

MODEL AM-806

WASTE/DOOR MONITOR

OPERATIONS – MAINTENANCE INSTALLATION MANUAL

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1.0 SPECIFICATIONS

INPUT SENSITIVITY -----	< 2 μ Ci Cs ¹³⁷ "DRIVE THROUGH" MODE OF OPERATION
MAXIMUM DETECTOR SEPERATION -----	72" (189 cm) BETWEEN DETECTORS
DISPLAY -----	VGA, 256 COLOR, TOUCH SENSITIVE SCREEN
OPERATOR INPUT CONTROLS -----	ALL OPERATOR INPUT IS THROUGH TOUCH SENSITIVE VGA SCREEN
OPERATING MODES -----	DRIVE THROUGH, TIMED COUNT,
TIMED COUNT -----	1 – 30 SECONDS
HIGH VOLTAGE -----	ADJUSTABLE - 300 - 1300 VDC - REGULATION \pm 1%
LOW VOLTAGE -----	+5 VDC & -5 VDC REGULATION \pm 0.5 %
POWER -----	120/250 VAC – 50/60 Hz - BACK-UP RECHARGABLE BATTERY – NOMINAL 2HRS OPERATION
TEMPERATURE RANGE -----	(-4°F) -20° CENT. TO (140° F) 60°CENT.
MEMORY RETENTION -----	10 YEARS
HUMIDITY RANGE -----	5 - 95% NON CONDENSING
DETECTOR HOUSING DIMENSIONS -----	48" L X 8" WIDE
DETECTOR DIMENSIONS -----	36" X 3" X 1.5" (162 IN ³ EACH DETECTOR)
WEIGHT -----	APPROXIMATELY 83#
HOUSING -----	16 Ga. ALUMINUM
HOUSING FINISH -----	GRAY - 2 PART POLYEUTHRANE ENAMEL
CALIBRATION SECURITY -----	OPERATOR PANEL IS SECURED BY KEY LOCK

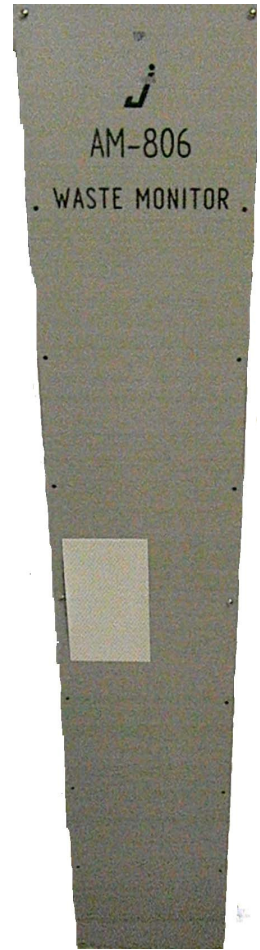
2.0 MAIN COMPONENTS



MAIN CONTROL HOUSING



#1 DETECTOR HOUSING



#2 DETECTOR HOUSING

FIGURE 2

3.0 DESCRIPTION

The Model AM-806 is a ruggedized, industrial grade monitor that can be utilized to detect the removal of radioactive material from controlled areas. The 806 utilizes 2 large area plastic scintillators totaling 325 cubic inches to detect the movement of gamma emitting isotopes passing through doorways or other similar openings to controlled areas. The instrument is durable and easy to operate with minimal training. Installation can be permanent or temporary. All of the data for the system is stored in a non volatile memory, capable of maintaining the data for 10 years.

3.0 THEORY OF OPERATION

3.1 GENERAL

The AM-806 utilizes the latest field proven, microprocessor circuitry and large area plastic scintillators to accurately and rapidly measure beta (above 500 keV) radiation and gamma radiation from 60 KeV to 2MeV. The instrument is very user friendly and can be utilized by persons with minimal training. Radiation detection is by 2 – 36” long plastic scintillators with a total volume of 325 cubic inches. Each Scintillator has a low energy window made of 1/32” aluminum that permits the AM-806 to measure higher energy beta and gamma radiation to 60 KeV. The scintillators are contained in a durable aluminum housing that can be quickly disassembled with commonly used hand tools. The readout and data entry are accessed through a large area color monitor that utilizes a touch sensitive screen for all data input. Figure 1 shows the VGA monitor doing the BACKGROUND INITIALIZATION prior to normal operation. The most pertinent measuring and diagnostic data is continuously displayed on the monitor in a configuration that looks like a doorway. The operator can see some of the data that is to be displayed i.e Detector high voltage and software versions. Parameters that are or can be displayed include the background count, date and time, number of persons who have passed through the portal, high voltage, battery voltage, counting rate of each detector, relative energy distribution of the incoming radiation and software version of each detector. An outline of the monitor and the relative strength of the radiation field striking each detector is displayed on the green vertical bars. The count rate and high voltage are displayed by each detector. During the startup period, the instrument is automatically running systems checks, establishing background and verbally stating that the unit is not ready for operation. The upper center of the portal displays the OPERATIONAL CONDITION of the portal i.e. background initialization, too fast, alarm etc. and the block below displays the seconds remaining before normal operation can begin.

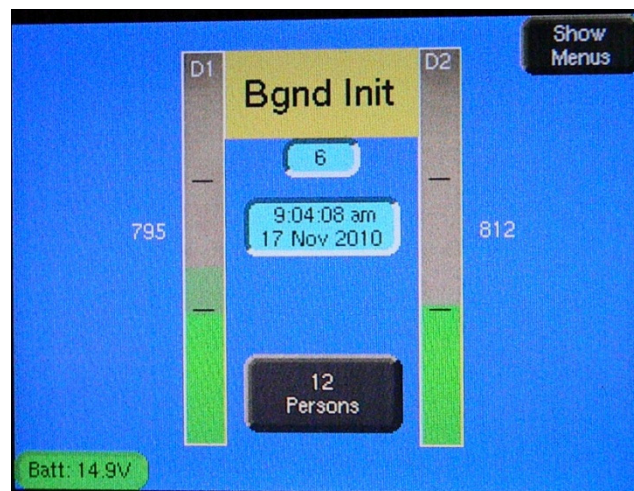


FIGURE 1

3.1 GENERAL - CONTINUED

The blocks on the edge of the display F1 –F5 on the left and on the right provide access to printer, additional menus, system setup and additional information. Two different modes of operation are provided: DRIVE THROUGH and TIMED COUNT of 0.1-30 seconds. The DRIVE THROUGH mode is utilized for normal operation and will screen persons or equipment passing through the system rapidly. This mode of operation can detect radiation levels of $<2\mu\text{Ci}$ (based on Cs^{137} calibration). The TIMED COUNT mode can be utilized for radiation contamination by stopping the person in the portal and counting for between 1-30 seconds.

Several diagnostics are continuously monitoring the instruments systems to determine if they are operating correctly. Diagnostics are provided for low detector counting rate, background counting rate to high, high voltage out of range, and low battery voltage. Alarms are provided for some of these diagnostics that must be reset on the touch screen by touching the AKNOWLEDGE ALARM button .

The operator can access the screen with alarm set points, operating mode, and operating times, by touching the SETUP button which will cause the screen to appear and the alarm set points will appear. Figure 3 shows the portal in alarm and Figure 4 shows the screen that appears when the SETUP button is touched.

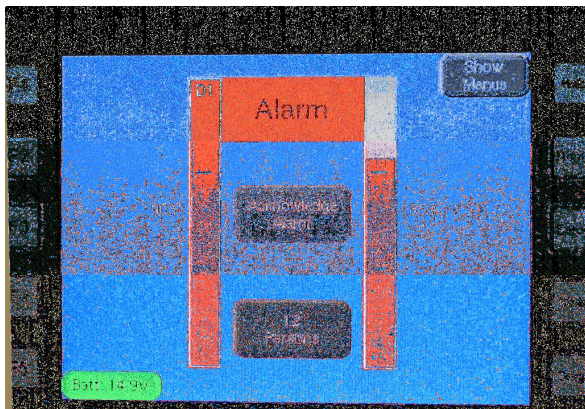


FIGURE 3

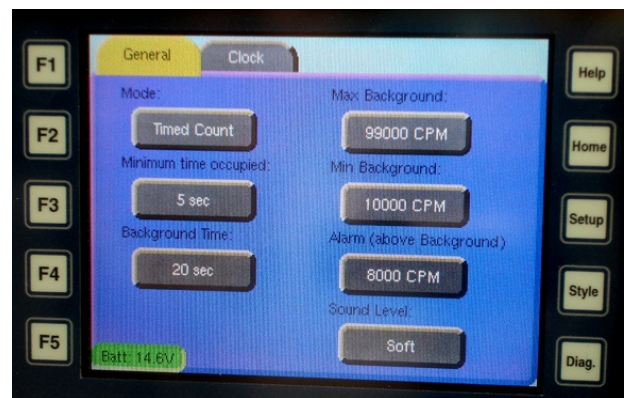


FIGURE 4

Touching the MODE button on the setup screen will change the operating mode to Timed Count or Drive Through operating mode. Touching a button on the set up screen will make a key pad appear that will enable the parameter to be set to a particular number and/or time.. **THE ALARM MUST BE TURNED OFF WHEN ACTIVATED. TO TURN THE ALARM OFF TOUCH THE ALARM ACKNOWLEDGE PAD ON THE VGA READOUT IN THE MAIN CONTROL HOUSING. THE PAD IS LOCATED BETWEEN THE DETECTORS DISPLAYED ON THE VGA MONITOR AS SHOWN IN FIGURE 3**

