instructions and Limitations

The TracXP-ANA (Alarm Notification Assembly) is a flexible, cost-effective alarm status annunciation for general purpose applications. The TXP-ANA offers optional strobe light configurations of one to four strobes, standard 99 dB or optional 120 dB horn, optional configurable Hush/Silence, and optional wireless functionality with the TXP Wireless System. The TXP-ANA wireless is available with a 900MHz radio frequency. The TXP-ANA can be used simultaneously to serve as a repeater to extend the wireless communication range to a TXP- controller.

2.1 Key Features

- Modular Design
- Up to four strobe alarm indicators
- NEMA 4X/IP66 Enclosure
- Power indicator
- 99 dB horn with configurable alarm sequences (Optional 120 dB horn)
- Alarm Hush button (Optional)
- 900 MHz Radio (Optional)

2.2 Specifications

2.2.1 Input Power

- 10-30 VDC, 3 watts maximum (non-wireless)
- 85-264 VAC (wireless)

2.2.2 Wireless Input (if equipped)

- 900MHz Receive Sensitivity Set At -100 dBm
- 900MHz Input Entails:
    - 2mA during “sleep” mode
    - 40mA while receiving beacon
    - Up to 1 amp during 1 watt “transmit” mode

2.2.3 Wireless Output (if equipped)

- Frequency-Hopping Spread Spectrum (FHSS) Wireless Modem w/ Data Encryption
- Frequency-Hopping Within 900MHz Occurs Between 902 – 928 MHz.
- 900MHz Power Adjustable From 10mW to 1 watt

2.2.4 Wireless Performance (if equipped)

- GHz frequency range: 2400 - 2483.5 MHz with 42 hops
- 900MHz frequency range: 902 - 928 MHz with 50 hops
- 900MHz indoor/urban range: Up to 3000 feet with 2dBi dipole antenna

2.2.5 Ambient temperature

- -40°F to 140°F (-40°C to 60°C)

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2.2.6 Dimensions

- 13 x 26.5 x 9.25 in. (33 x 67.3 x 23.5 cm) enclosure and 99 dB horn
- 28 x 26.5 x 9.25 in. (71.1 x 67.3 x 23.5 cm) with (4) strobes and 99 dB horn
- 28 x 26.5 x 13.5 in. (71.1 x 67.3 x 34.3 cm) with (4) strobes and 120 dB horn

2.2.7 Weight

- 17.6 lbs. (7.98 kg) with (4) strobes, wireless, and 99 dB Horn
- 18.2 lbs. (8.26 kg) with (4) strobes, wireless, and 120 dB Horn

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3 Installation

3.1 Mount the Enclosure

3.1.1 Permanent Mounting

Install the ANA to a wall or bracket using the pre-drilled mounting flanges included as seen in Figure 3-1. Horizontal holes are 14 inches on center and vertical holes are on 11.5 inch on center. The use of any other mounting methods should be avoided.

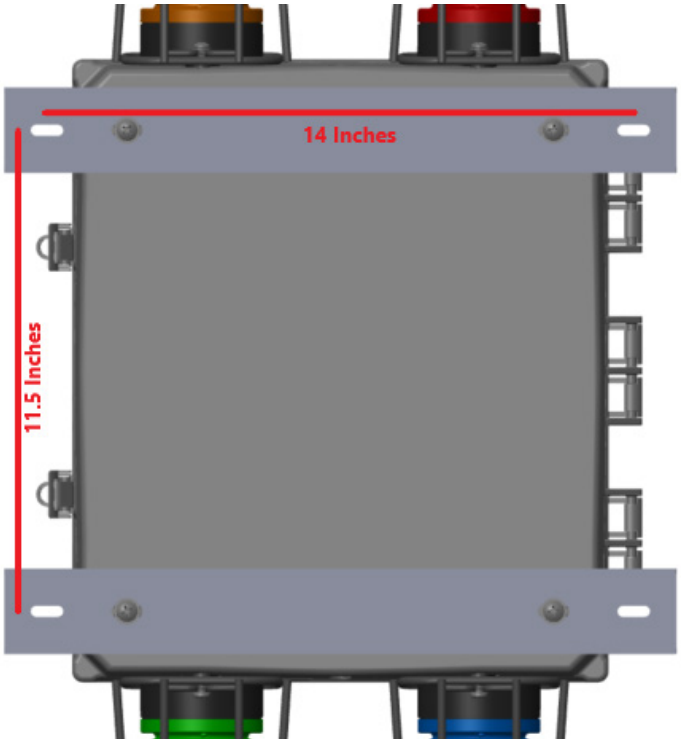

Figure 3-1 – Mounting Holes

⚠ WARNING
Only qualified personnel should perform the installation according to applicable electrical codes, regulations, and safety standards. Improper mounting techniques that include drilling mounting holes into the back or sides of the TXP-ANA module could cause water and gas intrusion into the interior, meaning the enclosure would no longer be safe for use in wet environments, the NEMA 4X rating would be invalidated, and the warranty would be voided.

3.1.1.1 Wireless Connection Mounting Considerations

If ordered with the wireless antenna (120VAC model), The TXP-ANA's antenna should typically be mounted within line-of-site view to the controller and/or the TXP-WTA. If a direct line-of-site angle is not possible, the TXP-ANA may still function properly at the ranges described in Section 3.3 Antenna Transmission Range – however, visual obstructions between the TXP-ANA and the controller / TXP-WTA should be avoided to ensure maximum interoperability.

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3.2 Connecting Power

> **WARNING**
>
> Qualified personnel should perform the installation according to applicable electrical codes, regulations, and safety standards. Ensure correct cabling and sealing fitting practices are implemented.

3.2.1 Hard Wired (24 VDC)

Connect incoming 24 VDC, from the control device relays, to the terminal block. See Figure 3-2.

