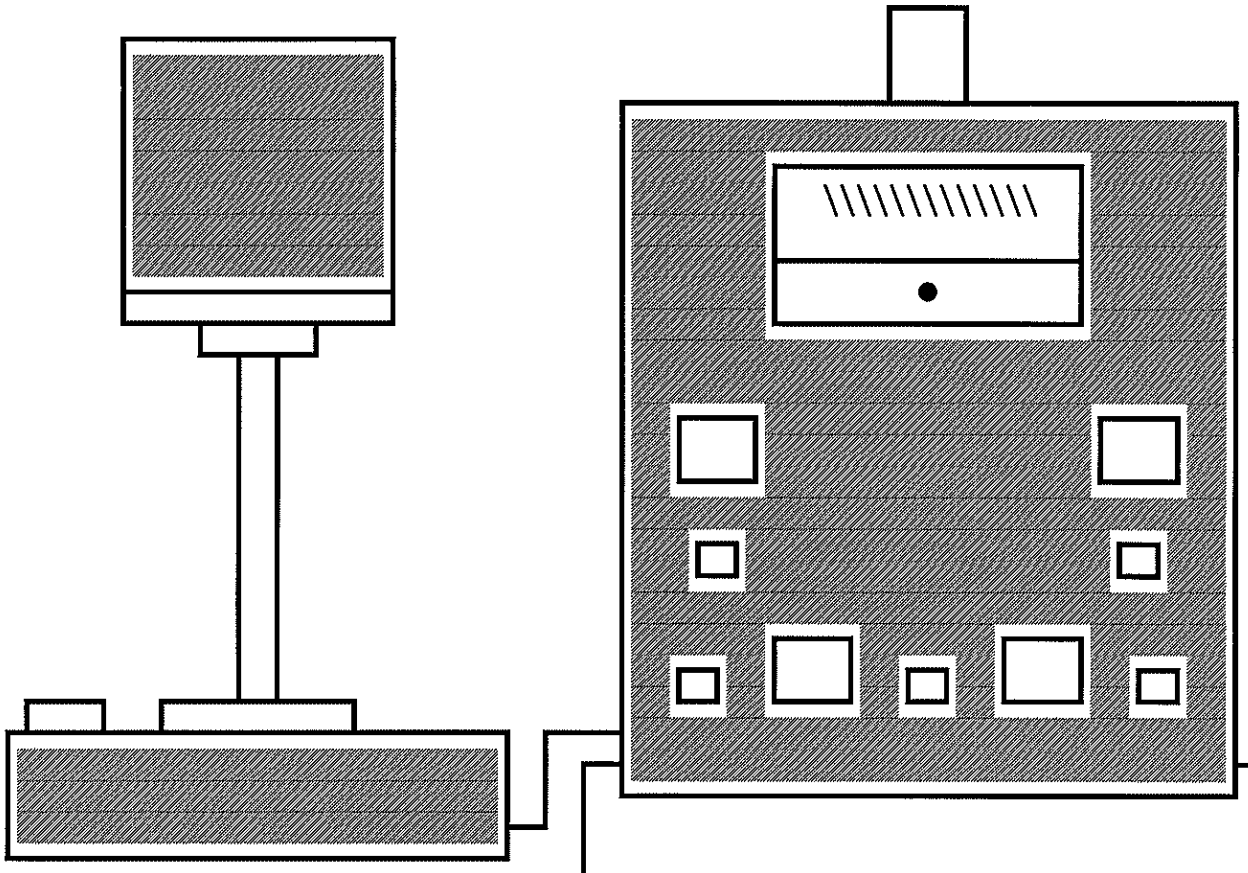
NDS PRODUCTS



ND-AM
AREA MONITOR
OPERATION MANUAL

www.ndsproducts.com

111 ANDERSON, PASADENA TX 77506, PHONE 713/ 475-2986, FAX 713/ 477-6741

ND-AM

CONTENTS

NOTE: DUE TO NDS PRODUCTS' CONTINUING PROGRAM OF RESEARCH AND DEVELOPMENT, ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE AND MAY BE VARIED AT OUR DISCRETION.