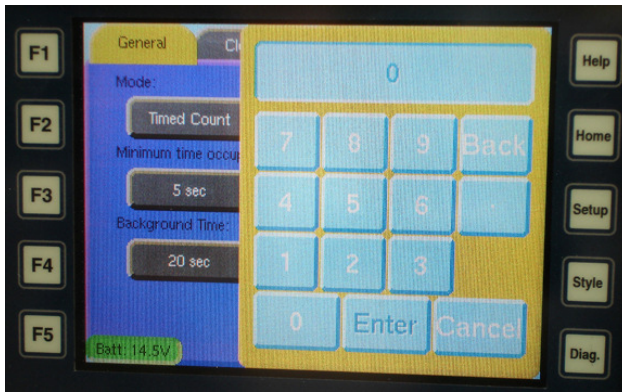


FIGURE 5

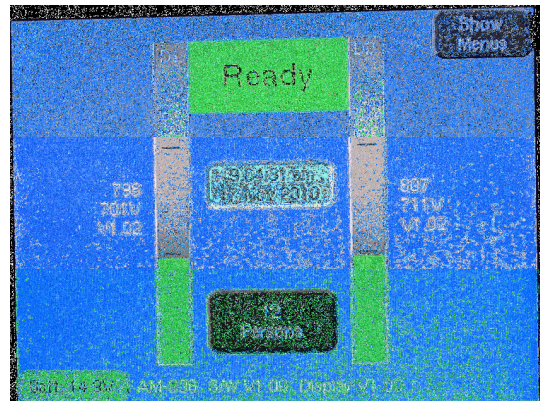


FIGURE 6

Figure 5 shows the key pad that will appear to reset the particular parameter for the button that was touched on the set up screen. After entering the new information the operator touches the ENTER KEY to save the information and touch the HOME button to return to normal operation. FIGURE 6 shows the HOME SCREEN in the NORMAL OPERATING MODE with no alarms

The AM-806 is designed to operate from regular house current of 120 vac 60 Hz or 250vac 50 Hz. If a power failure occurs the 806 will continue to operate from it's internal rechargeable battery for up to 2 hours. The internal rechargeable battery is automatically charged as long as power is connected to the MAIN CONTROL housing. Connecting the main components (each detector and main control housing) is simple. Each detector is interconnected by a CAT5 cable that carries all of the necessary power and signal connects between the detectors. The connection from the detectors to the main control housing requires a CAT5 cable and 3 conductor. The termination points of these connectors are shown in the INSTALLATION PORTION OF THIS MANUAL.

4. UNPACKING & CHECKING OF MAIN COMPONENTS

4.1 MAIN COMPONENTS

GENERAL:

The model AM-806 consists of 3 main components – MAIN CONTROL housing with full color operator interface, NUMBER 1 DETECTOR with the person sensors and NUMBER 2 DETECTOR with the reflector for the person detector. These components have been carefully packed to prevent damage during shipping. 2.0 MAIN COMPONENTS shows all of the major components except the wiring. Check each component carefully to detect any physical damage to the exterior of the components. The MAIN CONTROL HOUSING can be checked by opening the door on the housing. Check to see if all internal components are secured and in their proper location. Figure 7 shows the internal components in the MAIN CONTROL HOUSING. Remove the cover on the NUMBER 1 & 2 DETECTOR HOUSINGS. Figure 8 shows the internal components of the DETECTOR HOUSINGS.

The two detector housings #1 & #2 are packed in separate boxes. The front cover is only secured with 6 screws because these covers will have to be removed during installation. A package of screws required to secure the covers on #1 & #2 DETECTOR HOUSINGS IS LOCATED IN THE BOX CONTAINING THE MAIN CONTROL HOUSING.

