

# **AM-806 DOOR/GATE MONITOR FUNCTIONAL TEST PROCEDURE**



**WB Johnson Instruments, LLC  
4083<sup>E</sup> 600N  
Rigby, ID 83442**

**Telephone: 208-557-6945**

**WEB: [www.jradmeters.com](http://www.jradmeters.com)**

**Fax: 208-557-6946**

## **SECTION**

## **CONTENTS**

1	GENERAL
2	FUNCTIONAL TEST
3	HIGH VOLTAGE ADJUST
4	CALCULATION OF SOURCE CHECK RANGE
5	SCHEMATICS
ATTACHMENT A	FUNCTIONAL TEST DOCUMENT

## 1.0 **GENERAL**

This procedure outlines the steps necessary for performing functional testing of all models of the AM-806 Portable Portal Monitors. The AM-806 comes in five different models as configured below:

AM-806-2-180:	2 – 180 in <sup>3</sup> Scintillation Detectors
AM-806-2-300:	2 – 300 in <sup>3</sup> Scintillation Detectors
AM-806-2-400:	2 – 400 in <sup>3</sup> Scintillation Detectors
AM-806-2-500:	2 – 500 in <sup>3</sup> Scintillation Detectors
AM-806-4-360:	4 – 180 in <sup>3</sup> Scintillation Detectors

Make sure the AM-806 is in the correct model configuration before starting the functional testing described in the following Sections.

## 2.0 **FUNCTIONAL TEST**

**NOTE:**        **INFORMATION REQUIRED BY THIS SECTION SHALL BE RECORDED ON ATTACHMENT A – “AM- 806 Functional Test Document”**

2.1     Record the following information:

AM-806 Model  
AM-806 Serial Number  
Cs-137 Check Source Number

- 2.1     Place the AM-806 to be tested into the “Area Monitor” mode of operation and set the Alarm Set Point to 5000 cps – return to Home Screen
- 2.2     Push “Show All” button in bottom right hand corner of display
- 2.3     Record the General Test Settings
- 2.4     Record as Found High Voltage (HV)
- 2.5     Record the current background counts per second (cps/CPS) of the detectors in use
- 2.4     Calculate and record the acceptable source check ranges – Section 4 explains the calculations necessary to obtain the source check range.
- 2.6     Place the Cs-137 check source that came with the AM-806 (the serial # will be referenced on the original test document that came with the instrument) in contact with the middle portion of each detector for a minimum of Thirty (30) seconds then record the reading in the As Found Source CPS for each detector in use.

- 2.6.1 If the source cps fall within the acceptable range for the detector tested record the reading in the As Left Source CPS column – also record the As Found HV in the As Left HV column – no further action for this detector is necessary.
- 2.6.2 If the source cps fall outside the acceptable range for the detector proceed to Section 3.0 and perform the necessary HV adjustment to bring the cps into the acceptable range – then record the cps in the As Left Source CPS column - also record the new HV setting in the As Left HV column - no further action for this detector is necessary.
- 2.7 Repeat Step 2.6 for all detectors in use.

### 3.0 HIGH VOLTAGE ADJUSTMENT

- 3.1 High voltage (HV) boards are located behind the detector inside the detector housing
- 3.2 The HV board is illustrated in FIGURE 1