Shield to TBG (Yellow/Green Wire)
Strobe 1 to TB1 (Red Wire)
Strobe 2 to TB2 (Yellow Wire)
Strobe 3 to TB3 (Blue Wire)
Strobe 4 to TB4 (White Wire)
Horn to TB5 (Brown Wire)
Power Indicator to TB7 (Gray Wire)
Ground to TB9 (Black Wire)

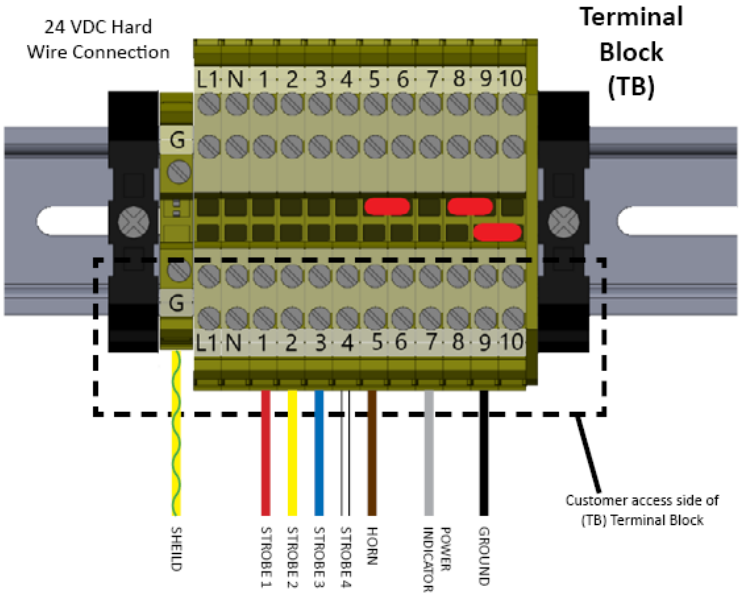

Figure 3-2 – Terminal Block connections

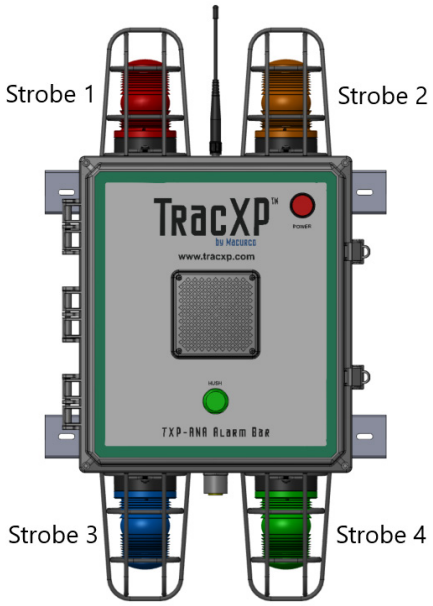

Figure 3-3 – Strobe layout

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3.2.2 Wired Cable Pinout

For the cable wired option, the wiring is factory installed. Wire the connector to the following

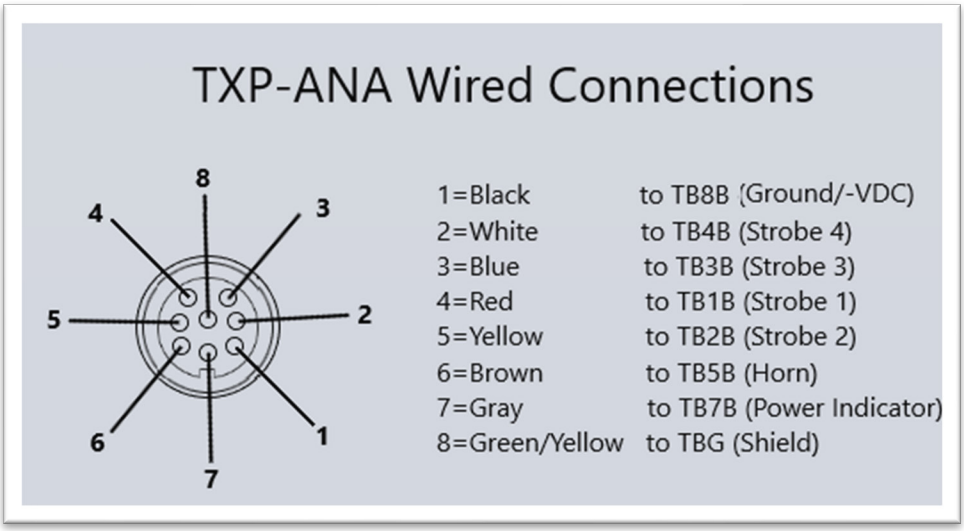

Figure 3-4 – Cable Pinout wiring

3.2.3 Hard Wired (120 VAC)

Connect the incoming 120 VAC to the terminal block, Line Voltage to L1, neutral to N and ground to G. See figure 3-5.

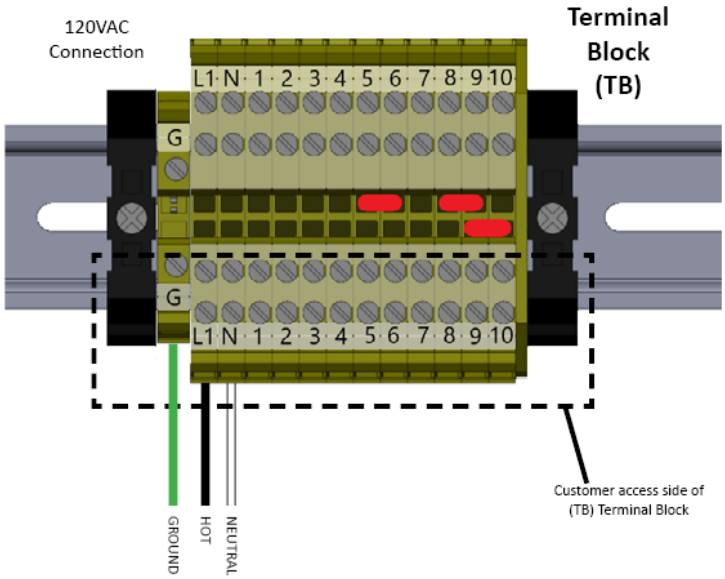

Figure 3-5 – Terminal Block wiring

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3.2.4 Hush Timer Settings (Optional)

The optional Hush Timer is factory set to silence the audible siren for approximately five (5) minutes when the Hush button on the front panel is pressed. After the time elapses and an alarm condition remains active, the siren will reactivate. The time to silence the alarm can be adjusted by changing the Range and Fine Adjustment on the timer. The Range dial indicates the overall range or "timespan" that the timer will operate in. Factory default is 10m which means zero to ten minutes. After setting the Range, the Fine Adjustment dial can be set to indicate the precise time withing the Range. Factory default is set at five minutes. NOTE: The Hush Timer does not affect the strobe beacons. They will remain lit depending on the active alarm status. See figure 3-6.