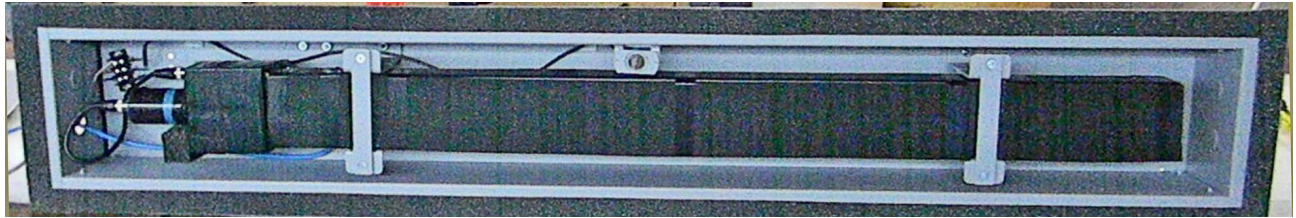


FIGURE 7
INTERNAL COMPONENTS DETECTOR #1 HOUSING

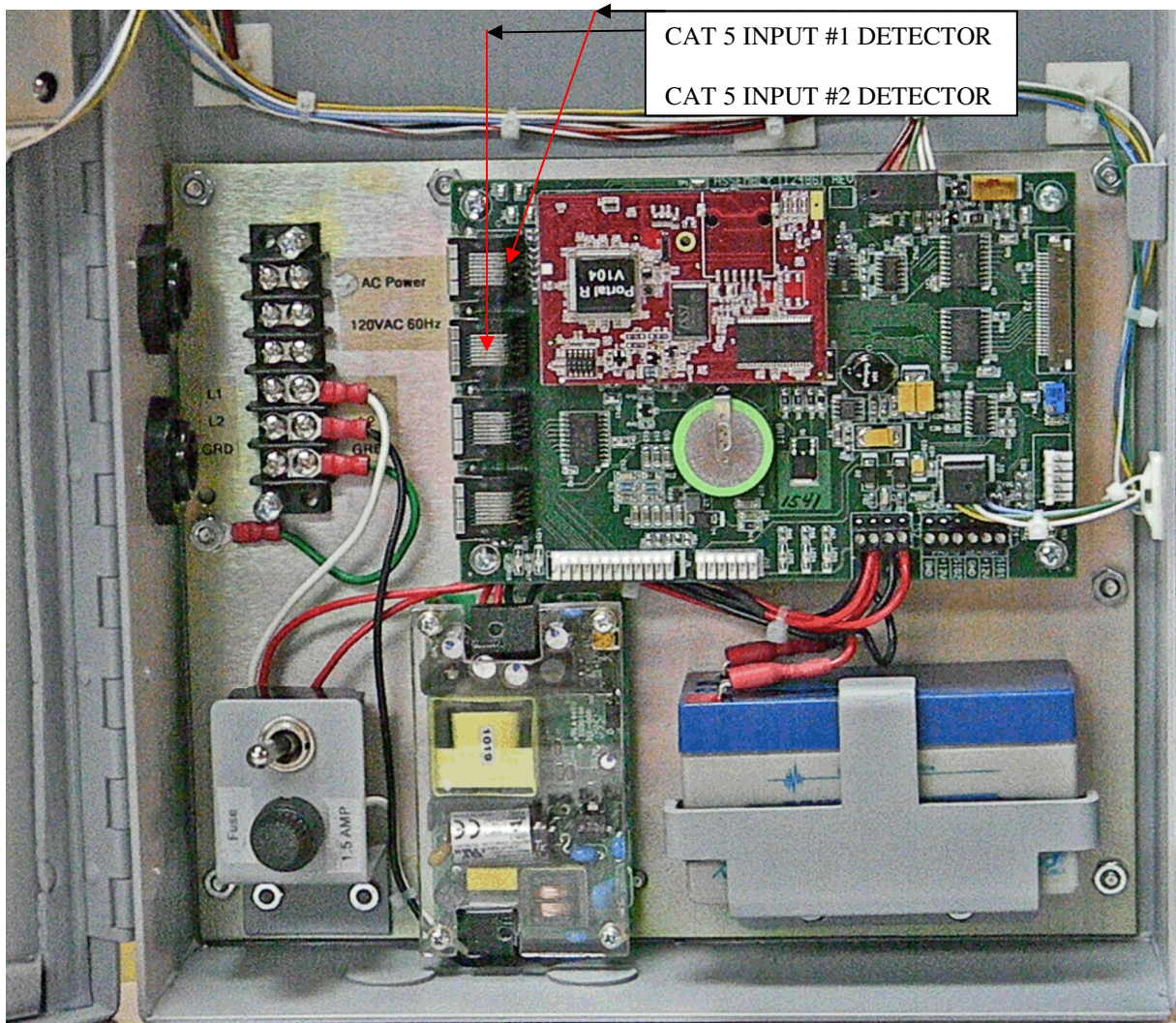


FIGURE 8
INTERNAL COMPONENTS MAIN HOUSING

4.2 AM-806 SYSTEM DESCRIPTION

The MAIN CONTROL HOUSING. These components are interconnected by a CAT5 cable and a 3 conductor cable from the NUMBER 1 HOUSING to the MAIN CONTROL HOUSING. The connections for the 3 conductor PERSON SENSOR IN THE MAIN CONTROL HOUSING can be seen in FIGURE 11 . THE CONNECTIONS FOR THE POWER CONNECTION TO THE MAIN HOUSING CAN BE SEEN IN FIGURE 9. THE CONNECTIONS FOR THE CAT 5 CABLES THAT CONNECT THE DETECTORS TO THE MAIN CONTROL HOUSING ARE SHOWN IN FIGURE 8 The CAT5 cables will be furnished with the detectors attached if the customer will determine the CONDUIT DISTANCE from the NUMBER 2 DETECTOR to the NUMBER 1 DETECTOR HOUSING and the CONDUIT DISTANCE from the NUMBER 1 DETECTOR HOUSING to the MAIN CONTROL HOUSING. The CAT5 cables are standard cables that can be purchased locally. The 3 conductor cable is also a standard non shielded cable using 18 to 20 ga. Twisted copper wire. If the cable cannot be purchased locally. Forward this information to the Johnson distributor who will arrange for the cables to be delivered to the customer at no cost in approximately 5-7 business days. Customer must be responsible for determining the local code requirements for the AM-806. Johnson engineering will provide recommendations and equipment specifications but cannot be responsible for meeting the local electrical & mechanical codes.

5.0 BEFORE INSTALLATION

5.1 SYSTEM ELECTRICAL & DETECTOR CONNECTIONS.

5.1.1 ELECTRICAL CONNECTIONS IN MAIN CONTROL HOUSING.

The AC input power required to operate the AM-806 is 120 vac – 60 Hz – 5 amp circuit with disconnect Switch

5.1.2. FIGURE 9 shows the location of the AC power input to the MAIN CONTROL HOUSING. ALL AC POWER IS CONTAINED INSIDE THE MAIN CONTROL HOUSING. ALL WIRING LOCATED OUTSIDE THE MAIN CONTROL HOUSING UTILIZES LOW VOLTAGE OF 15 VDC OR LESS AND 5 VAC CONTROL SIGNALS. THE CUSTOMER IS RESPONSIBLE FOR MEETING THE LOCAL APPLICABLE ELECTRICAL & MECHANICAL CODES.

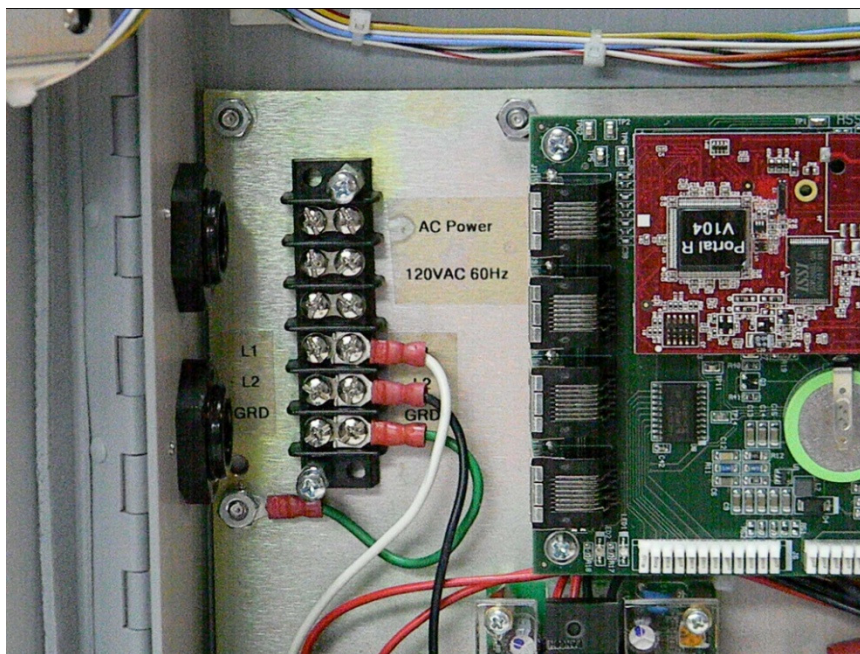
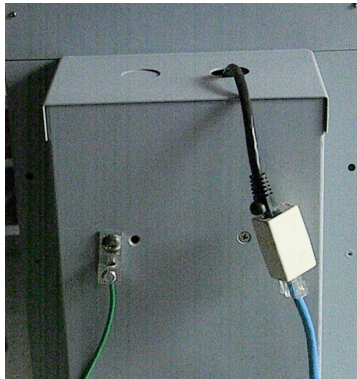


FIGURE 9

5.2 DETECTOR CAT 5 AND PERSON SENSOR CONNECTIONS.

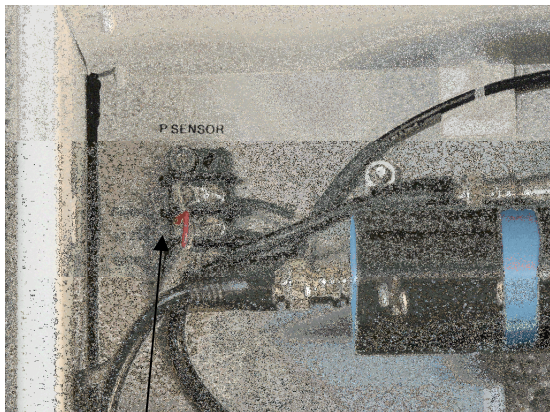


**CAT 5 & GROUND LUG LOCATION
FIGURE 10**

5.2.1 Each detector housing is equipped with a CAT 5 cable and connector to connect to another CAT 5 cable. FIGURE 10 shows one of the DETECTOR housing with the CAT 5 connector.

5.2.2 Connecting the system to the INTERCONNECTING CAT 5 CABLES FROM THE MAIN CONTROL HOUSING SIMPLY REQUIRES CONNECTING THE CABLES TOGETHER.

5.2.3 Connecting to the person sensor requires the front cover be removed from the #1 detector and the 3 conductor cable is connected to a 3 pin terminal block making the connections as indicated by the nomenclature by the terminal block. FIGURE 11 shows the terminal block in the #1 housing.



**P. SENSOR TERMINATION POINTS
1 DETECTOR HOUSING**

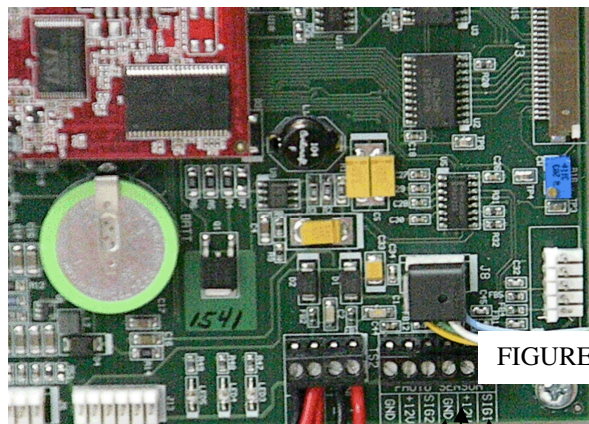


FIGURE 11

**P. SENSOR TERMINATION POINTS
MAIN CONTROL HOUSING**

FIGURE 11

5.3 INSTALLATION INSTRUCTIONS & CONSIDERATIONS

GENERAL: The MAIN COMPONENTS of the AM-806 can be surface mounted or mounted flush in a wall. The 806 is provided with a mounting flange for flush mounting. Johnson recommends the AM-806 be flush mounted to prevent damage to the #1 & #2 detector. Johnson recommends the user of this instrument consider the PRE-INSTALLATION CONSIDERATIONS listed in this document before deciding on a installation site and method for locating and mounting the AM-801 Johnson also recommends the interconnecting wiring be enclosed in conduit or similar material to prevent damage to the wiring. All external wiring for the AM-806 is low voltage in the 5-10 range and not considered a shocking hazard except the 120vac wiring that is required to operate the MAIN CONTROL HOUSING. THE CUSTOMER IS RESPONSIBLE FOR MEETING THE LOCAL ELECTRICAL AND MECHANICAL CODES. JOHNSON WILL PROVIDE ANY TECHNICAL ASSISTANCE CONCERNING THE SYSTEM SPECIFICATIONS ETC. Figure 12 shows a schematic diagram of the system conduit

