
Com-Trol IR-4500 Infra-red Leak Detection & Control System Users Manual



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Introduction

Effective refrigerant leak detection has become a necessity in today's supermarket and refrigerated warehouse facilities due to environmental issues and legislation, as well as the cost of the new refrigerants.

The Com-Trol IR-4500 has been specifically designed to detect refrigerant leaks, produce alarms, and take action, if desired, using the latest infra-red technology. Infra-red technology can be tuned to be very selective for the gases detected. This reduces the chance for false alarms that are prevalent with other sensing technologies, to almost zero.

The IR-4500's optical filters/detector has been tuned to detect CFC's, HFC's, and HCFC's. Each unit is specifically calibrated for three gases – the standard gases are R-22, R-404A and R-507. The unit may be special ordered for any of the following gases (requires 8 week lead time): R-11, R-12, R-123, R-134A, R-401A, R-402A, R-402B, R-406A, R-407C, R-408A, and R-502. A single unit can monitor up to 16 different zones. An expansion unit is available to handle up to 32 zones. Whenever a leak is detected, an audible alarm will sound, LED's will flash and the alarm will be logged in the memory of the IR-4500 and can be viewed on the LCD display. Two alarms are available for each zone - Slow Leak and Fast Leak. An alarm event is also provided to indicate a hardware problem, such as a plugged tube. The unit also provides three outputs that can be used for remote alarm devices to indicate slow leak, fast leak or hardware failure.

The IR-4500 provides a separate port/input that is used for a source of "clean air" for reference purposes. Most other systems require you to use one of the zones.

The IR-4500 logs the last 3.5 days of readings (512 readings at 10 minute intervals) for each zone and the last 40 alarms. The data can be reviewed at any time.

The ***Help*** key provides information for each screen, reducing the need for a reference manual.

The IR-4500 can be used as a standalone device or it may be connected to the Com-Trol RS-485 global communications bus for remote access through an Advantage 6000 graphical user interface.

To interface with other control systems, an analog output is provided for each zone that outputs a 0 to 5 volt signal representing a 0 to 2000 ppm reading.

The IR-4500 can also, as an option, provide a control relay for each Zone that can be used to shut-off valves, compressors, etc. to isolate the leak and minimize any loss.

Installation

The installation of the IR-4500 is quite simple; mount the unit, connect to 120v power source, run tubing to the reference and desired monitor zones, connect filters to end of tubing runs, connect communication bus wiring and local alarm, if used.

Mounting the IR-4500

Normally the IR-4500 unit would be mounted in or near the compressor room. However, it can be mounted anywhere within the facility where convenient, or to minimize the length of tubing required.

Internal keyholes are provided to make hanging the unit easy. A template is provided with the unit so that screws may be installed and the unit hung by one person. The unit should be mounted so the display will be at eye level for the average person – about 5' AFF. Try to locate the unit so that it will not be damaged by pallet trucks or forklifts, commonly used in these facilities, or be covered up by merchandise.

Tubing Runs

A separate reference port is provided that must have a tube run to the outside of the building, if possible. This port is used to determine the zero base level that all other ports are compared to. Thus, if the reference port is located where refrigerant could be present, an inaccurate reference could be applied to all other ports. Alarm settings are available for the reference port as well, so that notification of a compromised reference can be made.

After the reference tubing is run, then make tubing runs to all other zones that you wish to monitor. Remember that most refrigerants sink to the floor, so mount tubing about 6 "AFF when possible. Secure tubing with tie wraps and take care to route so that the tubing does not get kinked or is exposed where it can be damaged. The tubing recommended is Parker Hannifin Parflex with 5/16" O.D. and 3/16" I.D. (Com-Trol part number 744200BH01).

The tubing ports are located on the bottom of the unit and are labeled reference, Zone 1, Zone 2, etc. from left to right.

There is an exhaust port located on the upper left side of the box that may be connected to 3/8" I.D. tubing (Com-Trol part number 744201BH01), and run to the outside of the building, if desired. ***Note: It is critical that this tubing not exceed 100 feet in length and it must never be plugged as this can damaged the infra-red bench.***

Filters

A filter (Com-Trol part number 500095BH01) should be placed at the end of each tube. This filter keeps dirt and moisture from entering/clogging the tube. Make sure you place the proper end of the filter in the tube, see Appendix Figure C. These filters need to be checked/replaced annually.

Water Separator

A water separator is supplied that is mounted at the bottom right of the unit, see Appendix Figure C. This device collects any moisture that travels through the tubes. It should be checked periodically (approximately every 6 months) and drained, if required.

Connecting Power

The IR-4500 requires 3 amps and should be connected to a 15 amp/120v circuit breaker that is a dedicated power source for the IR-4500. All related electrical installation and connections must be made according to all applicable codes. Be sure to connect the ground wire to the lug provided. Use a minimum of AWG #14 wire gauge for all of these connections.

Access to wiring terminals is provided at the top right side of the unit, see Appendix Figure C. Make sure that the cover is replaced to prevent accidental contact with high voltage.

Analog Output Connections

The IR-4500 can be connected to other control/monitoring systems via the analog outputs that are provided for each zone. Each analog output is wired to an analog input on the control system. The input must be capable of accepting 0 to 5 volts and be scaled for 0 to 2000 ppm. Consult the vendor of the control system for compatibility; see Appendix Figure C.

Local Alarm Wiring

Three relays (dry contacts) are provided on the I/O board that can be used to drive remote pilot relays for horns and or lights. These relays will handle loads up to 3 amps; see Appendix Figure C.

Two relays are provided on the processor board that can drive a Com-Trol remote audible that consists of an LED and Sonalert (Com-Trol part number 40TD090G02). This panel may be connected directly to the alarm outputs; see Appendix Figure D.

Connecting the RS-485 Bus

If the IR-4500 is being networked to a Com-Trol communications Interface or GUI (such as the Advantage 6000), simply connect the Global Bus at the IR-4500 to the Global Bus on the Interface or on any other Controller. Reconfigure/re-scan controllers and the IR-4500 to update system configuration, see Appendix figures D and E.

Acceptable Environmental Conditions

Indoor use;
Altitude up to 2000 m;
Temperature 0 to 40°C (104°F);
Maximum relative humidity 80% for temperatures up to 31°C (89°F),
decreasing linearly to 50% humidity at 40°C (104°F);
Mains supply voltage fluctuations not to exceed $\pm 10\%$ of nominal voltage;
Transient overvoltages according to INSTALLATION CATEGORY III;
POLLUTION DEGREE 2.