1.0 USER CAUTION AND WARNINGS:

THE EQUIPMENT HEREIN IS DESIGNED AND MANUFACTURED IN COMPLIANCE WITH ALL APPLICABLE SAFETY STANDARDS; NEVERTHELESS, CERTAIN HAZARDS ARE INHERENT IN THE USE OF ALL ELECTRONIC EQUIPMENT. ADEQUATE WARNINGS ARE INCLUDED IN THIS MANUAL AND ON THE PRODUCT ITSELF TO COVER HAZARDS THAT MAY BE ENCOUNTERED IN NORMAL USE & SERVICING OF THIS EQUIPMENT. NO OTHER PROCEDURES ARE WARRANTED BY NDS PRODUCTS. IT SHALL BE THE OWNER'S OR USER'S RESPONSIBILITY TO ASSURE THAT THE PROCEDURES HEREIN ARE METICULOUSLY FOLLOWED, AND ESPECIALLY THAT THE WARNING AND CAUTIONARY NOTES ARE HEEDED. FAILURE ON THE PART OF THE USER IN ANY WAY TO FOLLOW THE PRESCRIBED PROCEDURES SHALL OBSOLVE NDS PRODUCTS AND ITS AGENTS FROM ANY RESULTING LIABILITY.

WHEN ENTERING A HIGH RADIATION AREA ALWAYS USE A SURVEY METER AS A BACKUP.

READ YOUR OPERATION MANUAL

2.0 WARRANTY:

NDS PRODUCTS WARRANTS THAT THE PRODUCTS COVERED HEREBY SHALL BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR FROM DATE OF NDS PRODUCTS' SHIPMENT (GM TUBE IS WARRANTEED BY MANUFACTURER FOR 90 DAYS). THE FOREGOING WARRANTY DOES NOT APPLY TO ANY PRODUCTS WHICH HAVE BEEN SUBJECT TO MISUSE (INCLUDING STATIC DISCHARGE), NEGLECT, ACCIDENT, OR MODIFICATION. NDS PRODUCTS' SOLE OBLIGATION TO BUYER HEREUNDER FOR PRODUCTS FAILING TO MEET THE AFORESAID WARRANTY SHALL BE, AT NDS PRODUCTS' DISCRETION, TO REPAIR AND RECALIBRATE THE NONCONFORMING PRODUCT OR TO REPLACE THE NONCONFORMING PRODUCT WHERE WITHIN THE WARRANTY PERIOD: 1) THE BUYER HAS RETURNED THE NONCONFORMING PRODUCT TO NDS PRODUCTS, FREIGHT PREPAID, AND 2) NDS PRODUCTS HAS DETERMINED THE PRODUCT IS NONCONFORMING AND THAT SUCH NONCONFORMITY IS NOT A RESULT OF IMPROPER USE, REPAIR, MODIFICATION OR OTHER MISUSE BY BUYER.

THE FOREGOING WARRANTY AND REMEDIES ARE EXCLUSIVE AND ARE MADE EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, EITHER IN FACT OR BY OPERATION OF LAW, STATUTORY OR OTHERWISE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE. NDS PRODUCTS NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OR USE OF ITS PRODUCTS, AND NDS PRODUCTS MAKES NO WARRANTY WHATSOEVER FOR PRODUCTS NOT MANUFACTURED BY NDS PRODUCTS. NDS PRODUCTS SHALL NOT BE LIABLE FOR DAMAGES DUE TO DELAYS IN DELIVERIES OR USE AND SHALL IN NO EVENT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND; WHETHER ARISING FROM CONTRACT, TORT, OR NEGLIGENCE, INCLUDING BUT NOT LIMITED TO, LOSS OF PROFITS, LOSS OF GOODWILL, OVERHEAD OR OTHER LIKE DAMAGES.

3.0 DESCRIPTION:

THE MODEL ND-AM IS A SELF CONTAINED RADIATION MONITOR THAT DETECTS GAMMA & X-RAY RADIATION. IT IS EQUIPPED WITH A REMOTE DETECTOR PROBE THAT CAN OPERATE ON CABLE LENGTHS UP TO 1000 FEET.