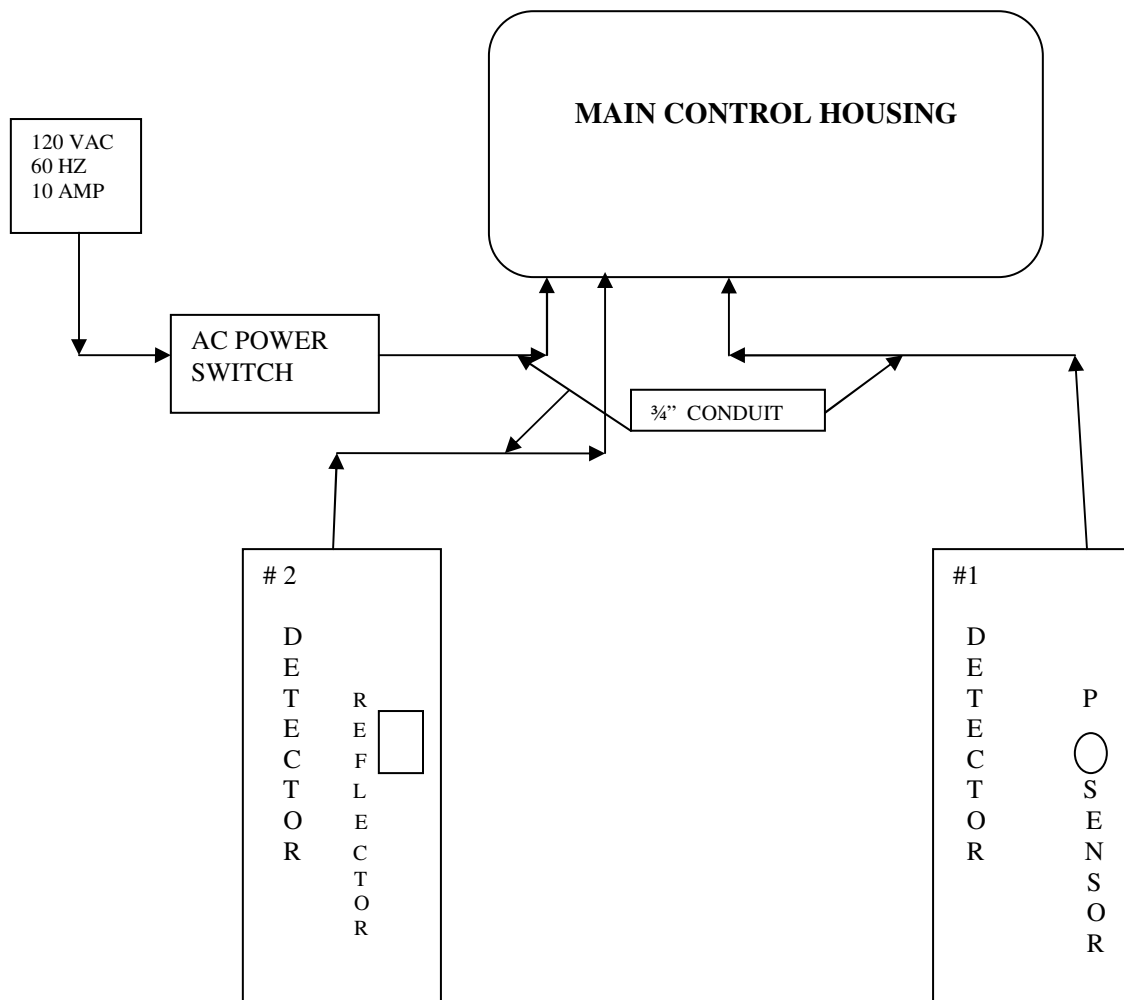


FIGURE 12 CONDUIT SCHEMATIC

5.4.1 The detectors for the AM-806 ***CANNOT BE MOUNTED*** where doors or other similar material will cover the sensitive portion of the detector. **FIGURE 13** shows how the detectors must be located to prevent doors from interfering with the instruments operation. Johnson recommends the DETECTORS be located approximately 12" before (or after) the operating area of the doors.

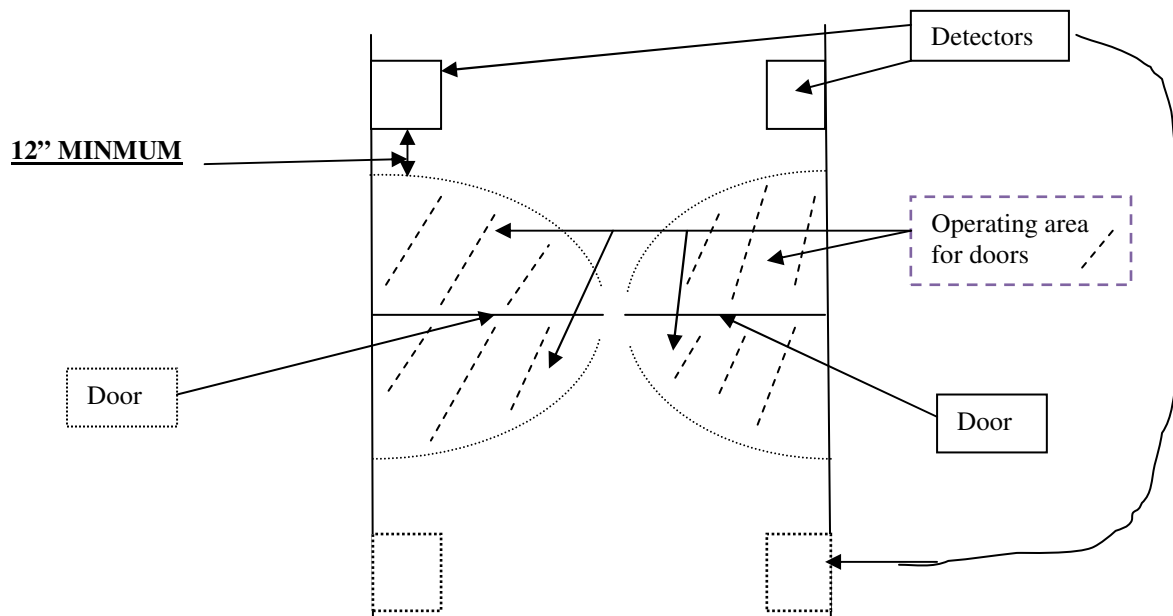


Figure 13

5.4.2 The detectors are provided with a mounting flange and can be mounted flush to the wall or surface mounted on the outside of the wall. Johnson recommends the detectors be flush mounted to prevent damage to the detector. If the detectors are surface mounted extra protection will have to be provided to minimize detector damage. **FIGURE 14** SHOWS THE DETECTOR DIMENSIONS