Cleaning Instructions

Use a lint-free slightly damp cloth to clean powder-coated surfaces. Keeping the unit door closed and locked will reduce collection of unwanted dust and maintain restricted entry.

Manufactured by

Com-Trol Div. of Ranco NA an Invensys Company, 535 Beer Rd., Mansfield, OH

Hardware Setup

There are several switches that need to be set/checked on the IR-4500. An eight position switch on the Processor board controls global communications addressing, if used, and memory initialization/clearing. Check to see that these switches are set properly as follows.

Processor/IR-4500 Dip switches:

Switches 1-5 – only used if connected to Com-Trol global bus. Set to next available address, binary addressing, see Appendix Figure E.

Switch 6 – not used

Switch 7 & 8 can be used to clear the memory/program.

The I/O board has a four position dip switch that is used to select the number of zones (actual solenoids present), and whether the unit is the master or slave unit. These switches should be set at the factory to match the hardware ordered.

I/O Board:

Hardware Dip switches 1&2 – selects 4, 8, 12, 16 zones.

<u>Switch 1</u>	<u>Switch 2</u>	<u>Zones</u>
Closed	Closed	4
Open	Closed	8
Closed	Open	12
Open	Open	16

Switch #3 - Master unit = Open , Slave unit = closed

Switch #4 - Enable reference = Open, Disable reference = Closed **(Not used at this time.)**

Programming

To program the system, all you need to know are what refrigerants are being used/detected in each zone and the approximate length of tubing run for each circuit.

Press *Enter* to get to the **Main Menu** from the Normal Scan screen.

```
MAIN MENU
→Status
 Alarm Log
  Data Log      ↓↑
```

Press the down arrow until the cursor is next to System Set-up, then press Enter.

```
MAIN MENU
Setpoints
System Menu
→Setup Menu    ↓↑
```

The Password screen will come up. Type in the high level password (default is 9999), then press ENTER, as indicated.

```
Password Required
Enter Password,
  +++++
then press ENTER.
```

Use the ↓↑ keys to select the zone you wish to set-up, then press ENTER.

```
ZONE SETUP Zone-
01:Zone #01
Select Zone, then
Press ENTER.    ↓↑
```

The next screen gives you the opportunity to change the name of the Zone. Press the HELP key to get the instructions for entering text. Help pages 2 through 7 cover this operation. Press ENTER or ↓ to secure the name change and move to the next screen.

```
Setup for Zone-01:
Change Zone Name?
  →Zone #01
(see Help), ENTER, ↓↑
```

The refrigerant type is selected next. The refrigerant is selected by pressing the ←→ keys(see Help pages 7-9). There are 4 refrigerant types. Press Enter when the desired type has been selected.

```
Setup for Zone-01:
Which Refrigerant?
  →GasTyp1
←→Choices, ENTER, ↓↑
```

The length of the tubing run is entered next. Type in the approximate length, then press Enter.

```
Setup for Zone-01:
Length of Tubing?
  → 50 ft
Type value, ENTER, ↓↑
```

Next, you have the choice of setting up a relay output for the zone. This provides for a control action to be taken when a set point value is exceeded. Simply press the ←→ keys to toggle to “Yes” and press Enter. If no relay is desired, simply press Enter.

```
Setup for Zone-01:
Relay Control?
  →No
←→Choice, ENTER, ↓↑
```

This completes set-up for this zone. If another zone is to be set-up, press Enter. If not, use the ←→ keys to toggle to “No”, then press Enter.

```
ZONE SETUP Setup
another Zone?
  →Yes
←→Choice, ENTER. ↑
```

Using the System

Under normal operation, the system will scan through each zone that has been programmed, in addition to the reference zone. The length of time spent on each zone is a function of the length of tubing that was entered during programming.

Scan/Skip/Hold Modes

Any zone may be taken out of Scan Mode and may be either Skipped, a permanent removal from the scan until returned to the Scan Mode, or it can be placed in Hold Mode, which temporarily forces the system to scan this one zone until a 30 minute maximum timer runs out, or the user places it back in Scan Mode. These functions may be used to trouble shoot/test a particular zone.

To place a zone in Hold mode, press the HOLD/SCAN key while viewing the normal scan screen. The following screen will appear.

```
Mode For ZONE-01 ↓↑  
Change Scan Mode?  
→Scan  
SCAN/HOLD, SKIP, ENTER
```

Use the ↓↑ keys to move to the desired Zone, then press the HOLD/SCAN key once and it will change from Scan to Hold, then press ENTER.

```
Mode For ZONE-01 ↓↑  
Change Scan Mode?  
→Hold  
SCAN/HOLD, SKIP, ENTER
```

To Skip a zone (remove from the scan sequence), follow the same procedure for HOLD, but press the SKIP key, then ENTER.

```
Mode For ZONE-01 ↓↑  
Change Scan Mode?  
→Skip  
SCAN/HOLD, SKIP, ENTER
```

To return to Scan Mode, press the Hold, Scan key, select the zone, then press the Hold/Scan key again to toggle to Scan, then press Enter.

Status Screen

The Status screen shows the Name, Mode, Alarm status, and Value for one zone at a time. Pressing Enter while viewing the scan screen takes you to the MAIN MENU. The Status is the first item on this menu. If the arrow is not pointing to it, use the ↓↑ keys until it is. The following screen will appear.

```
Zone-01:Zone #01
Mode: Scan
Alarm: Clear
Value: 0001    ↓↑
```

The Mode can indicate Scan, Hold, or Skip. The Alarm will indicate clear, timing or Alarm. The Value will indicate the level /reading for the last scan of this zone.