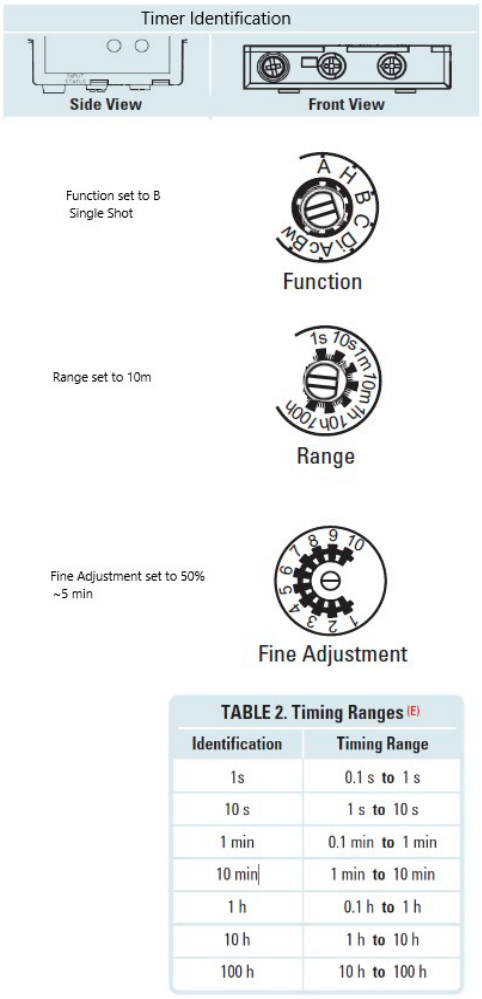

TABLE 2. Timing Ranges [E]

Identification	Timing Range
1s	0.1 s to 1 s
10 s	1 s to 10 s
1 min	0.1 min to 1 min
10 min	1 min to 10 min
1 h	0.1 h to 1 h
10 h	1 h to 10 h
100 h	10 h to 100 h

Figure 3-6 - Timer Controls

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3.3 Antenna Transmission Range (Wireless, 120VAC model only)

The distance radio signals can travel is dependent upon several factors including:

- Antenna Design
- Transmitter Power
- Free-space Losses

NOTE: For a wireless link to work, the available system operating margin (TX power - RX Sensitivity + Antenna gains) must exceed the free-space loss and all other losses in the system. For best RF line-of-site, the combined height of both antennas must exceed the Fresnel zone diameter.

Distance Between Antennas	Fresnel Zone Diameter	Freespace Loss (dB)
1000 ft. (300 m)	16 ft. (4.9 m)	81
1 Mile (1.6 km)	32 ft. (9.7 m)	96
5 miles (8 km)	68 ft. (20.7 m)	110

Table 3-1 – Antenna Distance

Example:

A 900 MHz TracXP system has following parameters:

- RF TX power setting = 21 dBm (125 mW)
- RF RX sensitivity = -95 dBm (this is a constant)
- Antenna gain (standard equipped rubber collinear) = 7dBi x 2 = 14dBi

The system operating margin is 21 - (-95) + 14 = 130 dBm. This is enough to transmit 5 miles if free space was the only loss in the system. For this to be the case, the antennas must be mounted with a combined height greater than 68ft above all obstructions (including the ground) to keep the Fresnel zone clear. In practice, however, there are many losses in the system besides just free-space and it is recommended there be at least 20dB extra system operating margin.

RF “Tips & Suggestions”:

- Doubling the range with good RF “Line of Sight” (LOS) requires an increase of 6 dB.
- Doubling the range without good RF LOS requires an increase of 12 dB.
- Doubling the power increases dBm by 3.

3.4 Antenna Selection

Please see the TXP-WTA manual for information on antenna selection.

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3.5 Surge Protection and Grounding

Voltage surges can enter the gas detection system via:

- Antenna connections
- Power supply connections
- Connections to other equipment
- The earth or ground connection

Surges are electrical energy following a path to earth, and the best protection is achieved by draining the surge energy to earth via an alternate path. Wireless devices need to have a solid connection to earth via a ground stake or ground grid if the soil has poor conductivity. Solid connection means a large capacity conductor (not a small wire) with no coils or sharp bends. All other devices connected to the controller need to be grounded to the same ground point. There can be significant resistance between different ground points leading to very large voltage differences during lightning activity. As many wireless units are damaged by earth potential surges due to incorrect grounding as direct surge voltage.

It is very difficult to protect against direct lightning strikes, however the probability of a direct strike at any one location is very small. Unfortunately, power line surges and electromagnetic energy in the air can induce high voltage surges from lightning activity several miles away.

3.5.1 Antenna Grounding

Electromagnetic energy in the air will be drained to ground via any and every earth path. An earth path exists between the antenna and the TXP-WTA Sensor Transmitter, and to protect against damage this earth path current must be kept as small as possible.

This is achieved by providing better alternate earth paths:

- Ground the antenna to the same ground point as the TXP-WTA Sensor Transmitter.

Surge energy induced into the antenna will be drained:

- By the mount's ground connection
- By the outside shield of the coax cable to the ground connection on the radio
- By the internal conductor of the coax cable via the radio electronics
  NOTE: This path causes damage unless the other two paths provide a better earth connection allowing surge energy to bypass the electronics.

When an antenna is located outside of a building and outside of an industrial plant environment, external coax surge diverters are recommended to further minimize the effect of surge current in the inner conductor of the coax cable.

Coax surge diverters have gas-discharge element which breaks down in the presence of high surge voltage and diverts any current directly to a ground connection. A surge diverter is not normally required when the antenna is within a plant or factory environment, as the plant steelwork provides multiple parallel ground paths and good earth grounding will provide adequate protection without a surge diverter.

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3.5.2 Connections to Other Equipment

Data devices connected to the wireless unit should be well grounded to the same ground point as the wireless unit. Surges can enter the wireless unit from connected devices, via I/O, serial, or Ethernet connections.

Special care needs to be taken where the connected data device is remote from the wireless unit requiring a long data cable. As the data device and the wireless unit cannot be connected to the same ground point, different earth potentials can exist during surge conditions:

- Fit surge diverters to the data cable to protect against surges entering the wireless unit.
- Fit surge diverters for I/O wiring to protect the wireless unit from surge voltages being induced on long lengths of wire from nearby power cables.