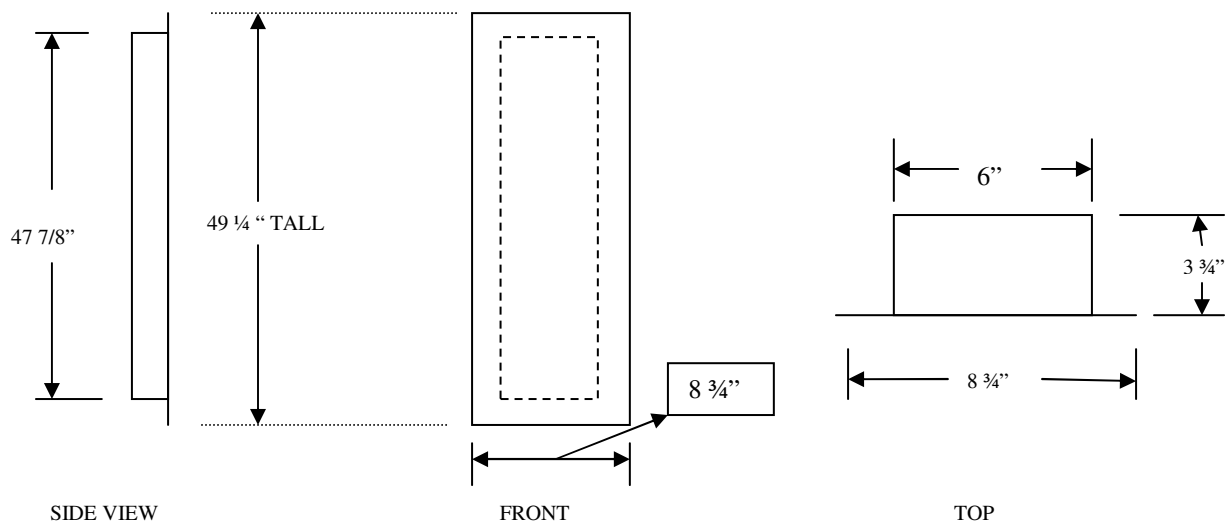


FIGURE 14

- 5.4.3 DETECTOR FLUSH MOUNTING:** Johnson recommends the cut out for flush mounting be located at least 12" before or after the OPERATING AREA OF A DOOR OR SIMILAR OBSTACLE (SEE 5.2.1).
- A. Cut opening for the detector to recess into the wall ¼" larger to assure detector will fit into the recessed area of the wall.
 - B. The detector will be mounted to the wall with the 10 counter sunk holes in the flange for #8 or #10 size screws. (The cover on each detector must be removed to access the holes for the mounting screws)
- 5.4.4 DETECTOR SURFACE MOUNTING:** Johnson recommends a frame of metal or wood be constructed that will accept the detector mounting flanges to mount the detector. The inside dimensions of the frame should be approximately the same dimensions as the cut-out for the recessed mounting.
- 5.4.5 MAIN CONTROL HOUSING 120 VAC ELECTRICAL SUPPLY:** The MAIN CONTROL HOUSING requires a 120 vac 60 Hz electrical supply of 5 amperes. The user is responsible for providing this supply to meet all local electrical and mechanical codes. Johnson recommends this supply be run in conduit and that a disconnect switch be located no more than 5 feet from the MAIN CONTROL HOUSING. Figure 9 shows the connections for the 120 ac power in the MAIN CONTROL HOUSING.
- 5.4.6 DETECTOR HOUSING ELECTRICAL GROUNDING:** Although the detector housing do not contain electrical voltages and/or currents that are considered dangerous it is *extremely* important the housings are connected to a good earth ground for good operation. The grounding of the detector housings is required to prevent extraneous electrical signals from interfering with the operation of the AM-801. A grounding lug is provided on the back of the detector housing for this purpose. Johnson suggests the lug be connected to a good earth ground with 14 ga. Copper wire. FIGURE 10 SHOWS THE GROUD LUG FOR EACH DETECTOR HOUSING

6.0 INSTALLATION INSTRUCTIONS

- 6.1 DETECTOR PREPERATION:** Remove the cover from the front of each detector by removing the 6 – 6-32 screws from the cover Save the screws. Additional screws have been provided for replacing the cover at the end of installation.
- 6.2** Locate the area where the detectors will be installed. Prep the wall or provide a frame depending on the method of installation. **CAUTION: SEE FIGURE 16. FRONT OF DETECTORS MUST BE PARALLEL OR SYSTEM WILL NOT FUNCTION CORRECTLY**
- 6.3 MAIN CONTROL HOUSING:** Locate the area where the MAIN CONTROL HOUSING will be located. Johnson suggests the housing be located as close as possible to the DETECTOR HOUSING so persons passing through the system will know when the system has detected abnormal operation.
- 6.4 ELECTRICAL SERVICE:** Locate where the electrical service will be supplied that can provide 120 vac – 5 amperes.
- 6.4.1** Run conduit from the panel that will provide the electrical service to the MAIN CONTROL HOUSING. **BE SURE TO PROVIDE A DISCONNECT SWITCH WITHIN 5 FIVE FEET OF THE MAIN CONTROL HOUSING.**
- 6.5 INSTALL THE DETECTOR HOUSINGS:**
- 6.5.1 Install the DETECTOR HOUSINGS so the bottom of each housing is 18" above floor level.
 - 6.5.2 DETECTOR HOUSINGS MUST BE INSTALLED AS PER THE RECOMMENDATIONS IN FIGURE 15. DETECTORS MUST BE LOCATED DIRECTLY ACROSS FROM EACH OTHER AND EACH DETECTORS SIDE AND FRONT SURFACES MUST BE PLUMB.
 - 6.5.3 Connect each detector housing to the MAIN CONTROL HOUSING with ¾" conduit.
 - 6.5.4 Connect each detector housing to a good earth ground using at least 14 ga copper wire connected to ground terminal on rear of each housing. FIGURE 10 SHOWS THE GROUND LUG ON THE DETECTOR HOUSING.
 - 6.5.5 Determine length of conduit that runs between MAIN CONTROL HOSING & DETECTOR #1 housing. Obtain a CAT5 cable with connectors on each end of that length + approx. 5' and install in the conduit. Plug in connectors are provided on each end of the Detector housings.
 - 6.5.6 Repeat 6.5.5 for the #2 DETECTOR HOUSING.

TYPICAL DOOR INSTALLATION

NOTE: DETECTOR FRONT & SIDES MUST BE PLUMB. FRONTS MUST BE PARALLEL

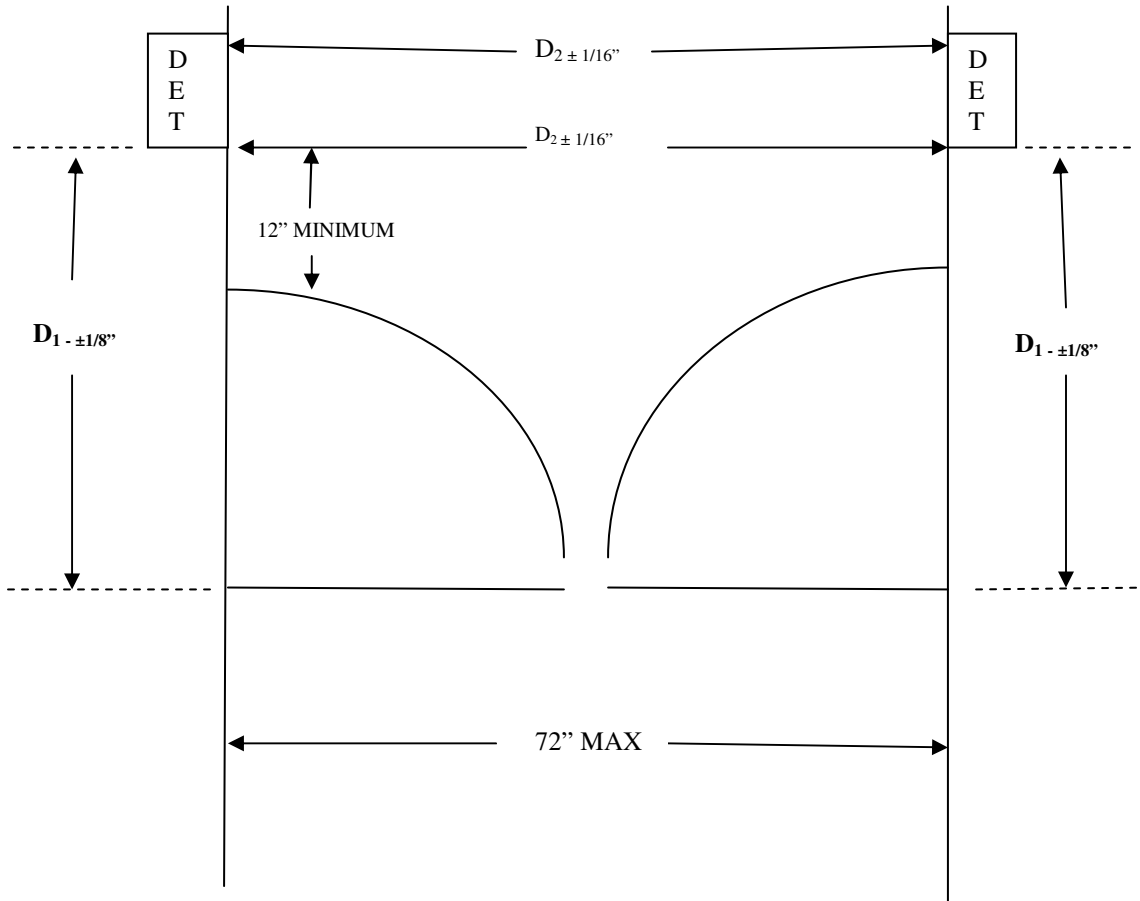


FIGURE 15

7.0 OPERATING INSTRUCTIONS

7.1 CONTROLS – POWER SWITCH- 120/250 VAC & BATTERY OPERATION

GENERAL:

The model AM-806 portal monitor is 100% digital and microprocessor controlled. All data entry and readout is through the VGA touch sensitive monitor in the MAIN CONTROL HOUSING. The 806 can be operated from standard 120 vac 60 Hz/250 vac 50 Hz house current or from it's internal rechargeable battery for up to 2 hours. Operation from the internal battery is automatic and requires no intervention by the user. All programming and important data i.e. program settings and person count is held in memory **WITH AN INTERNAL BATTERY BACKUP WITH A NOMINAL 10 YEAR LIFE**. Johnson suggests the AM-806 be tested weekly for correct operation using the Cs137 test sources provided with the instrument.

The **MAIN POWER SWITCH** and **FUSE** are located inside the MAIN HOUSING. The fuse used in the AM-806 is 1.5 amp SLO-BLO. Access to the inside of the MAIN HOUSING is controlled by a key lock to prevent unauthorized operation of the instrument. A ac power disconnect switch is provided near the MAIN CONTROL HOUSING to permit complete power removal from the system for maintenance.