Viewing Alarms

To view the Alarm Log, go to the MAIN MENU, press the ↓↑ keys until the arrow is pointing to Alarm Log, then press Enter.

```
MAIN MENU
Status
→Alarm Log
Data Log    ↓↑
```

The following screen will appear, this is the newest alarm in the log. Pressing the ↓ key takes you to the next alarm, or pressing the ↑ key takes you to the oldest alarm in the log.

```
IR-4500 System Event
Alarm: Power Up
      Occurred at
08/28 18:04 #01 ↓↑→
```

By pressing the → key you can view the “Cleared” time and date, if the condition has cleared.

```
IR-4500 System Event
Alarm: Power Up
      Cleared at
08/28 18:04 #01 ↓↑→
```

Viewing Logged Data

To view the Alarm Log, go to the MAIN MENU, press the ↓↑ keys until the arrow is pointing to Alarm Log, then press Enter.

```
MAIN MENU
Status
Alarm Log
→Data Log      ↓↑
```

Use the ↓↑ keys to select the desired zone to review the data from, then press Enter as indicated on the screen.

```
DATA LOG
Zone-01: Zone #01
Select Zone, then
Press Enter.    ↓↑
```

The data appears as follows: zone name on first line, most current sample on the second line, followed by second and third data entries. The "*" indicates the newest entry, so as you move back and forth through the data you will know when you are back to the beginning. Pressing the ↑ arrow moves you to the oldest data sample, while pressing the ↓ arrow moves you through the data one sample at a time. There are 512 samples for each zone logged at 10 minute intervals.

```
Zone-01:Zone #01
0005 16:00 08/28*
0007 15:54 08/28
0006 15:48 08/28↓↑
```

Pressing Enter (or Escape) returns you to the zone select screen. Pressing Escape from there returns you to the Main Menu.

Changing Setpoints

To Change Setpoints, use the ↓ key on the Main Menu until the Ⓜ is next to "Setpoints", then press Enter.

```
MAIN MENU
Alarm Log
Data Log
→Setpoints      ↓↑
```

The password screen will then appear (unless previously entered). Type in the appropriate password (initially set to 9999), and press Enter.

```
Password Required
Enter Password,
  _+---
then press ENTER.
```

Next select the zone for which you want to change setpoints.

```
SETPOINTS
Zone-01:Zone #01
Select Zone, then
Press Enter.      ↓↑
```

The first set point is the Fast Leak Alarm level. (Generally you will want to set this at a higher level, than the slow leak alarm, but with a shorter delay time.) Type in the desired alarm setting and press Enter, or press Enter to move to the next screen without changing the value.

```
Zone-01:Zone #01
Fast Leak Alarm:
→ 1000ppm
Type Value, Enter, ↓↑
```

The Delay Time for the fast leak alarm is next. (Generally you will want to set this timer for a shorter interval than the slow leak alarm). Type in the desired alarm setting and press Enter, or press Enter to move to the next screen without changing the value.

```
Zone-01:Zone #01
Fast Leak Delay:
→ 5min
Type Value, Enter, ↓↑
```

The Slow Leak set points follow the Fast Leak Set points as shown below. Use same procedure for setting.

```
Zone-01:Zone #01
Slow Leak Alarm:
  → 100ppm
Type Value, Enter, ↓↑
```

```
Zone-01:Zone #01
Slow Leak Delay:
  → 60min
Type Value, Enter, ↓↑
```

The next set point, Alarm Inhibit Time, can be used to temporarily disable an alarm. This timer value automatically counts down to zero. The maximum value is 48 hours. Type in the desired value and press Enter.

```
Zone-01:Zone #01
Alarm Inhibit Time:
  → 0 hrs
Type Value, Enter, ↓↑
```

If relay control was selected in the set-up, the turn on value is set in the next screen.

```
Zone-01:Zone #01
Relay Control Set:
  → 1000ppm
Type Value, Enter, ↓↑
```

Finally, a delay time before activating the relay can be set as desired.

```
Zone-01:Zone #01
Relay Set Delay:
  → 5min
Type Value, Enter, ↓↑
```

If you want to adjust set points in another zone, simply press Enter. If you want to quit, toggle to “No” and press Enter.

```
SETPOINTS
Do another Zone?
  →Yes
←→Choice, Enter, ↓↑
```

The System Menu

The System Menu is accessed from the Main Menu by pressing the ↓↑ until the → is next to the System Menu. Press Enter to access System Menu Screen.

```
MAIN MENU
Data Log
Setpoints
→System Menu    ↓↑
```

Setting the Clock

The first item is Set Clock. To access the Set Clock screen press Enter when the → is pointing to Set Clock.

```
SYSTEM MENU
→Set Clock
Passwords
Clear Log       ↓↑
```

A Level 1 password is required to set the clock. Enter it with the appropriate number keys and press Enter.

```
Password Required
Enter Password,
  +---+
then press ENTER.
```

Use the ←→ keys to move the underline beneath the item you want to change, then press Enter when complete. You will return to the SYSTEM MENU.

```
SET CLOCK
10/05/98 14:35:13 Use
←→ to Select, ENTER
when done.
```

Changing Passwords

If you want to change the passwords, move the → to the Passwords selection and press Enter.

```
SYSTEM MENU
Set Clock
→Passwords
Clear Log      ↓↑
```

You will be prompted for a password as follows (unless still active from previous activity):

```
Password Required
Enter Password,
  +++++
then press ENTER.
```

After proper entry of the password (Level 2 password required), a change code is also necessary as shown on the next screen.

```
Change Code Required
Enter Change Code,
  +++++
then press ENTER.
```

Type in the change code (1843), then press Enter. The Passwords edit screen will appear.

```
PASSWORDS
Level 1: 8888 ←→↓
Level 2: 9999 ←→↑
Change & press ENTER
```

The underline can be moved left and right with the ←→ keys or up and down with the ↑↓ keys. Type in the desired values then press Enter when changes are complete.

NOTE: Make sure you do not forget the password as the only way to get back to a known password is to clear the memory on the IR-4500 and do the complete set-up over again.

Clearing the Alarm Log

If you want to Clear the Alarm Log, select the Clear Log entry on the System Menu.

```
SYSTEM MENU
Set Clock
Passwords
→Clear Log      ↓↑
```

A Level 2 password is required and will be prompted. Enter password as previously described.

```
Password Required
Enter Password,
  _+++
then press ENTER.
```

Just press Enter, as indicated, to Clear the Log or press the Escape key to abort.

```
CLEAR LOGGING MEMORY
To Clear Log
Press ENTER or,
Escape to Abort.
```

You will then be returned to the SYSTEM MENU.