THIS UNIT HAS A VISUAL RED FLASHING LIGHT WHICH IS ACTIVATED WHEN RADIATION IS PRESENT AND AN AMBER FLASHING LIGHT IS ACTIVATED WHEN THE POWER SWITCH IS ON. AN ALARM TEST BUTTON IS PROVIDED TO CHECK EXTERNAL ALARMS SUCH AS SIRENS, LIGHTS, ETC. ND-AM ALSO CONTAINS AN ADJUSTABLE ALARM TRIP CONTROL LOCATED ON THE PANEL'S METER INDICATOR. HE ND-AM RESPONDS AS FOLLOWS: WHEN THE ALARM IS TRIPPED, THE CONTROL UNIT SENDS 120 VAC POWER TO ALL WARNING ACCESSORIES.

4.0 SPECIFICATIONS:

RADIATION DETECTED: GAMMA, X-RAY

RANGES: TO CUSTOMER SPECIFICATIONS

MAXIMUM INTESITY OR SATURATION: GREATER THAN 1000 R/hr

ACCURACY: WITHIN 10% OF FULL SCALE @ -30 TO 50 DEG C.

GAMMA ENERGY DEPENDENCE: +/-20% @ 60 TO 1500 KeV

ALARM TRIP POINT:

- ADJUSTABLE FROM 3% TO 100% OF SCALE

ADJUSTMENT KNOB IS LOCATED ON THE METER INDICATOR.

POWER: 120 VAC, 50 TO 60 CYCLES.

REMOTE ALARM OUTLETS (2):

- CONTACTS RATED AT 5 AMPS @ 120 VAC.

POWER FUSE: 5 AMPS AT 120 VAC.

ALARM FUSE: 5 AMPS AT 120 VAC.

5.0 INSTRUMENT LIMITATION (SATURATION) * CAUTION *

IT IS A WELL KNOWN PHENOMENON THAT ALL GEIGER-MUELLER SURVEY METERS SATURATE OR OVERLOAD AT SOME POINT (THIS MAY BE CALLED FLOODING OR JAMMING). THIS PARTICULAR MODEL WILL SATURATE WHEN IN A RADIATION FIELD IN EXCESS OF 1000 R/hr WHEN IT HAS BEEN PROPERLY MAINTAINED. IF THE RADIATION FIELD IS IN EXCESS OF 1000 R/hr, ONE OF TWO EVENTS WILL OCCUR: 1) THE NEEDLE WILL SWING TO THE EXTREME RIGHT AND WHEN IT REACHES SATURATION, THE NEEDLE WILL FALL BACK TO ZERO, OR 2) IF THE SURVEY METER IS TURNED ON IN A FIELD IN EXCESS OF 1000 R/hr, THE NEEDLE WILL NOT REACT AND STAY AT ZERO.

ALTHOUGH A 1000 R/hr FIELD IS EXTREMELY HIGH AND MAY NEVER BE ENCOUNTERED, PROPER RADIATION SAFETY PROCEDURES AND REGULATIONS SHOULD BE OBSERVED WHEN MAKING ANY TYPE OF RADIATION SURVEY.

6.0 INSTALLATION OF AREA MONITOR AND ACCESSORIES:

6.1 PLACE THE ND-AM CONTROL UNIT IN AN EASILY AQCCESSIBLE LOCATION WITH A GROUNDED 120 VAC POWER SOURCE. THIS AREA SHOULD BE FREE OF DIRECT OR BACKGROUND RADIATION. DO NOT CONNECT POWER CORD UNTIL AFTER NEXT STEP.

6.2 CONNECT THE REMOTE DETECTOR PROBE UNIT CABLE TO THE EIGHT PIN CONNECTOR ON THE BACK OF THE CONTROL UNIT. WARNING: ASSURE THAT THE CONTROL UNIT POWER CORD IS NOT CONNECTED PRIOR TO INSTALLING THE DETECTORE PROBE CABLE.

6.3 LOCATE THE REMOTE DETECTOR PROBE IN THE AREA TO BE MONITORED ACCORDING TO THE SELECTED, PRESET TRIP RANGE.

6.4 CONNECT THE EXTERNAL WARNING LIGHT(S) TO THE OUTLET(S) ON THEN LEFT SIDE OF THE CONTROL UNIT. NOTE: SOME LIGHT UNITS MAY BE COMBINED WITHAUDIBLES OR EQUIPPED WITH EXTENSION ALARM OUTLETS SO THAT OTHER ALARMS MAY BE ADDED, DEPENDING UPON THE CUSTOMER'S SPECIFICATIONS.