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4 Wireless Operation

4.1 Wireless TXP-ANA Configuration

The wireless TXP-ANA is designed to control alarm event relay switching for up to 32 TXP-WTA Sensor Transmitters.

From each TXP-WTA Sensor Transmitter, the TXP-ANA receives:

- Fail
- Alarm 1
- Alarm 2
- Alarm 3

The TXP-ANA maps the received messages to its (up to) four programmable relays. Each relay is mapped to an onboard strobe. Each relay is also mapped to a single horn drive. The horn may be set to off, pulse or steady for each of the relays. Additional features include:

- Failsafe
- Alarm
- Acknowledge
- Refresh

Four standard 5-amp alarm relays may be programmed to activate based upon various alarm combinations.

A backlit graphic LCD clearly indicates the alarm status of monitored channels (Figure 3 1). When there are no channels with alarm conditions:

- The TXP-ANA displays ALARMS STATUS CLEAR as the Main Screen.
- When there are channels with alarms the ALARMS STATUS CLEAR screen is replaced by the Channel Alarm Status screen which displays any active channel in alarm and is followed by an alternating line which shows the channel's Measurement Name and the current alarm (Section 3.3.2).

The right side of the screen displays the range indicator. One of four indicators will be displayed vertically. When the TXP-ANA has been out of range of the Server for at least 30 seconds the Previously Out of Range icon will be displayed:

1. When WNR is a Server	2. In-Range	3. Out of Range	4. Previously Out of Range
S E R V E R			

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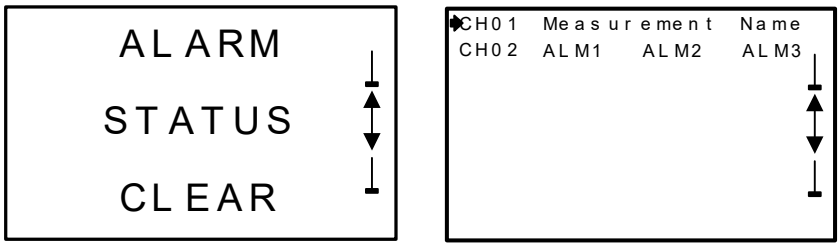

Figure 4-1 – Main Screen

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4.2 Wireless Menus

Below, in Figure 4-2, is the complete menu tree for the TXP-ANA. To navigate the menus, use the magnetic keypad.

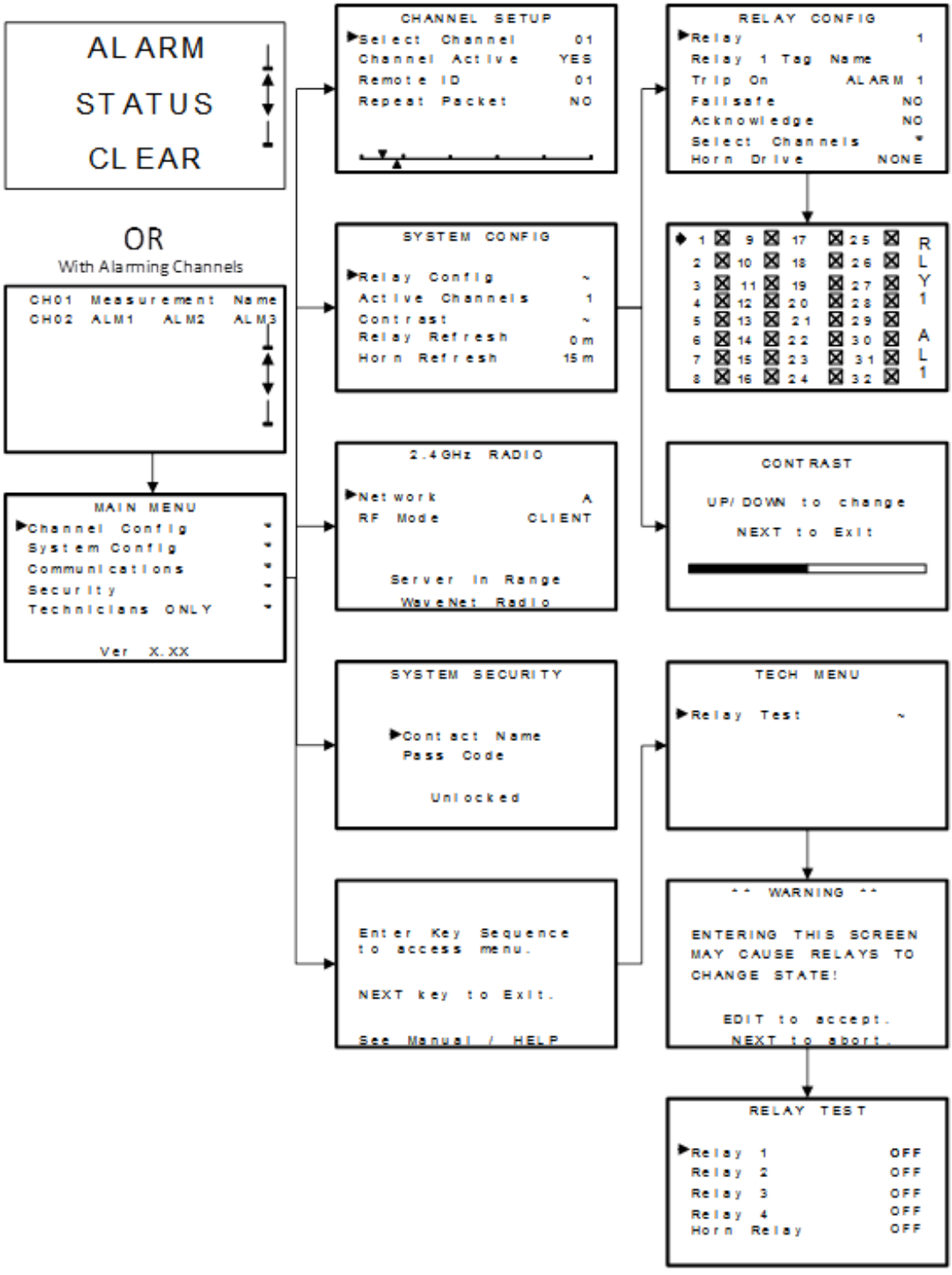

Figure 4-2 – Menu Tree

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4.2.1 Wireless Main Menu

To reach The MAIN MENU group shown in Figure 4-3 below:

1. Swipe the EDIT key while on the Home Screen.
   NOTE: This is the entry-level screen to Channel Config, System Config, Communications, Security and Technicians ONLY menus, and displays the current firmware version.
2. Use the UP/DOWN keys to move the pointer to the desired menu.
3. Swipe the EDIT key.