7.2 SPEAKERS and AUDIBLE ALARMS

A Sonalert alarm speaker is located in the MAIN CONTROL HOUSING. . The Sonalert is utilized to provide an audible alarm when the preset alarm set points have been exceeded. Once the audible alarms have been engaged *they will continue to sound until they have been reset by the operator.*

7.3 OPERATING INSTRUCTIONS

7.3.1 BEFORE OPERATION

- 7.3.1.1 Follow the assembly instructions in section 4 of this manual.
- 7.3.1.2 Provide 120 vac 60 Hz OR 250 vac 50 Hz power for operation
- 7.3.1.4 Turn on power to the AM-806 by engaging the external disconnect switch and the internal power switch located in the MAIN CONTROL HOUSING
- 7.3.1.5 AM-806 IS NOT READY FOR OPERATION. The system must go through a diagnostic check to be sure all electrical systems are operating within specification.
- 7.3.1.6 The AM-806 will then run a 20 second check to determine the **BACKGROUND RADIATION** in the area of the detectors. *Once the background check is complete the system will display **READY** with a GREEN BACKGROUND in the block at top of the diagram on the VGA monitor.*
FIGURE 16 SHOWS THE BACKGROUND INITIALIZATION SCREEN

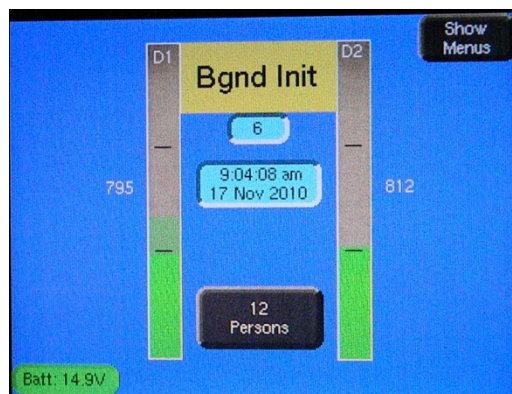


FIGURE 16

7.3.1.7 When the AM-806 completes the BACKGROUND INITIALIZATION the top block on the VGA monitor will show **READY** with a green background and with each detector (vertical block each side will display **GREEN** which indicates the radiation part of the system is ready for operation. **FIGURE 17** shows the 806 with a normal HOME screen.

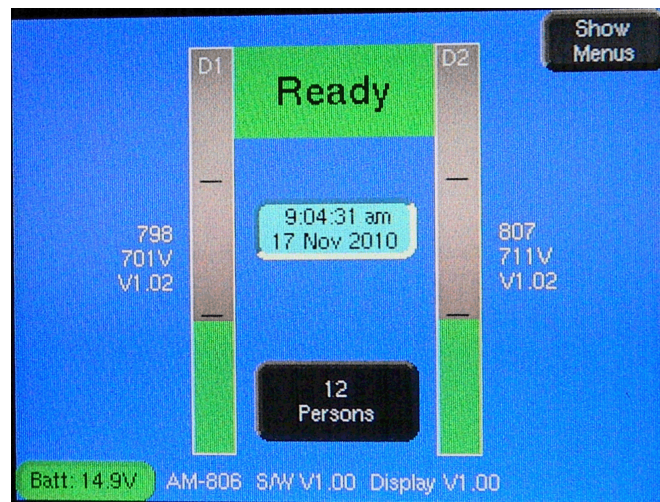


FIGURE 17

7.3.1.8 To set the other parameters of the AM-806 Touch the **SETUP** button on the right side of the monitor and the **SETUP SCREEN WILL APPEAR**. **Figure 18** shows the **SETUP SCREEN**. To set a parameter i.e. clock touch the **CLOCK** button. The screen for setting the clock will appear. Set the parameters on the screen as indicated (clock is set on 24 period, displayed on 12 hour period) . When all parameters have been completed touch the **APPLY** button at the bottom of the screen to save the settings.

7.3.1.9 Set each parameter on the **SETUP** screen in the same manner being sure to **SAVE** each setting.

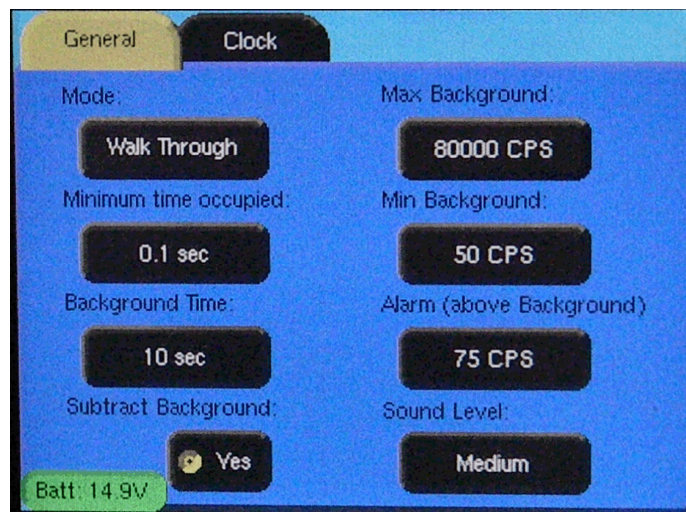


FIGURE 18

7.3.2

OPERATING INSTRUCTIONS

7.3.2.1 Normal operation for the AM-806 is in the DRIVE THROUGH mode of operation.

7.3.2.2 MINIMUM TIME in the sensitive area of the detectors is 0.1 seconds. IF A PERSON OR PHYSICAL OBJECT PASSES THROUGH THE AREA IN LESS THAN 0.1 SECONDS THE INSTRUMENT WILL INDICATE TOO FAST. This alarm will require resetting the system on the VGA screen. The TOO FAST screen is shown in FIGURE 19. To reset this alarm touch the ACKNOWLEDGE ERROR button.

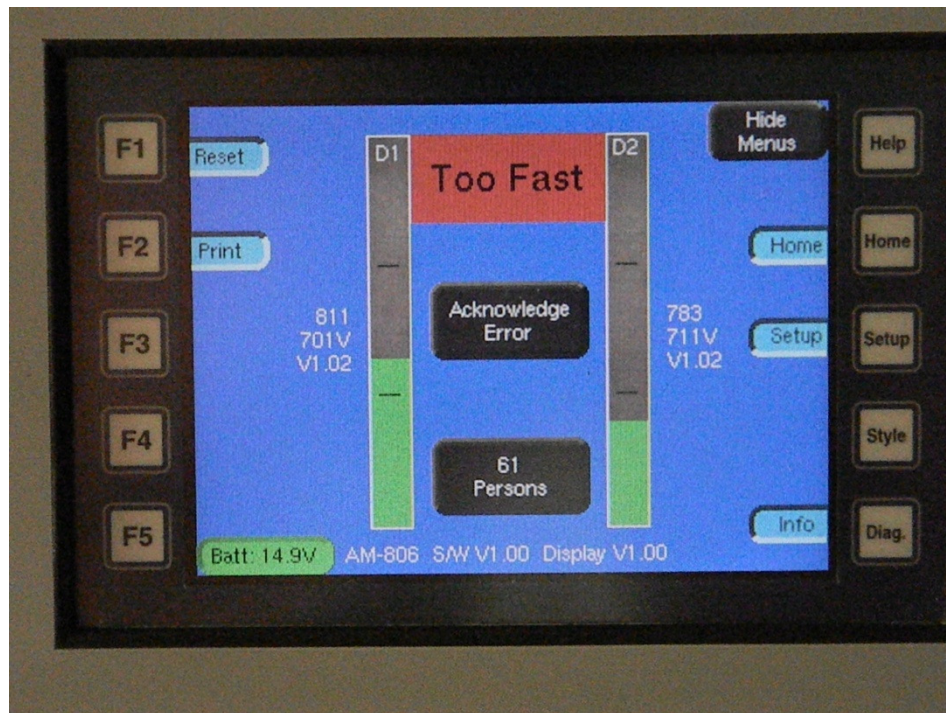


FIGURE 19

7.3.2.2 SENSITIVITY CONTROL: The AM-806 sensitivity control is adjustable. The sensitivity is determined by the number of counts above background the ALARM (above background) shows on the SETUP SCREEN – IN FIGURE 18. When the AM-806 is shipped the ALARM above background is set to 75 cps. This should cause an alarm if the system is installed on a 72” doorway and a 2 μ Ci – Cs 137 test source is carried by a person through between the detectors. Installing the system on a small or wider doorway will require the ALARM cps be adjusted to a higher or lower number. EACH ALARM WILL REQUIRE THE USER TO RESET THE SYSTEM BEFORE IT WILL RETURN TO NORMAL OPERATION.