6.5 POSITION THE LIGHT(S) IN A VISIBLE AREA.

6.5.1 MOUNTING: THE EXTERNAL WARNING LIGHT(S) CAN BE MOUNTED ON A FLAT SURFACE OR A 1/2 DIA PIPE. THE LIGHT CAN BE MOUNTED IN ANY POSITION, HOWEVER, IF THE UNIT IS MOUNTED UPSIDE DOWN IN AN OUTDOOR LOCATION, DRILL A 1/8" HOLE IN THE DOME TO ALLOW MOISTURE TO DRAIN FROM THE UNIT. MOUNTING HARDWARE AND INSTALLATION DETAILS ARE LEFT TO THE USER.

6.5.2 ELECTRICAL CONNECTIONS: THE FOUR POWER LEADS ARE TWISTED INTO PAIRS. EACH PAIR CONSISTS OF ONE WIRE FROM THE MOTOR AND ONE WIRE FROM THE LAMP. CONNECT THESE TWISTED PAIRS TO THE 120 VAC SOURCES.

6.5.3 MAINTENANCE: TO CHANGE THE LAMP, REMOVE THE SCREW THAT HOLDS THE RETAINING BAND ON THE UNIT. REMOVE THE BAND AND LIFT OFF THE DOME. REPLACE THE LAMP WITH A GE TYPE S11 OR EQUIVALENT. DO NOT USE ABRASIVES WHEN CLEANING. THE MOTOR-GEAR ASSEMBLY IS A SEALED UNIT, NO LUBRICATION IS REQUIRED.

7.0 OPERATION:

7.1 AFTER INSTALLATION, TURN THE ND-AM POWER ON AND PUSH THE ALARM TEST BUTTON. THE SYSTEM WILL RESPOND AS FOLLOWS:

- ALL WARNING LIGHTS WILL LIGHT.

7.2 ADJUST THE "ALARM TRIP ADJUSTMENT" CONTROL ON THE METER INDICATOR OF THE ND-AM CONTROL PANEL TO ANYWHERE FROM 3% TO 100% OF METER SCALE.

7.3 EXPOSE THE ND-AM TO A RADIATION FIELD AND THE SYSTEM WILL RESPOND AS FOLLOWS:

- ALL WARNING LIGHTS WILL LIGHT.

- SIREN(S) WILL SOUND.

NOTE: WHEN THE ALARM SYSTEM'S POWER IS TURNED ON OR OFF, A ONE SECOND SIREN BLAST MAY OCCUR DUE TO THE CHARGING OR DISCHARGING OF THE CIRCUIT. THE WARNING LIGHTS MAY ALSO REACT MOMENTARILY.

8.0 TEST PROCEDURES:

8.1 THE FOLLOWING TEST SHOULD BE PERFORMED TO ENSURE THAT THE AREA MONITOR IS OPERATING PROPERLY PRIOR TO EACH PERIOD OF USE. RECORDS OF SUCH TESTS SHOULD BE MAINTAINED FOR INSPECTION BY THE NRC AND OR APPLICABLE STATE AGENCIES.

8.1.1 ND-AM POWER ON.

8.1.2 ADJUST THE ALARM TRIP CONTROL ON METER INDICATOR, IF NECESSARY. ONCE THE ALARM TRIP HAS BEEN SET IT IS NOT NECESSARY TO ADJUST IT EACH TIME THE POWER IS TURNED ON, HOWEVER, VERIFICATION SHOULD BE MADE THAT THE ADJUSTMENT HAS NOT BEEN INADVERTANTLY CHANGED BEFORE PROCEEDING.

8.1.3 PUSH ALARM TEST BUTTON. ALL WARNING LIGHTS WILL LIGHT.

8.1.4 CLEAR THE AREA OF PERSONNEL AND EXPOSE THE ND-AM CONTROL UNIT TO A RADIATION FIELD. THIS MUST BE DONE BEFORE EACH PERIOD TO CHECK THE GM TUBE DETECTOR.

8.2 FAILURE OF THE ABOVE TO OCCUR. CHECK THE FOLLOWING:

8.2.1 120 VAC POWER INPUT.

8.2.2 ALARM AND POWER FUSES.

- IF POWER FUSE IS DEAD THE WARNING LIGHTS WILL LIGHT.

- IF THE ALARM FUSE IS DEAD ALL EXTERNAL ALARMS WILL NOT FUNCTION. THE FLASHING LIGHT ON THE ND-AM WILL FLASH IF RADIATION IS PRESENT.