Clearing Relay Overrides

To clear the override on a relay that has tuned On, select Overrides on the System Menu and press Enter. You will be prompted for a Level 1 password if not already active.

```
SYSTEM MENU
Passwords
Clear Log
→Overrides      ↓↑
```

Next, select the zone that you want to remove the override on, by using the ↓↑ keys, then press Enter.

```
RELAY OVERRIDE
Zone-01: Zone #01
Select Zone, then
Press ENTER.    ↓↑
```

Press ENTER to remove the override or press Escape to abort. Either action will return you to the System Menu.

```
RELAY OVERRIDE
To clear override,
press ENTER or,
ESCAPE to Abort ↓↑
```

Clearing Memory

The memory on the IR-4500 can be cleared, if required. In normal operation this function should not need to be used. This action should only be taken if you are instructed to do so by Com-Trol personnel.

This function requires the entry of the level 2 password. Type in the password and press Enter.

```
Password Required
Enter Password,
  _+++
then press ENTER.
```

You will then be given a warning that you will wipe out all programming and the Set-up will have to be performed again. Pressing Enter again will activate the memory clear function or you can press Escape to abort the process.

```
--*[ WARNING! ]*--
ENTER will wipe-out
SET-UP memory, press
ESCAPE to Abort.
```

System Calibration

The system is calibrated at the factory. Should the IR bench have to be replaced in the field, the system would have to have new calibration factors entered. This selection provides the screens to perform this function. A level 2 password is required.

```
Password Required
Enter Password,
  +---+
then press ENTER.
```

After the password is successfully entered, the System Calibrate screen will appear.

```
SYSTEM CALIBRATE Select
Bench:1  ↑↓
Select Gas #:1  ←→
Adjust, Press ENTER.
```

First select which bench you want to calibrate, 1 or 2, with the ↑↓ arrows. Next select which gas you are entering calibration data for , 1 to 4, with the ←→ arrows.

```
Setup Bench-1: Gas-1
Change Gas Name?
  →GasTyp1
Type value, ENTER, ↑↓
```

The name of the Gas may be changed next if required. Press the Help key for further information. On the next 6 screens the calibration factors are entered for the bench constants.

```
Setup Bench-1: Gas-1
Change Constant K1?
  →05000
Type value, ENTER, ↑↓
```

```
Setup Bench-1: Gas-1
Change Constant K2?
  →00500
Type value, ENTER, ↑↓
```

```
Setup Bench-1: Gas-1
Change Constant K3?
  →01500
Type value, ENTER, ↑↓
```

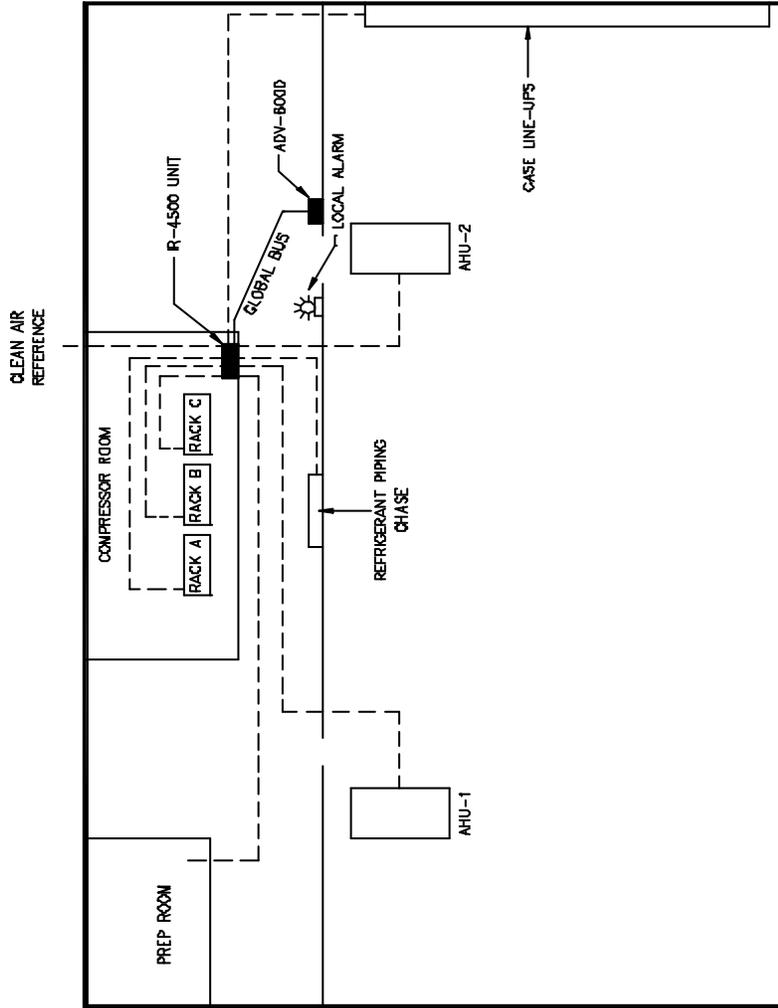
```
Setup Bench-1: Gas-1
Change Constant K4?
  →05000
Type value, ENTER, ↑↓
```

```
Setup Bench-1: Gas-1
Change Constant K5?
  →0500
Type value, ENTER, ↑↓
```

```
Setup Bench-1: Gas-1
Change Constant K6?
  →01500
Type value, ENTER, ↑↓
```

Type in the reference calibration values provided with the bench. You will then be presented with a screen that allows you to calibrate another bench or gas, or by changing to “No”, return to the System Menu.

```
SYSTEM CALIBRATE
Setup Another Gas?
  →Yes
←→ Choice, ENTER, ↑
```



THIS DRAWING ILLUSTRATES AN IR-4500 SET-UP IN A TYPICAL SUPERMARKET. THE IR-4500 IS MOUNTED IN THE COMPRESSOR ROOM WITH TUBING RUNS (DASHED LINES) TO EACH RACK, AIR HANDLERS (RETURN AIR), THE REFRIGERANT PIPING CHASE, PREP ROOM(S)/BOXES, AND FIXTURE LINE-UPS. ONE TUBING RUN IS ALSO SHOWN FOR THE "CLEAN" AIR REFERENCE. THE IR-4500 MAY BE CONNECTED TO AN ADV-6000 VIA THE GLOBAL BUS, IF PRESENT, FOR COMPLETE SYSTEM INTEGRATION. IT CAN ALSO DRIVE ALARM LIGHT(S) AND/OR BUZZERS DIRECTLY FOR STANDALONE APPLICATIONS. IT MAY BE WIRED TO OTHER CONTROL SYSTEMS VIA ITS ANALOG OUTPUTS TO THE CONTROL SYSTEMS ANALOG INPUTS.