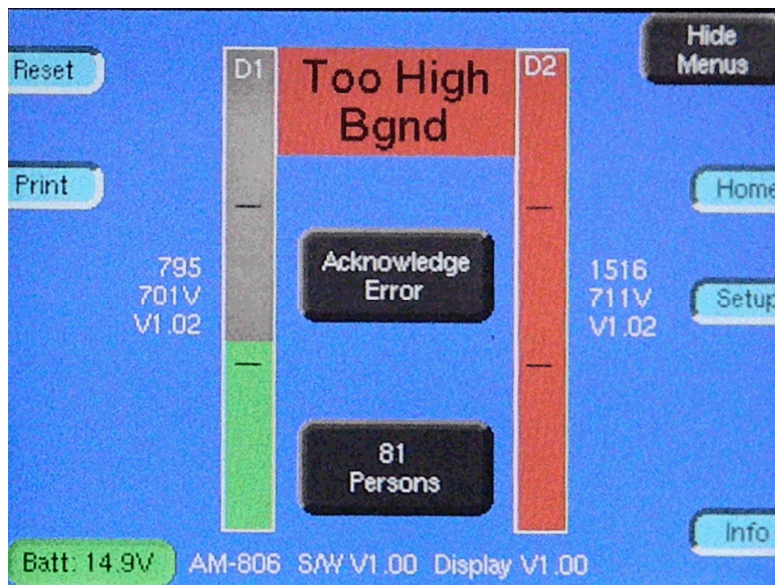
7.3.2.3 ALARM: When the signal from one or both detectors exceeds the ALARM SETPOINT the detector or detectors with signals above the ALARM SETPOINT bargraph for that detector will turn RED and the alarm will sound. The connector bar on the VGA monitor will turn red and display ALARM. FIGURE 3 shows the AM-806 in ALARM CONDITION.

8.0 DETAILED DESCRIPTION OF OPERATING SCREENS FOR THE AM-806



BACKGROUND INITIALIZATION

This screen is present when the system is first turned on and is present while the system is performing a check of its internal diagnostics prior to operation. During this screen the system is establishing background, checking high voltage, battery voltage and several internal checks for the internal circuitry. This screen is present for 20 seconds or the time that has been set to count background.

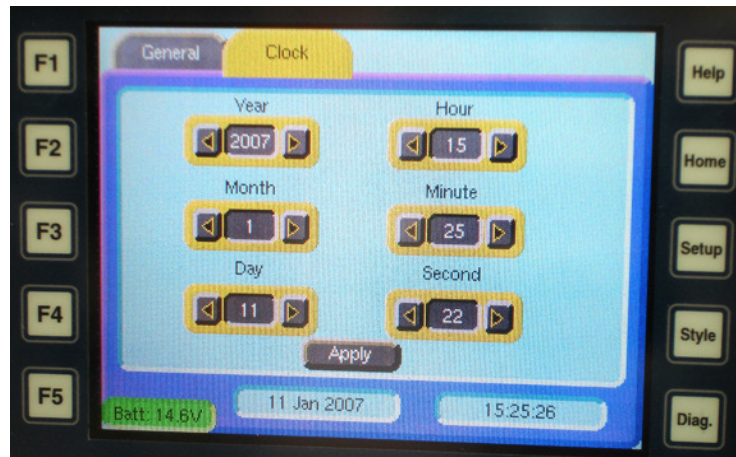


HOME SCREEN - TOO RAPID (HIGH BACKGROUND) CHANGE

This screen appears if the background suddenly has a rapid change and exceeds the alarm that has been preset for the detectors when they are in normal operating mode. Sudden changes in background (less than 1 minute) cannot be tolerated during normal operation. This type alarm indicates that a test source or other type radioactive material may have been placed close to the detectors and must be removed before normal operation can begin. Long term changes of up to 20 $\mu\text{R/hr}$ (approximately 2000 CPS) can be compensated for during normal operation.

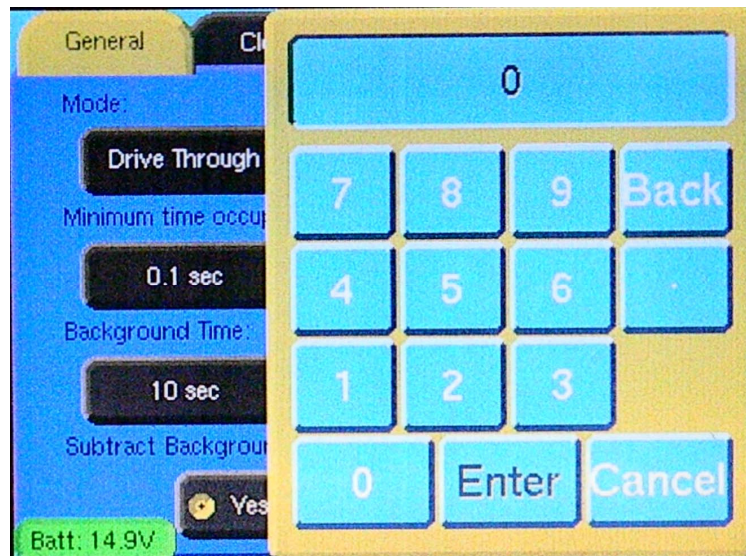
CLOCK SCREEN

- a. Access to **CLOCK SETUP SCREEN** – SEE **CLOCK & DATE SETUP SCREEN**



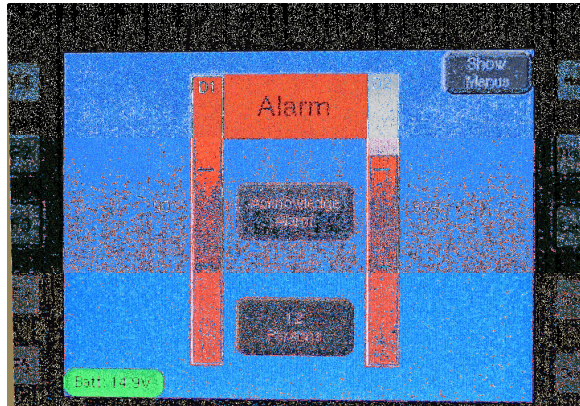
SET CLOCK & DATE

This screen appears when the user accesses the **SETUP** screen and touches the **CLOCK** button at the top of the screen. The screen makes provisions for setting the year, month, day, hour, minute and second. The condensed settings are shown at the bottom of the screen. After entering the data touch the **APPLY**.



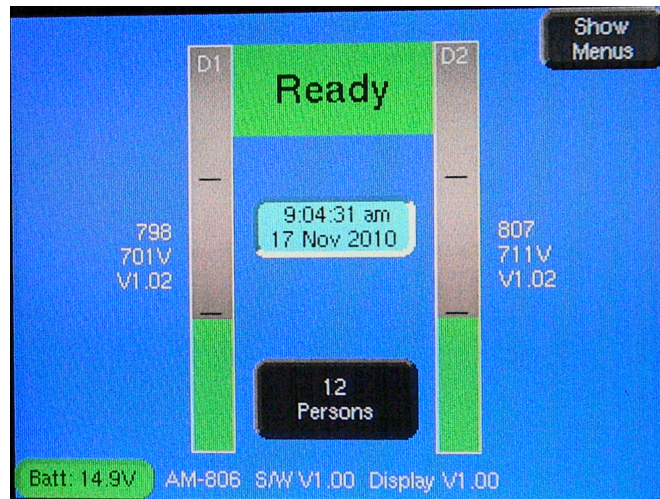
KEY PAD DATA ENTRY

This screen appears when the user accesses the **SETUP** screen and touches a button on the screen that requires the user to enter numerical data. The user simply enters the desired numerical data and then touches **ENTER** and the screen returns to the **SETUP** screen.



HOME SCREEN - COUNT TO HIGH ALARM

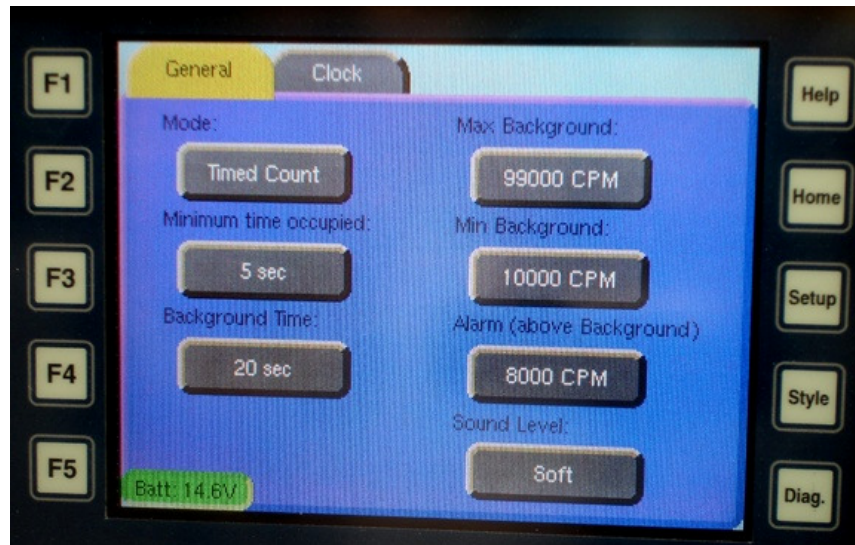
This screen appears when one or all of the monitors scintillation detectors measure a radiation field that exceeds the alarm setpoint. The high radiation field will cause the scintillator/scintillators to turn RED and the monitor will sound an alarm, turn on the red alarm light and issue a verbal instruction STOP SEE OPERATOR.