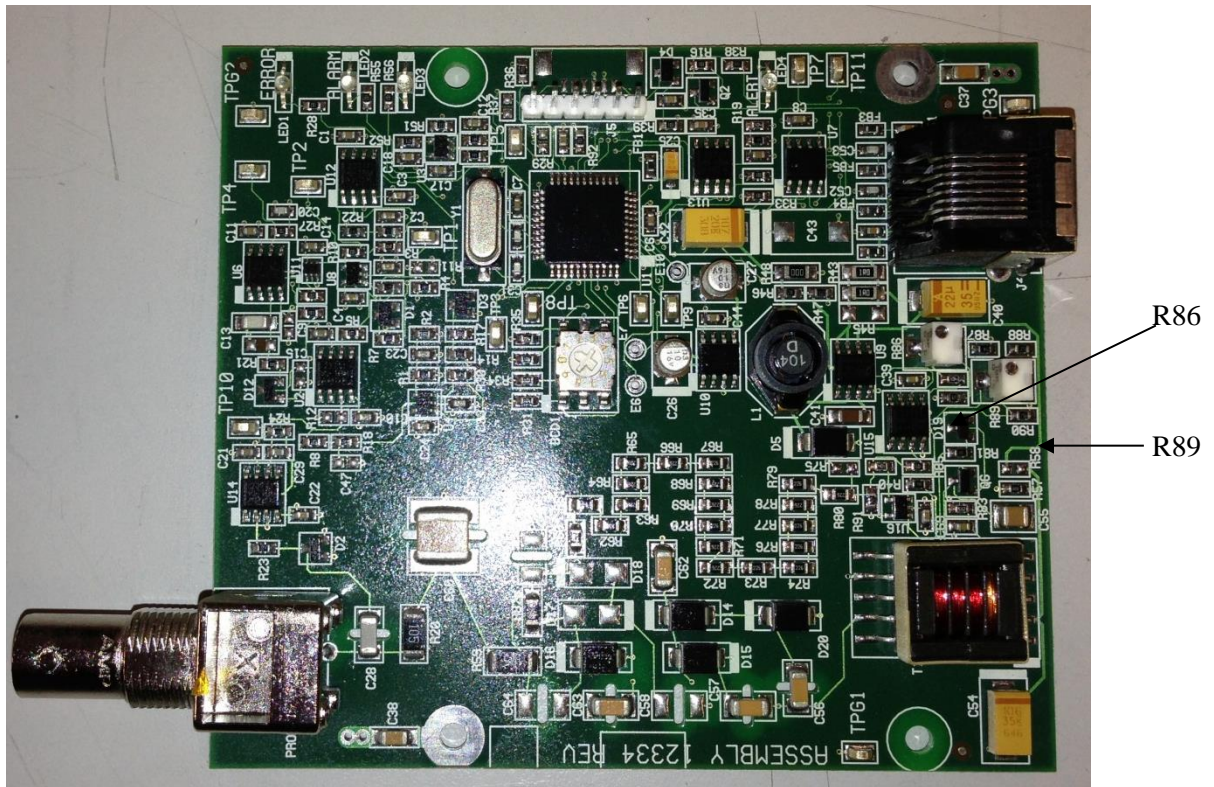


FIGURE 1 – 10 Turn Pots

**CAUTION: DO NOT ADJUST POTENTIOMETER R89 THIS WILL NOT ADJUST THE HV IT WILL ONLY CHANGE THE HV READING ON THE DISPLAY.**

- 3.3 Place the Cs-137 Check Source in the middle of the detector to be adjusted making sure the source is in contact with detector.

- 3.4 Adjust R86 until the desired number of cps are displayed.
- 3.5 Remove the Source and check background cps to see if they are similar to the other background counts of the other detectors.
- 3.6 If the Source cps and the background cps are satisfactory record new readings under as found data.