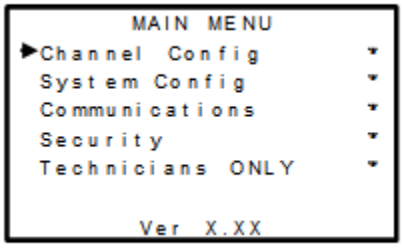

Figure 4-3 – Main Menu

4.2.2 Channel Config Menu Group

The CHANNEL CONFIG menu shown in Figure 4-4 allows configuration of variables specific to the selected channel. To select the channel to be affected:

1. Swipe the EDIT key.
2. If the selected channel is in an alarm state, the Comm Error Timeline will be replaced by an indication of the type of alarm being received.

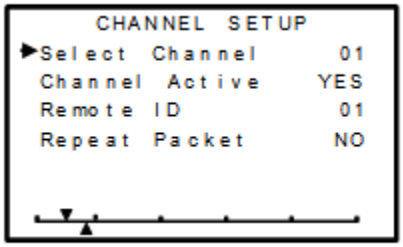

Figure 4-4 – Channel Config Menu

4.2.2.1 Channel Active

Channel Active is a YES/NO field that allows temporarily deactivating channels. Channels that may be deactivated are limited to the number of Total Channels designated in the System Config menu group (see Section 4.2.3.2).

NOTE: If a channel is to be permanently removed, then Total Channels should be adjusted down to reflect the number of sensor assemblies communicating to this TXP-ANA.

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4.2.2.2 Remote ID

Key Qualities

- Determines which TXP-WTA Sensor Transmitter Remote ID number is assigned to this TXP-ANA channel.
    - Remote ID numbers are limited to 1-32, but any of these may be assigned to any of the 32 TXP-ANA channels.
- Useful for arranging which TXP-ANA channels are used to relay specific TXP-WTA Sensor Transmitter information. For example, dual gas sensor assemblies have consecutive Remote ID numbers.

NOTE: It might be desirable to separate these at the TXP-ANA in order to keep same gas types together.

4.2.2.3 Repeat Packet

Turn on the Repeat Packet option to ensure any received packet by the TXP-ANA will automatically be retransmitted on the current hopping frequency, and distant TXP-WTA Sensor Transmitter transmissions will reach all the controller and TXP-ANA or TXP-WAR receivers.

NOTE: If two TXP-ANAs or TXP-WARs are in range of one another, both should not be set to repeat.

4.2.2.4 Comm Error Timeline

The horizontal Comm Error Timeline on the bottom of the Channel Config Menu is divided into five segments, from left to right.

Key Qualities & Notes

- Each segment = 1 TXP-WTA Sensor Transmitter Wakeup Timer interval from the TXP-WTA providing data to this TXP-ANA channel (see sensor transmitter manual).
- The arrow on the top side of the Timeline slides across the line as time goes by for the current channel being observed.
  NOTE: Each time the broadcast packet is received on this channel, the pointer resets to the left of the timeline.
- If the pointer reaches the right of the timeline the TXP-ANA will raise a comm error for this channel.
- The pointer should never exceed the 1st Wakeup Timer line segment.
- The arrow on the bottom side of the Timeline slides across the line as time goes by in a similar manner to the other arrow.
  NOTE: This arrow represents the channel which is furthest along it's timeline for all the monitored channels. This is useful in determining if any channels have missed a transmission without having to cycle through observing all the channels.
- If the arrow on the bottom side has not passed the first segment, all the monitored channels have received their latest transmission.

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4.2.3 System Config Menu Group

The SYSTEM CONFIG menu shown in Figure 4-5 allows configuration of variables for the TXP-ANA unrelated to any specific channel. This includes:

- Editing how the relays function
- Total number of channels
- Contrast
- Relay refresh time

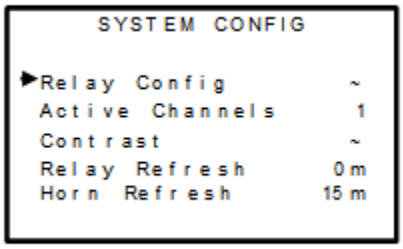

Figure 4-5 – System Config Menu

4.2.3.1 Relay Config

The RELAY CONFIG screen shown in Figure 4-6 allows sophisticated programming of each of the four programmable relays. To select the relay to be configured:

1. Point to the Relay menu.
2. Swipe EDIT.

NOTE: The fifth relay, the dedicated Horn Relay, is enabled by the Horn Drive setting for each of the four programmable relays.

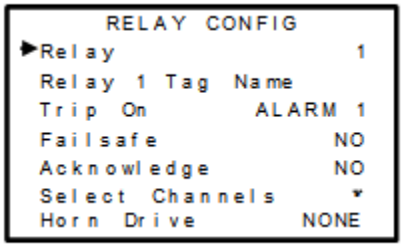

Figure 4-6 – Configure Relays Menu

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- **Tag Name** may be edited to give the selected relay a name, which will help identify which sensor assemblies are connected to that relay or the type of alarm associated with that relay or any name of the user's choosing.
- **Trip On** controls what conditions will cause the relay to activate. These may be:
  - A1
  - A2
  - A3
  - FAULT/COMM
  - Any Alarm (from a sensor transmitter)
- **Failsafe** is an ON/OFF field where ON causes the relay to energize when the condition is not present. When the Trip On condition becomes true the relay de-energizes. Failsafe is often utilized when it is desirable for loss of power to indicate the alarm condition.
- **Acknowledge** is an ON/OFF field with ON typically used when the relay controls an audible device, and it is desirable to silence the horn audible while troubleshooting the alarm. Applying an Alarm Reset causes the relay to return to its inactive state even though the alarm condition remains in effect. The Relay Refresh menu (see Section 4.2.3.4) may be used to re-activate acknowledged relays.
- **Select Channels** brings up a Check Box (Figure 4-7) screen for assigning which of the Active Channels are assigned to this relay. This allows creating Zones among the active channels.