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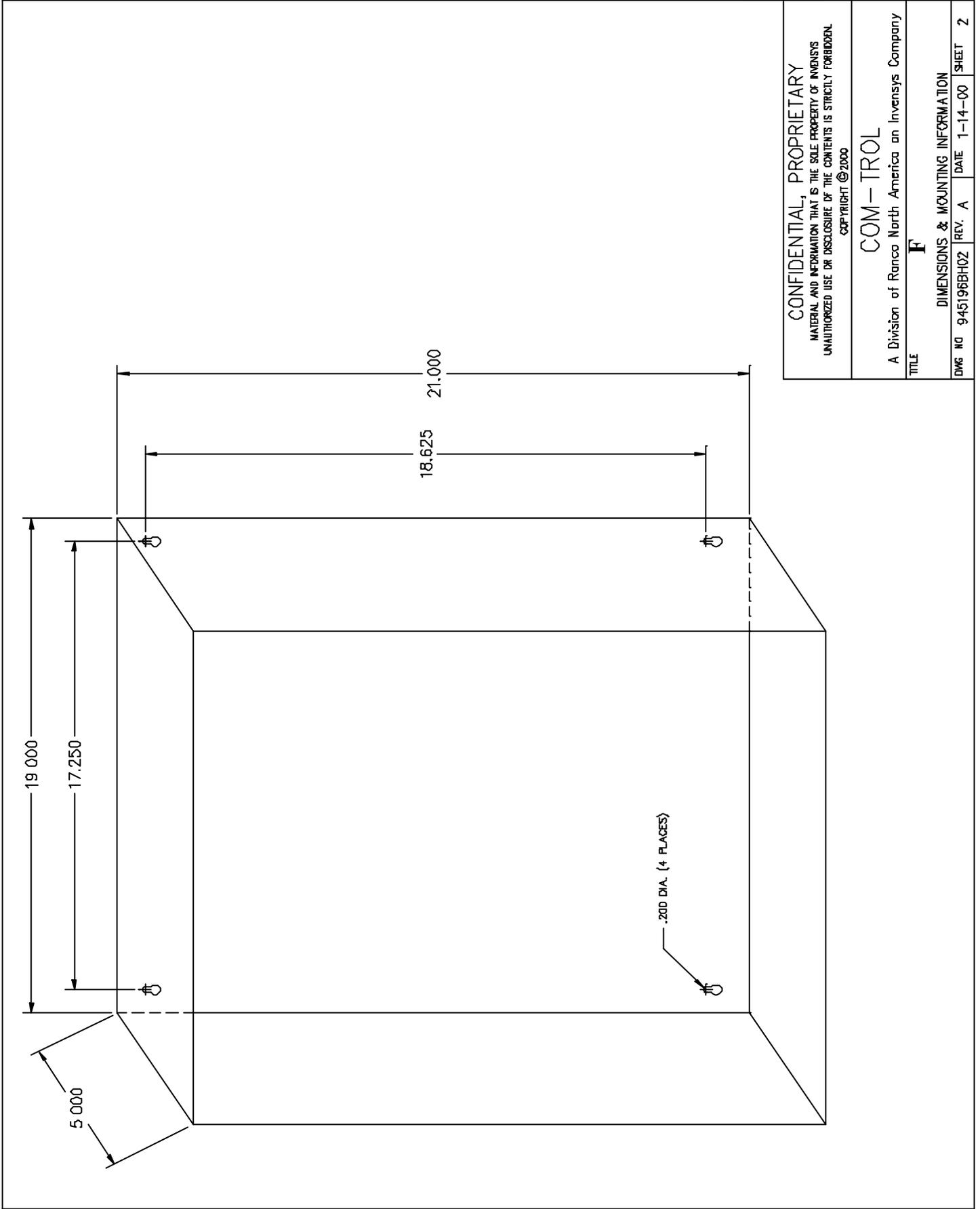
A Division of Ranco North America an Invenstys Company