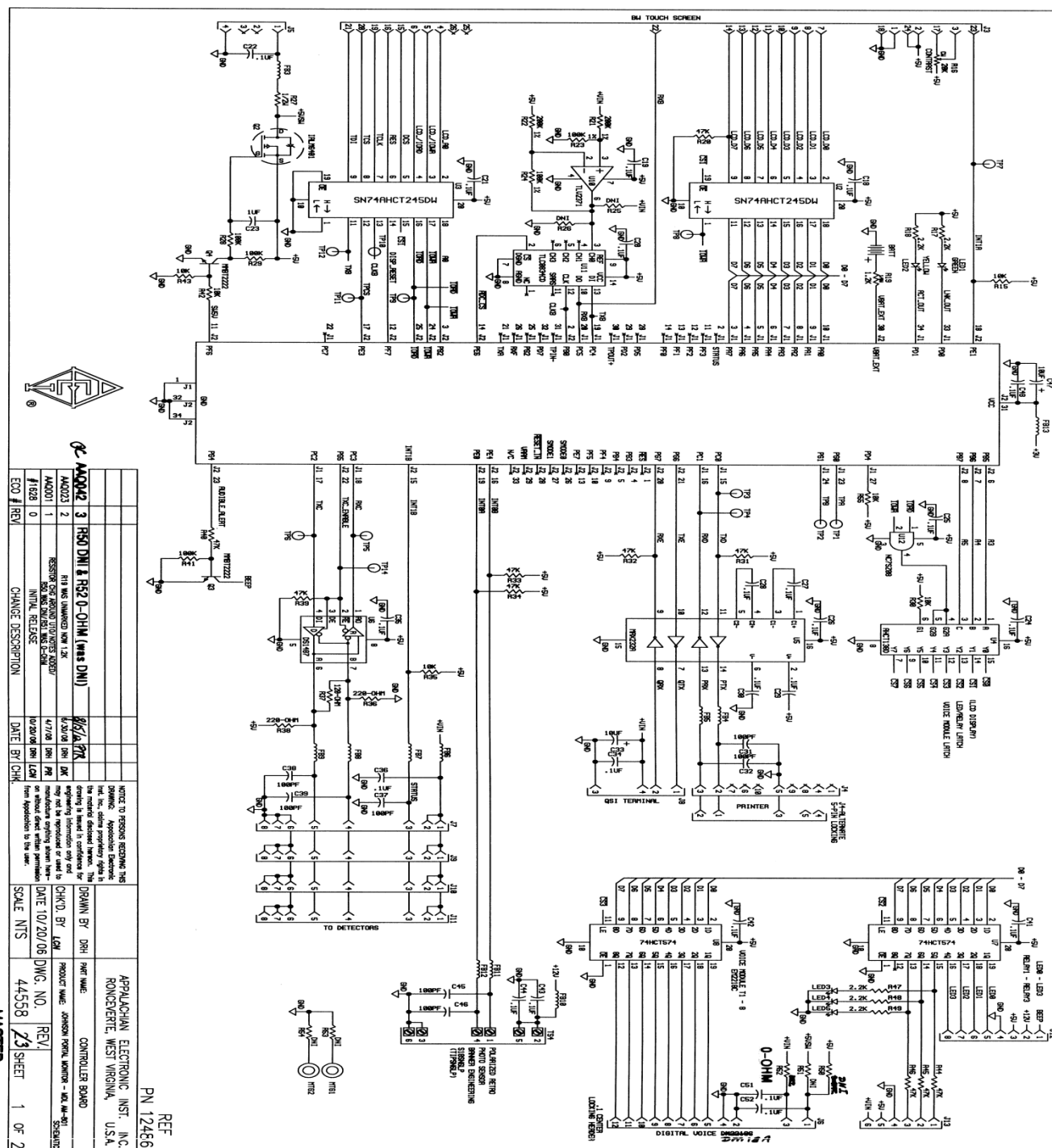
#### **4.0 CALCULATION OF SOURCE CHECK RANGE**

- 4.1 Take the cps for each detector that is listed on the “AM-801 Functional Test Document” and using the decay formula for CS-137 calculate the new cps number.
- 4.2 Take the number of cps calculated in Step 4.1 and multiply by 20%.
- 4.3 Take the number calculated in Step 4.2 and add it to the number calculated in Step 4.1 this number will become the high number of the acceptable source check range.
- 4.4 Take the number calculated in Step 4.2 and subtract it from the number calculated in Step 4.1 this number will become the low number of the acceptable source check range.
- 4.5 Example of calculating the acceptable source check range:

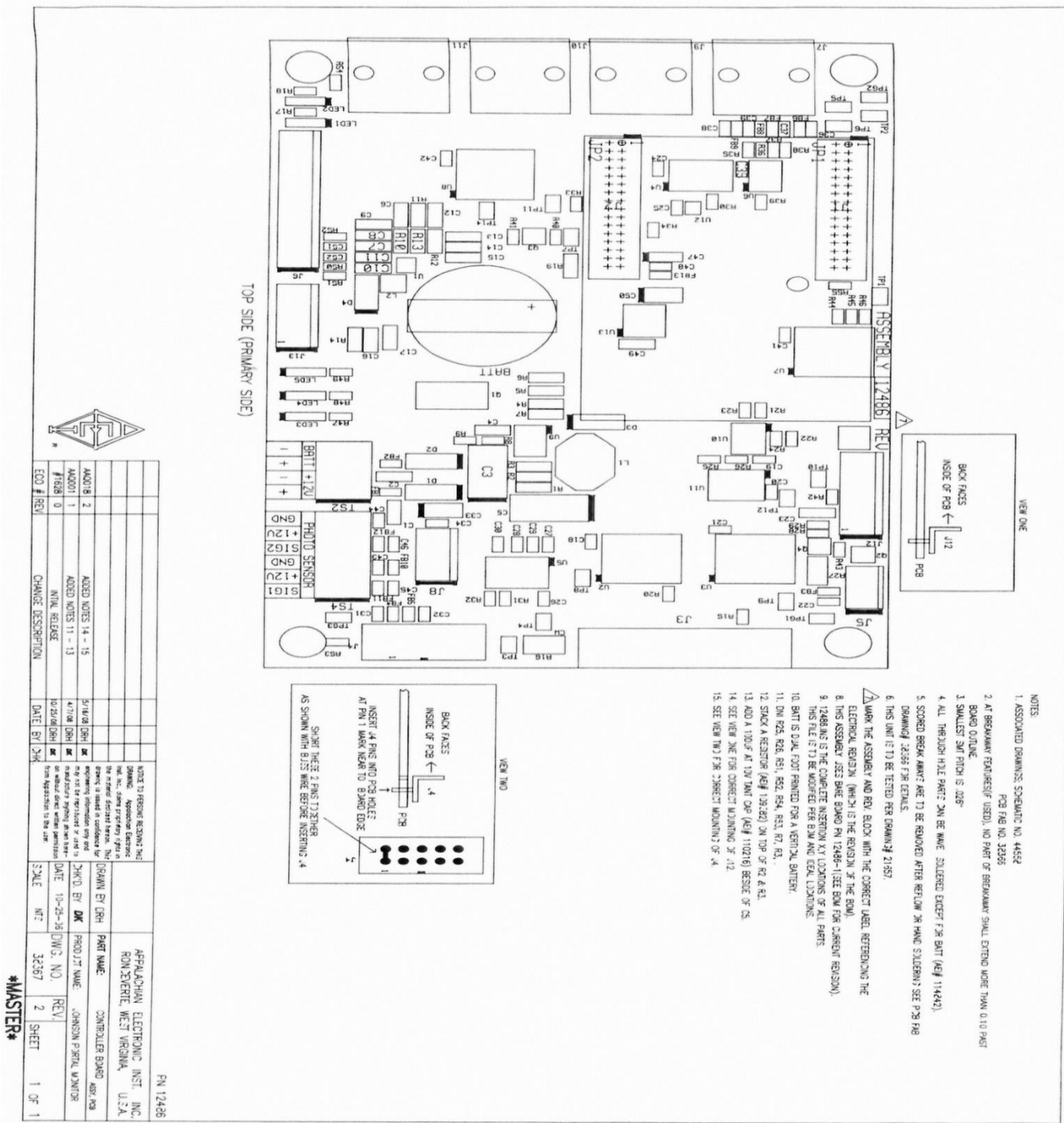
Step 4.1 is 2000cps (decay calculated cps) next Step 4.2 equals 400cps (20% of 2000cps) next 2000cps plus 400cps equals 2400cps next 2000cps – 400cps equals 1600cps this will give you an acceptable source check range of 1600cps to 2400cps.