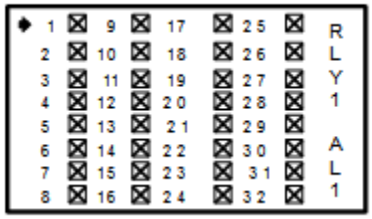

Figure 4-7 – Select Channels Menu

- Horn Drive controls the operation of the horn drive in relation to any of the four programmable relays. Horn Drive selects how the horn drive will function for the relay selected. Select one of three options:
  - None – no horn
  - Pulse
  - Steady

    NOTE: Steady overrides the pulse condition.

  When the alarm condition is present for the selected relay the relay will energize along with the horn drive in the manner selected.

4.2.3.2 Active Channels

Active Channels may be set from 1 to 32 and limits the maximum number of active channels. For example, if this menu is set for 10, then only 10 channels are available in the CHANNEL CONFIG menus discussed in Section 4.2.2.

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4.2.3.3 Contrast

To set LCD Contrast Adj. for optimum viewing using the menu shown in Figure 4-8:

1. Swipe the UP/DOWN keys to adjust the contrast.
2. Swipe NEXT to save the changes.

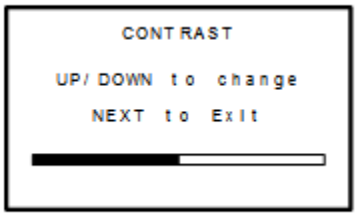

Figure 4-8 – LCD Contrast Adjust

4.2.3.4 Relay Refresh

Key Qualities

- May be set from 0 to 120 minutes with 0 turning the Refresh function OFF.
- Each relay may be set to allow Acknowledge (see Section 4.2.3.1) which means an Alarm Reset deactivates the relay even though the alarm condition still exists.
- Refresh will re-activate the relay after this timer expires. This feature is useful for silencing audible devices, and then automatically activating them again if the alarm condition remains after a period of time.

4.2.3.5 Horn Refresh

Key Qualities

- May be set from 0 to 120 minutes with 0 turning the Refresh function OFF.
- Each relay may be set to allow Acknowledge (see Section 4.2.3.1) which means an Alarm Reset deactivates the relay even though the alarm condition still exists.
- Refresh will re-activate the relay after this timer expires. This feature is useful for silencing audible devices, and then automatically activating them again if the alarm condition remains after a period of time.

4.2.4 Communications

The Communications Menu shown below allows setting the Network ID and RF Mode.

For 900MHz models the power level option is also available from this screen.

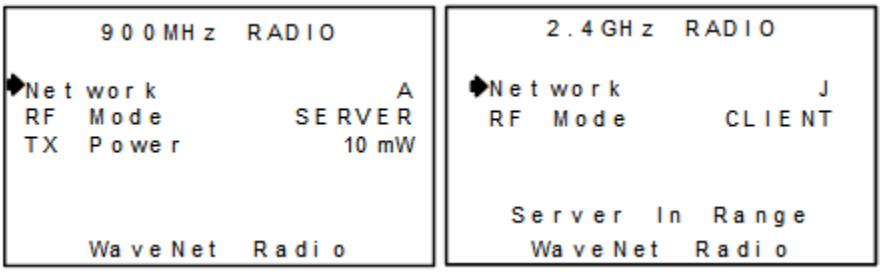

Figure 4-9 – Communications Menu

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4.2.4.1 Network

TXP-ANA devices utilize the Network setting to assign up to 26 unique hopping patterns. To simplify system setup, Network is entered using letter designators A through Z:

- A = [Hop Channel 1, System ID 1]
- Z = [Hop Channel 26, System ID 26].
- M – Z = Encrypted Networks (When selected, data will be encrypted via proprietary methods ensuring that only devices on that network will be able to decipher the data being transmitted).

A TXP-ANA will not indicate Server In-Range status or communicate with any device operating on a different Network ID. This feature allows multiple wireless systems to be located within range of each other without interference.

4.2.4.2 RF Mode

RF Mode determines if the TXP-ANA is a Server or a Client.

Specifications:

- ONLY ONE SERVER IS ALLOWED PER WIRELESS NETWORK.
- Numerous TXP-ANAs or TXP-WARs may share the same Network, but only one may be the Server.
- Networks with multiple TXP-ANAs or TXP-WARs should have the most centrally located unit designated as the Server.

4.2.4.3 TX Power

The TX Power menu is only available on 900MHz systems and allows the setting of the TX Power for the radio. The settings for this are:

- 10mW
- 200mW
- 400mW
- 1W

4.2.5 Security

The SECURITY menu in Figure 4-10 requires the 4-digit Pass Code prior to altering menus.

Specifications:

- Entering a Pass Code and locking the menu locks the entire menu database until the correct Pass Code is entered.
- Contact Name is a 12-character ASCII field available for displaying a phone # or name of personal who know the Pass Code.
- Lost Pass Codes may be recovered by entering the locked security menu and holding the UP key for 5 seconds.

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- The 4-digit code appears near the bottom of the screen.

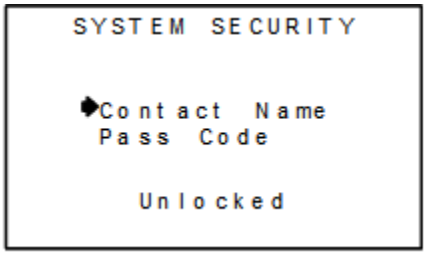

Figure 4-10 – Security Menu

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4.2.6 Technicians Only

⚠ WARNING
USERS OF THESE MENUS MUST HAVE A DETAILED UNDERSTANDING OF THEIR FUNCTIONS. PROCESSING OF ALARMS AND WIRELESS COMMUNICATIONS SHOULD NOT BE RELIED UPON WHILE EDITING THESE MENUS.

The TECHNICIAN ONLY menu group access requires a special key sequence of four consecutive UP keystrokes to prevent accidental modification of critical items. The TECHNICIANS ONLY menu tree is shown in Figure 4-11.

The TECHNICIAN ONLY menu group contains a Relay Test function which allows the user to stimulate the five relay outputs to ensure proper operation.

- Use the UP/DOWN keys to highlight the desired relay.
- Select using EDIT to energize the relay.