TITLE

F

IR-4500 INSTALLATION LAYOUT EXAMPLE

DWG. NO. 945196BH01 REV. A DATE 1-14-00 SHEET 1

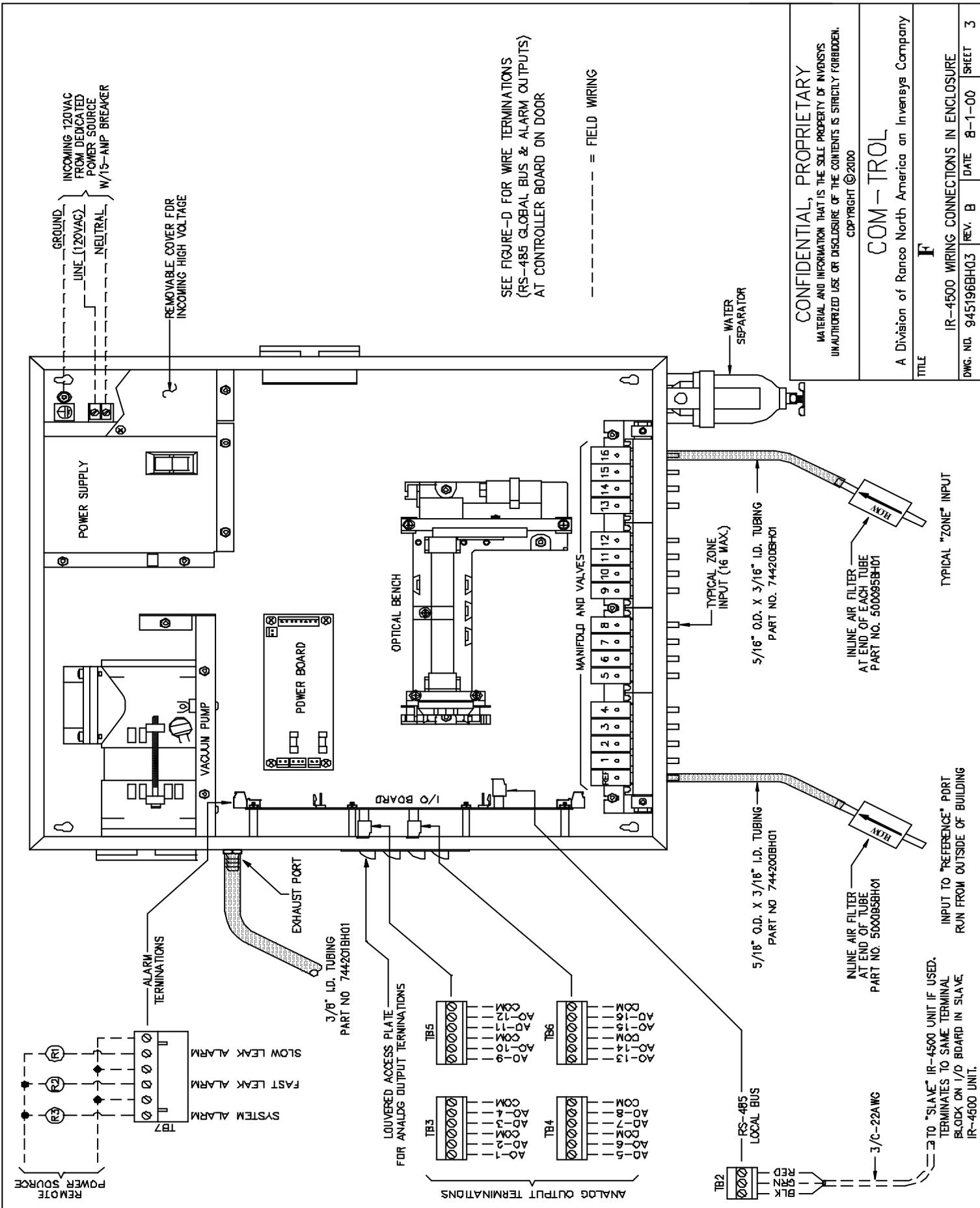


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TITLE
F

DWG NO 945198BH02 REV. A DATE 1-14-00 SHEET 2

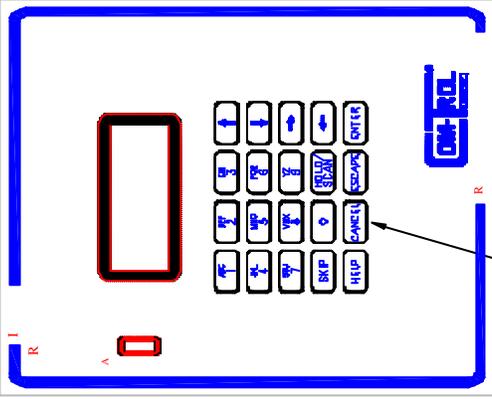


SEE FIGURE-D FOR WIRE TERMINATIONS (RS-485 GLOBAL BUS & ALARM OUTPUTS) AT CONTROLLER BOARD ON DOOR

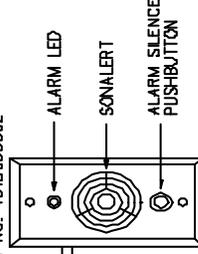
----- = FIELD WIRING

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 IR-4500 WIRING CONNECTIONS IN ENCLOSURE
 DWG. NO. 945196BH03 REV. B DATE 8-1-00 SHEET 3

KEYPAD ON OUTSIDE OF IR-4500 UNIT DOOR



REMOTE AUDIBLE
WITH ALARM SILENCE
PART NO. 40TDX80002

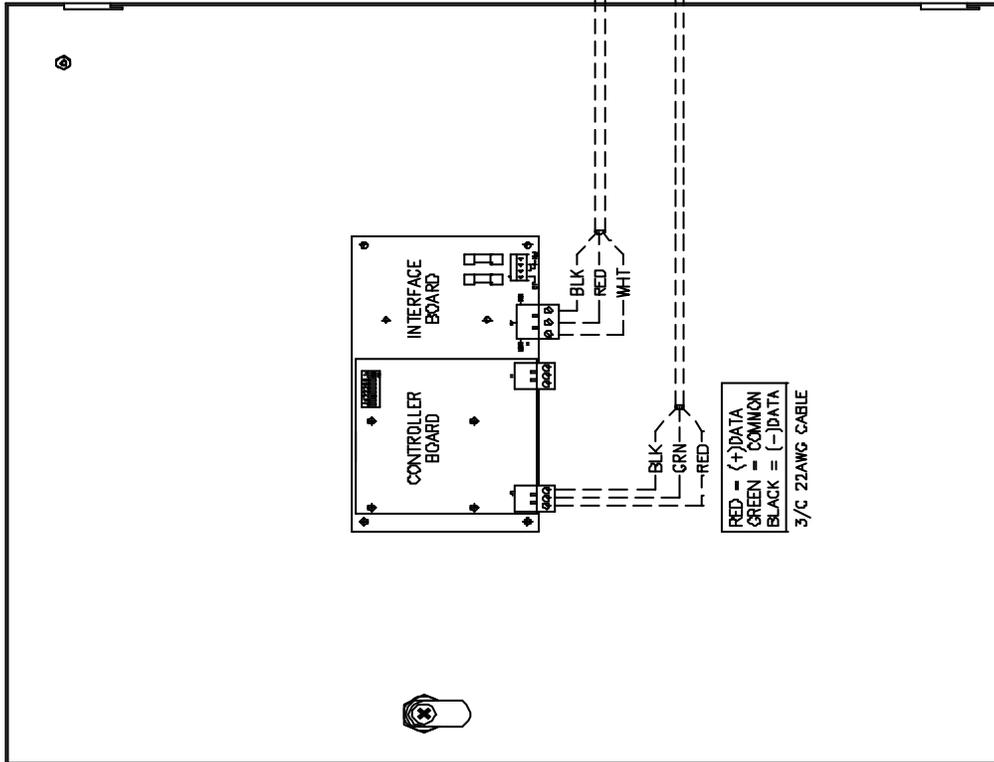


DO NOT TERMINATE GREEN WIRE
ALARM CAN BE SILENCED BY "CANCEL"
BUTTON ON KEYPAD OF R-4500 UNIT

4/C 22AWG CABLE - 6 FEET
(PART OF REMOTE AUDIBLE)