HOME SCREEN - NORMAL OPERATING - NO ALARM

This screen appears when system has completed all internal and background checks and is ready for NORMAL OPERATION. The screen shows the pertinent data utilized to operate the system:

- a. Count rate of each detector
- b. Number of persons that have passed through the portal
- c. Correct time and date
- d. Power supply (battery voltage if batteries are being used)



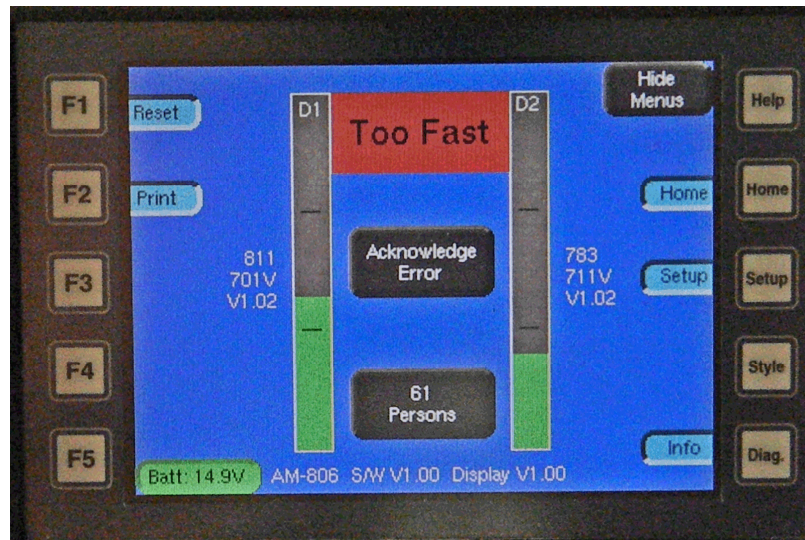
SETUP SCREEN

ALL SCREENS DISPLAY COUNT RATES IN CPS (COUNTS PER SECOND)

This screen will appear when the operator touches the SETUP button on the HOME SCREEN. The following functions are available on this screen:

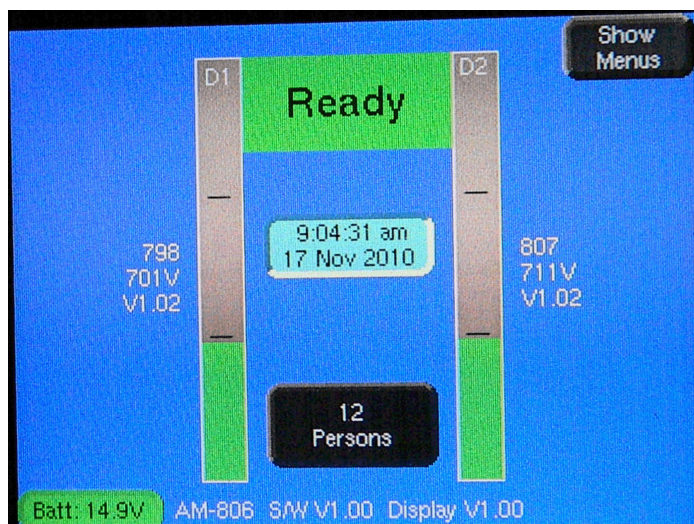
GENERAL SCREEN

- a. **MODE : TIME COUNT OR DRIVE THROUGH**
- b. **MINIMUM TIME OCCUPIED:** Time person must be in portal to obtain a satisfactory measurement
- c. **BACKGROUND TIME: (FACTORY SET)** Counting time required to obtain a satisfactory background
- d. **MAX BACKGROUND:** Max Background counts for normal operation
- e. **MIN BACKGROUND:** Minimum counts system should indicate in nominal background
- f. **ALARM (above background):** Counts above background indicating contamination
(115 CPS = approximately $1\mu\text{Ci}$ of Cs 137)
- g. **SOUND LEVEL:** Verbal Command loudness – soft, medium or loud



HOME SCREEN - TOO FAST (person passing through portal)

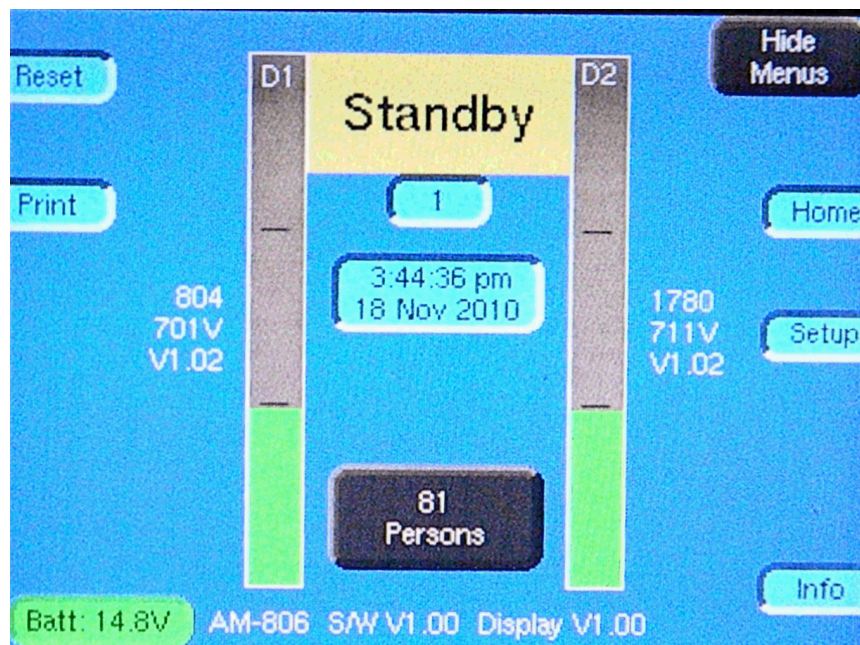
This screen appears if the person passing through the portal does not occupy the portal for at least the time that was set on the SETUP SCREEN – MINIMUM TIME OCCUPIED. This will cause the Ready area to turn RED, light the alarm light and issue a verbal command **TOO FAST SEE OPERATOR**. This alarm must be reset and the person must pass through the portal to obtain an accurate measurement.



HOME SCREEN - NORMAL OPERATING – NO ALARM – MAX DATA DISPLAY

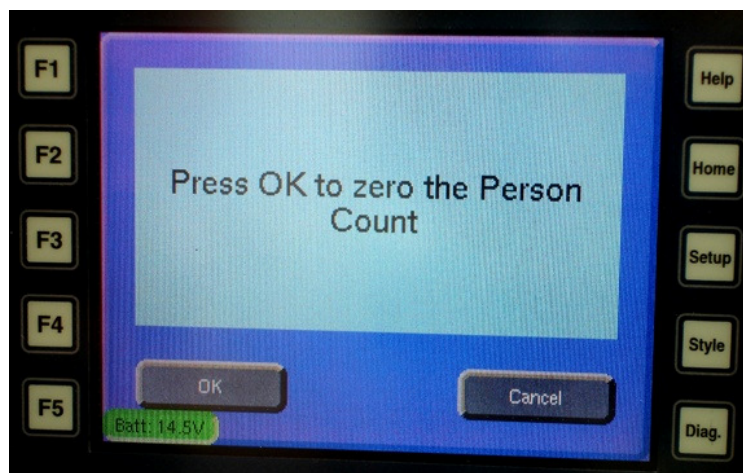
This screen appears when the operator touches the INFO BUTTON and system has completed all internal and background checks and is ready for NORMAL OPERATION. The screen shows the pertinent data utilized to operate the system:

- Count rate of each detector
- Number of persons that have passed through the portal
- Correct time and date
- Power
- supply (battery voltage if batteries are being used)
- High Voltage of each detector
- Program version for the display



HOME SCREEN - NORMAL OPERATING – STANDBY

This screen appears as soon as each measurement has been completed (3 seconds). The monitor is reinitializing before the next measurement.



PERSON COUNTER RESET SCREEN

This screen appears as soon as the operator touches the PERSON COUNTER (located at the bottom of the portal outline on the home screen). Press OK and the person counter is RESET to ZERO.