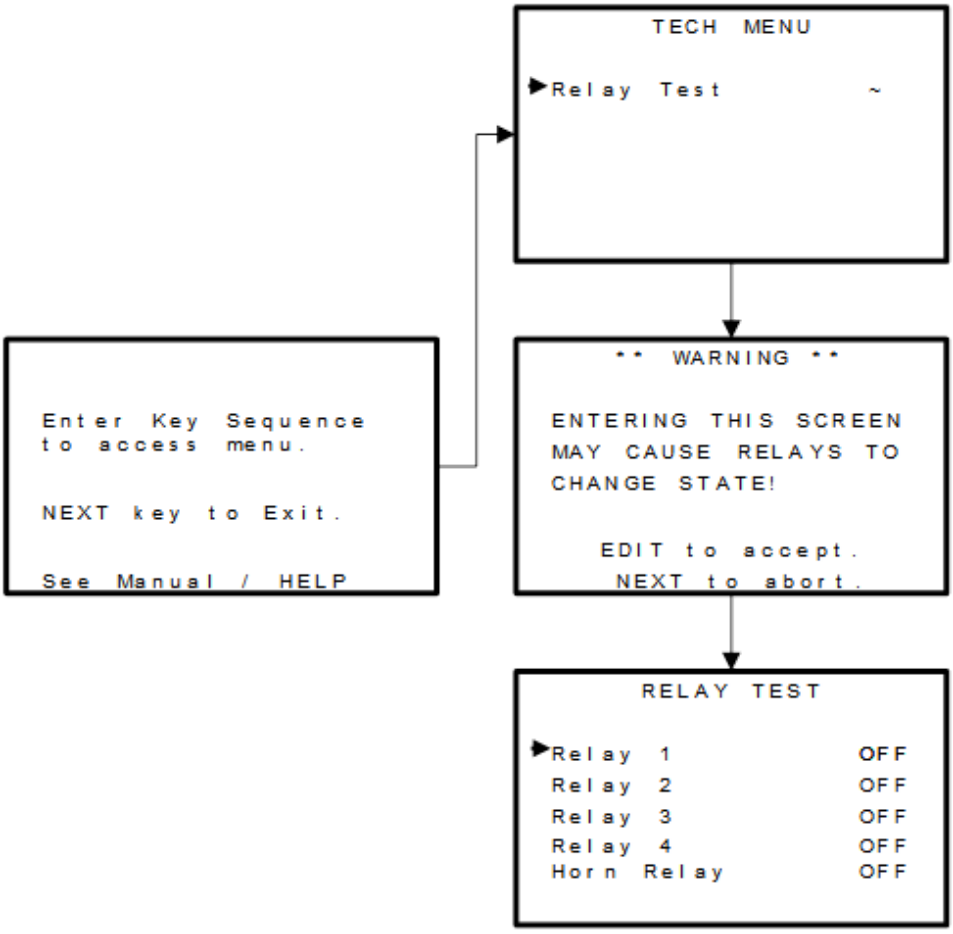

Figure 4-11 – TECHNICIANS ONLY Menu Tree

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4.3 Wireless Boards

4.3.1 Display/Radio Board

TracXP systems support 900 MHz FHSS networks determined by the radio module mounted to the Display / Radio Board. The 900 MHz radio module mounts to the back of the Display transmitter as shown in Figure 3-3. Its MMCX RF connector attaches to the coax pigtail of the antenna fitting required for 900 MHz models.

A slender 5 conductor cable connects between the Display / Radio Board and the Battery Board bolted to the bottom of the enclosure.

NOTE: The Display / Radio Board with the 900 MHz radio module has a Shield Board (not shown) that must be removed to access the radio modules and RF connectors.

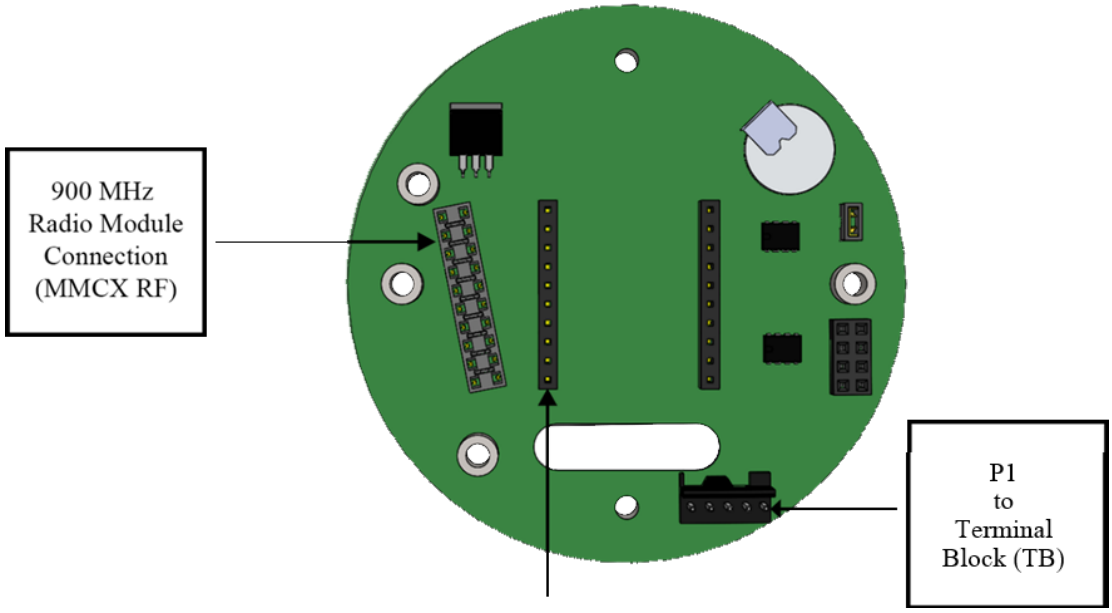

Figure 4-12 – Display/Radio Board (83-8008-0000-00)

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4.3.2 TXP-WAR Relay Power Supply/Relay Board

CAUTION: Alarm relays have dry contacts and power must be supplied from an external source. If this power source exceeds 3 amps users should consider fusing relay wiring with 3-amp fuses. Contacts are rated for resistive loads!

Inductive loads, such as contactor coils or motors, may cause contact arcing, which shortens life and emits RFI into the sensor signals. Use appropriate arcing snubbers and MOV's across inductive loads and keep wiring away from signal wires. External wiring to TB3 (Remote Alarm Reset) should be shielded and protected from noise spikes to prevent false Alarm Reset.