## 5.0 SCHEMATICS/COMPONENT LAYOUT

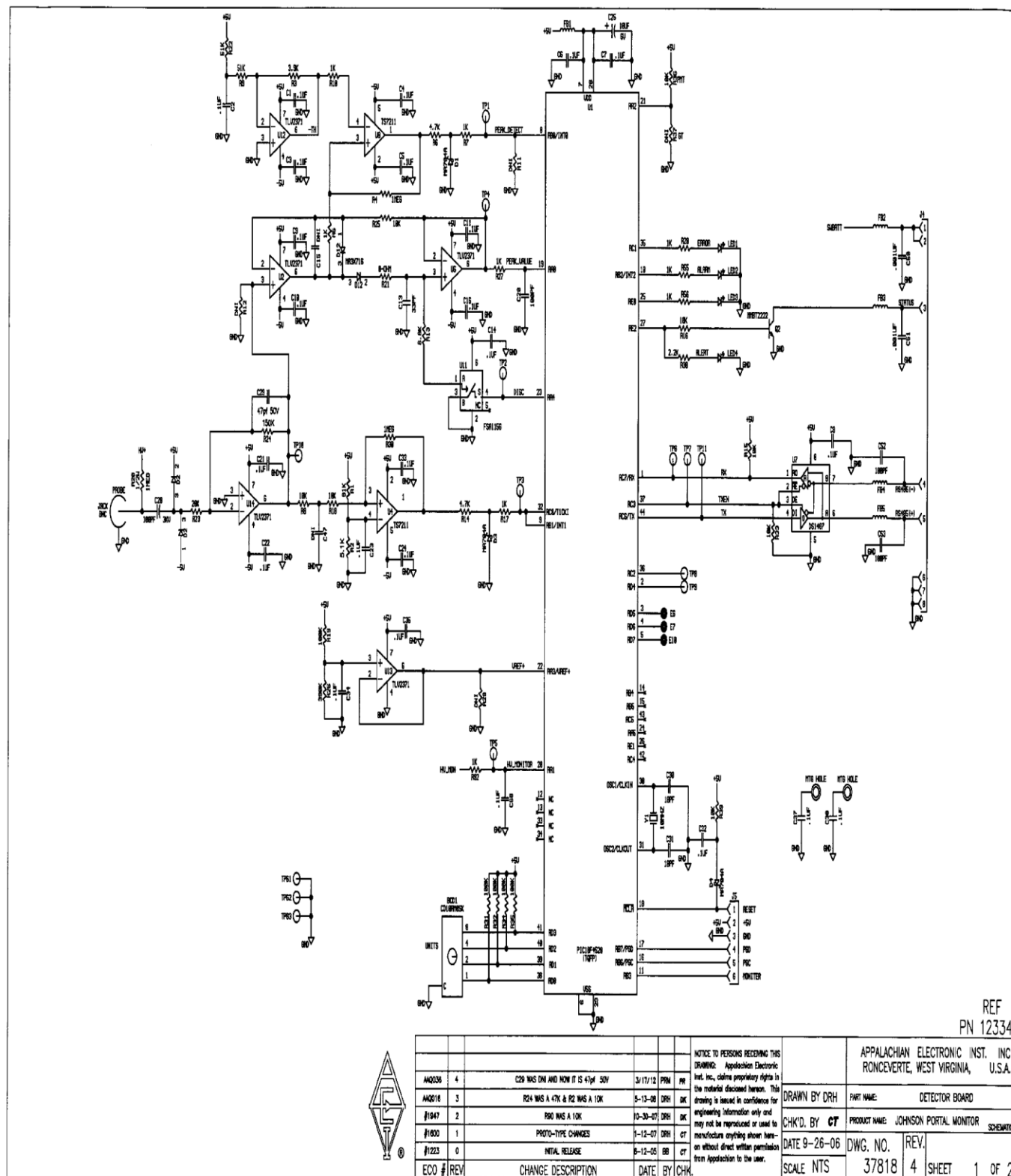
## 5.1 CONTROLLER BOARD SCHEMATIC



5.2 CONTROLLER BOARD COMPONENT LAYOUT

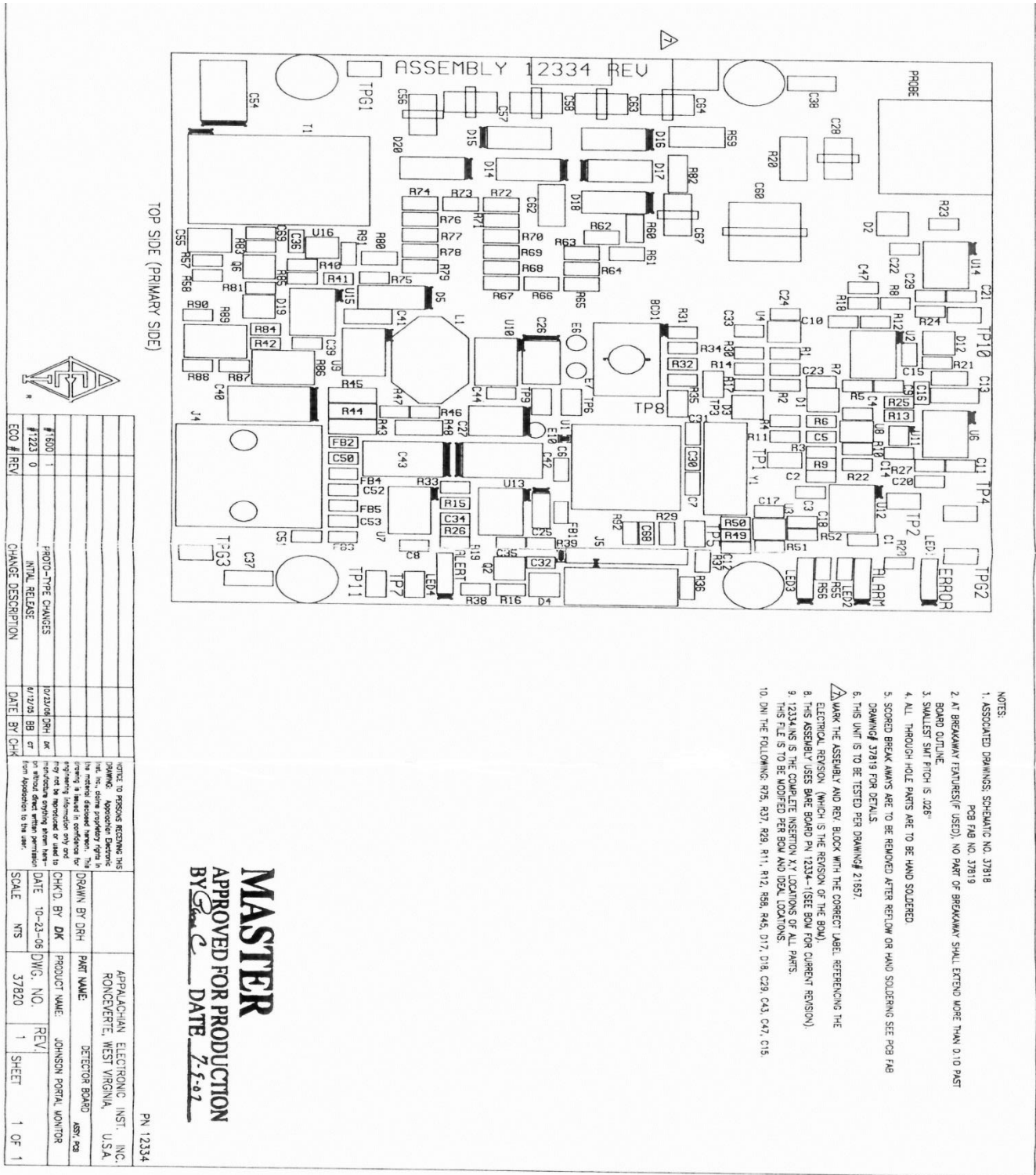


### 5.3 DETECTOR BOARD SCHEMATIC





5.4 DETECTOR BOARD COMPONENT LAYOUT



# AM-806 FUNCTIONAL TEST DOCUMENT

**TEST SETTINGS:**

**Minimum BKG Set Point:** \_\_\_\_\_ cps      **Maximum BKG Set Point** \_\_\_\_\_ cps

	BKG CPS	CS RANGE CPS +/- 20%	AS FOUND SOURCE CPS*	AS LEFT SOURCE CPS*	AS FOUND HV	AS LEFT HV
DETECTOR 1						
DETECTOR 2						
DETECTOR 3						
DETECTOR 4						

**SENSITIVITY TEST "DRIVE THRU" MODE (Source 18" from detector surface):**

**THE FOLLOWING WERE TESTED AND RESPONDED CORRECTLY (please initial):** \_\_\_\_\_

**COMMENTS:**

--

August 07, 2018