RED = +12V
BLACK = ALARM BUZZER
WHITE = ALARM LED
GREEN = ALARM SILENCE

TO RS-485 GLOBAL BUS
TERMINATION IN A COM-TROL
COM-5002 OR ADV-6000



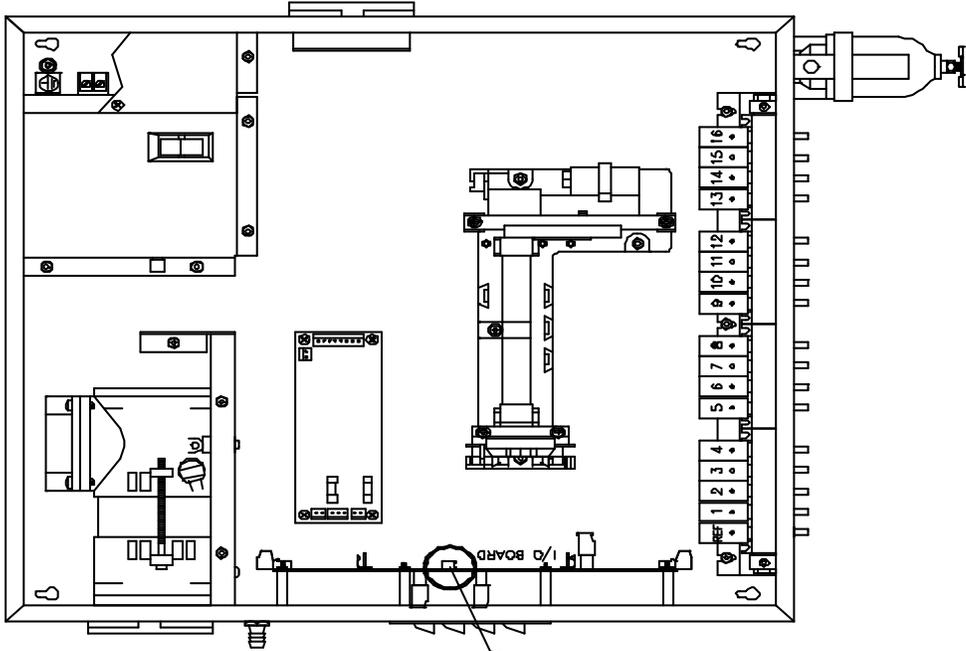
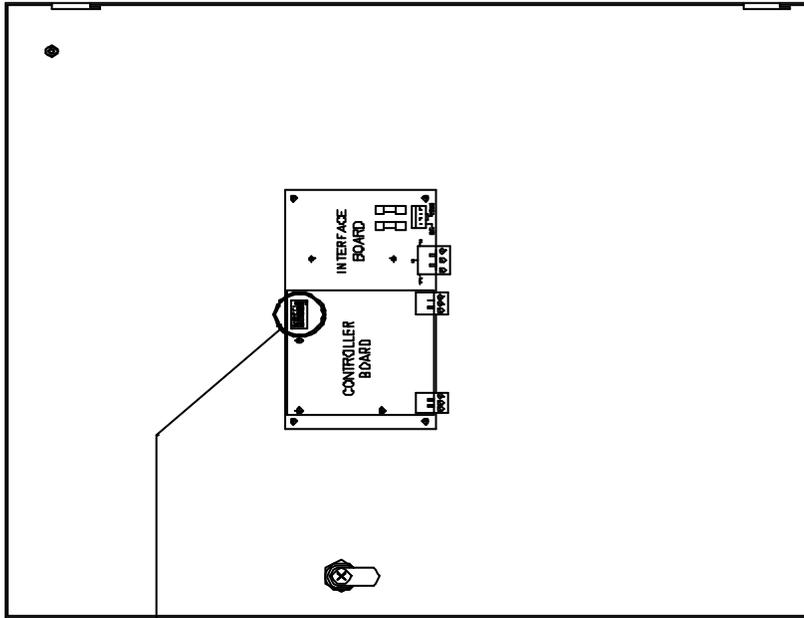
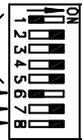
RED = (+)DATA
GREEN = COMMON
BLACK = (-)DATA
3/C 22AWG CABLE

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COM-TROL A Division of Ranco North America an Invensys Company			
TITLE F			
IR-4500 WIRING CONNECTIONS ON DOOR		REV. A	DATE 1-14-00
DWG. NO 945196BH04		REV. A	DATE 1-14-00
		SHEET	4

CONFIGURATION (RESETTING RAM)
 WITH UNIT POWERED DOWN, SET SWITCHES 7 & 8 TO "ON" (DOWN), THEN POWER UP UNIT AT DISCONNECT.
 MOVE SWITCH 7 TO "OFF" (UP) POSITION AND WAIT FOR 8 SECONDS, THEN
 MOVE SWITCH 8 TO "OFF" (UP) POSITION AND WAIT FOR 8 SECONDS, THEN
 MOVE SWITCH 7 BACK TO "ON" (DOWN) POSITION AND WAIT FOR 8 SECONDS, THEN
 MOVE SWITCH 8 BACK TO "ON" (DOWN) POSITION AND WAIT FOR 8 SECONDS, THEN
 TURN UNIT OFF AND BACK ON AGAIN AT THE DISCONNECT - CONFIGURATION COMPLETE

PROTECT
 NOT USED

BOARD ADDRESSING
 SET TO NEXT AVAILABLE ADDRESS -
 BINARY ADDRESSING.