Relay terminals are labeled:

- NO (normally open)
- NC (normally closed)
- COM (common)

These designators correspond to the de-energized, state of the relays.

AC or DC power supplies to relays on the Power Supply/Relay Board must be the same for each relay. Example: 24VDC should not be the power switched by one relay and 115VAC by others.

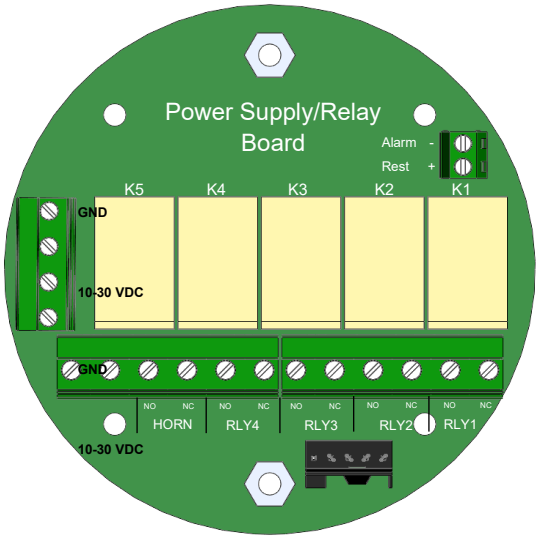

Figure 4-13 – Power Supply/Relay Board (83-800R-0000-00)

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5 Appendix A – Table of Figures

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6 Appendix B – Replacement / Service Parts

The tables below list all replaceable parts for the TXP-ANA. Please contact support to request a service order.

Part #	Replacement/Service Parts
94-1420-D133-00	TXP-HORN, VIBRATING, 99 DB, 24 VDC, NEMA 4X, GENERAL PURPOSE
94-5420-A000-00	TXP-HORN, 10-60 VDC, IP66, GENERAL PURPOSE, 120 BD, WITH GASKET
93-A023-0000-0C	TXP-POWER SUPPLY, 85-26 VAC INPUT, 24 VDC 50W OUTPUT, DIN MOUNT, GP
83-8000-0000-10	TXP-WTA/WCR, ANTENNA, 900 MHZ, 2.5 DBI, RP-TNC, 6.3 INCH, STRAIGHT (STANDARD)
88-800S-0000-00	TXP-WAR 900 MHZ REPLACEMENT BOARD STACK
93-A000-0000-0B	TXP HUSH TIMER CIRCUIT, REPLACEMENT KIT
93-A000-0000-05	TXP HUSH BUTTON, REPLACEMENT
93-A000-0000-0F	TXP STROBE GUARD, REPLACEMENT KIT

Part #	TXP-ANA Strobe Add-Ons
95-2124-A112-00	TXP-ANA STROBE KIT, AMBER, MALE 1/2 INCH NPT, 12-80 VDC, NEMA 4X, WITH GUARD
95-2124-B112-00	TXP-ANA STROBE KIT, BLUE, MALE 1/2 INCH NPT, 12-80 VDC, NEMA 4X, WITH GUARD
95-2124-C112-00	TXP-ANA STROBE KIT, CLEAR, MALE 1/2 INCH NPT, 12-80 VDC, NEMA 4X, WITH GUARD
95-2124-G112-00	TXP-ANA STROBE KIT, GREEN, MALE 1/2 INCH NPT, 12-80 VDC, NEMA 4X, WITH GUARD
95-2124-R112-00	TXP-ANA STROBE KIT, RED, MALE 1/2 INCH NPT, 12-80 VDC, NEMA 4X, WITH GUARD

Part #	TXP-ANA 99 dB Horns
93-5724-0000-16	TXP-ANA, NEMA 4X POLY ENCLOSURE, 10-30 VDC, 99 DB HORN
93-5724-0000-15	TXP-ANA, NEMA 4X POLY ENCLOSURE, 10-30 VDC, 99 DB HORN, HUSH BUTTON
93-6754-0000-16	TXP-ANA, NEMA 4X POLY ENCLOSURE, 85-264 VAC INPUT, 24 VDC OUTPUT, 60 WATT, 99 DB HORN, 900 MHZ WIRELESS
93-6754-0000-15	TXP-ANA, NEMA 4X POLY ENCLOSURE, 85-264 VAC INPUT, 24 VDC OUTPUT, 60 WATT, 99 DB HORN, 900 MHZ WIRELESS, HUSH BUTTON

Part #	TXP-ANA 120 dB Horns
93-5324-0000-16	TXP-ANA, NEMA 4X POLY ENCLOSURE, 10-30 VDC, 120 DB HORN
93-5324-0000-15	TXP-ANA, NEMA 4X POLY ENCLOSURE, 10-30 VDC, 120 DB HORN, HUSH BUTTON (ORDER STROBES SEPARATELY)
93-6354-0000-16	TXP-ANA, NEMA 4X POLY ENCLOSURE, 85-264 VAC INPUT, 24 VDC OUTPUT, 60 WATT, 120 DB HORN, 900 MHZ WIRELESS
93-6354-0000-15	TXP-ANA, NEMA 4X POLY ENCLOSURE, 85-264 VAC INPUT, 24 VDC OUTPUT, 60 WATT, 120 DB HORN, 900 MHZ WIRELESS, HUSH BUTTON

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7 Macurco Gas Detection Product limited warranty

Macurco warrants the TXP-ANA gas detector will be free from defective materials and workmanship for a period of two (2) years from the date of manufacture (indicated on inside cover of the TXP-ANA), provided it is maintained and used in accordance with Macurco instructions and/or recommendations. If any component becomes defective during the warranty period, it will be replaced or repaired free of charge, if the unit is returned in accordance with the instructions below. This warranty does not apply to units that have been altered or had repair attempted, or that have been subjected to abuse, accidental or otherwise. The above warranty is in lieu of all other express warranties, obligations, or liabilities. THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE ARE LIMITED TO A PERIOD OF TWO (2) YEARS FROM THE PURCHASE DATE. Macurco shall not be liable for any incidental or consequential damages for breach of this or any other warranty, express or implied, arising out of or related to the use of said gas detector. The manufacturer or its agent's liability shall be limited to replacement or repair as set forth above. Buyer's sole and exclusive remedies are the return of the goods and repayment of the price, or repair and replacement of non-conforming goods or parts.

Macurco Gas Detection

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