ZONE SELECTIONS

ZONES	SWITCH-1	SWITCH-2
4	ON	ON
8	OFF	ON
12	ON	OFF
16	OFF	OFF

MASTER/SLAVE SETTING

OFF = MASTER IR-4500D UNIT
 ON = SLAVE IR-4500 UNIT
 ENABLE/DISABLE REFERENCE
 NOT USED

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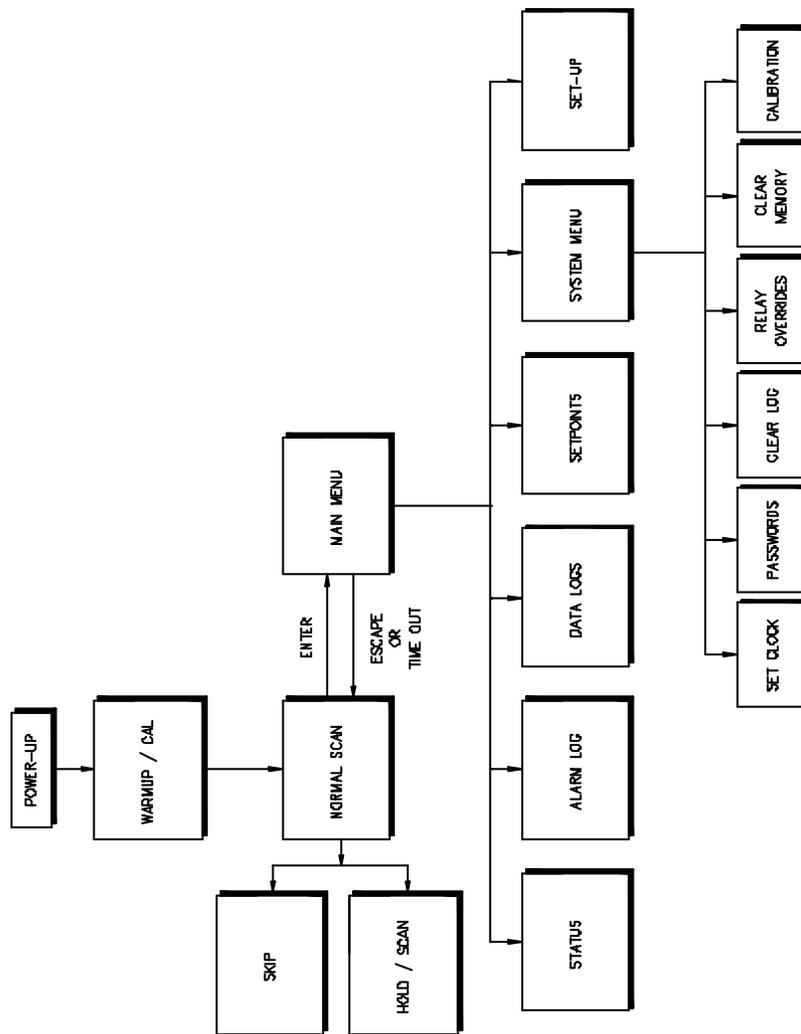
COM-TROL

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TITLE **F**

IR-4500 SWITCH SETTINGS

DWG NO. 945196BH05 REV A DATE 1-14-00 SHEET 5

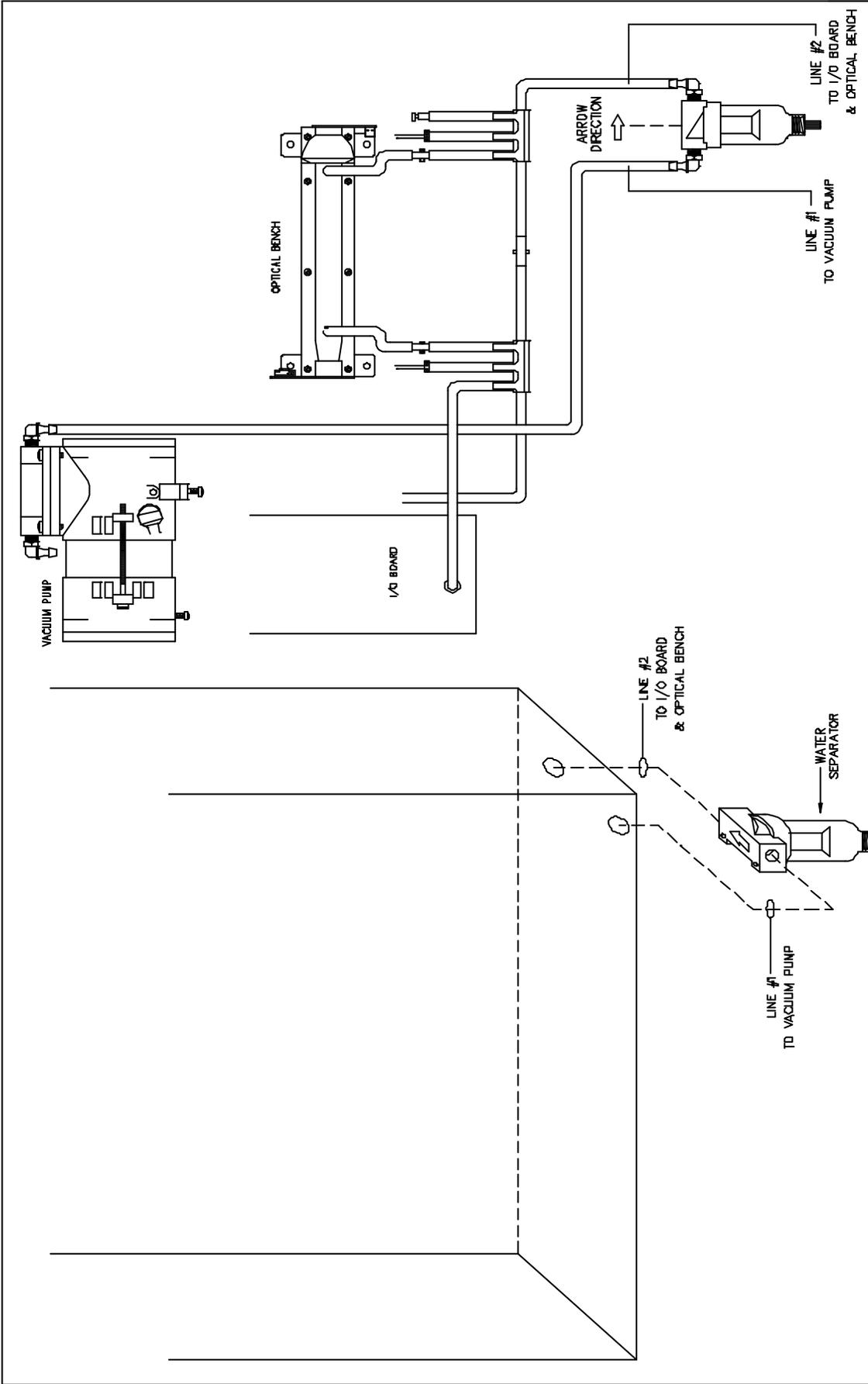


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TITLE	IR-4500 MENU MAP		
DWG. NO.	9451968H06	REV. A	DATE 1-14-00
SHEET	6		6



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TITLE **R**

IR-4500 WATER SEPARATOR INSTALLATION

DWG. NO. 945198BH07 REV. A DATE 6-20-01 SHEET 7

C
H
F
A
T