8.2.3 ALL ELECTRICAL CONNECTIONS.

8.2.4 LIGHT BULBS.

8.2.5 VERIFY THAT ALL STEPS IN THE ADJUSTMENT PROCEDURES HAVE OCCURRED.

WARNING: WHEN PRESSING THE ALARM TEST BUTTON, THE METER INDICATOR NEEDLE SHOULD MOVE TO FULL SCALE. IF IT DOES NOT GO TO FULL SCALE, THERE IS A VOLTAGE PROBLEM IN THE DETECTING CIRCUIT. DO NOT USE.

9.0 CALIBRATION:

9.1 CAUTION NOTES: READ BEFORE PROCEEDING.

9.1.1 THE CONTROL PANEL MUST BE REMOVED WHEN CALIBRATING EQUIPMENT, THUS EXPOSING HIGH VOLTAGE CONTACTS WHICH CAN RESULT IN AN ELECTRICAL SHOCK IF TOUCHED. ONLY TECHNICIANS ARE TO PERFORM THIS PROCEDURE.

9.1.2 IF IT APPEARS THAT AN APPRECIABLE CHANGE IN CALIBRATION HAS OCCURRED, IT IS ADVISABLE TO CHECK THE HI AND LOW VOLTAGE SUPPLY OUTPUTS BEFORE MAKING ANY CALIBRATION ADJUSTMENTS. SEE SECTION 10.

9.1.3 THE CALIBRATION SOURCE MUST CONSTITUTE THE SOLE SOURCE OF RADIATION WHEN CALIBRATION IS PERFORMED.CALIBRATION MUST NOT BE UNDERTAKEN WHEN THE BACKGROUND RADIATION IS ABOVE NORMAL OR WHEN THE INSTRUMENT IS IN A RADIATION FIELD OTHER THAN THAT PRODUCED BY THE KNOWN CALIBRATION SOURCE TO BE USED.

9.2 THIS EQUIPMENT WAS CALIBRATED AT THE FACTORY, BUT SHOULD RECALIBRATION BE REQUIRED PROCEED AS FOLLOWS.

9.2.1 REMOVE THE 6 PANEL SCREWS ON THE REMOTE PROBE HOUSING.

9.2.2 LOCATE CALIBRATION POTENTIOMETERS ON THE NDS-MSB CIRCUIT BOARD.

9.2.3 LOCATE THE GM TUBE ON THE NDS-MSB BOARD.

9.2.4 SET UP A RADIATION FIELD SO THAT THE CENTER OF THE GM TUBE IS IRRADIATED AT A SCALE CORRESPONDING TO 80% OF FULL SCALE. CHECK 20% OF LOW END OF SCALE.

9.2.5 CHECK THE GM TUBE SATURATION BY EXPOSING THE UNIT TO 15 R/hr OR GREATER.

10.0 CURRENT ADJUSTMENTS:

10.1 WARNING: THE CONTROL PANEL MUST BE REMOVED WHEN ADJUSTING THE CURRENT AND/OR CHECKING THE CIRCUIT VOLTAGES THUS EXPOSING THE HIGH VOLTAGE CONTACTS WHICH CAN RESULT IN ELECTRICAL SHOCK IF TOUCHED. ONLY QUALIFIED TECHNICIANS ARE TO PERFORM THIS PROCEDURE.

10.2 THE CURRENT ADJUSTMENTS WERE MADE AT THE FACTORY. IF THE POWER SUPPLY COMPONENTS Q3, T1, CR4 OR CR5 HAVE BEEN REPLACED, REFER TO THE FOLLOWING:

10.2.1 CHECK THE HIGH AND LOW VOLTAGES.

- CONNECT THE 5 VDC INPUT OF THE CIRCUIT BOARD IN SERIES WITH A mA METER DC.

- TURN THE POWER ON AND ADJUST R17 TO 20-25 ma.

10.3 CIRCUIT VOLTAGES:

- HI VOLTAGE AT ANODE OF GM TUBE V1 = 540-600 VDC

- LO VOLTAGE AT METER INDICATOR TERM A = 15-22 VDC

- POSITIVE SIDE OF POWER INPUT = 4.5 VDC

29-Aug-97	BILL OF MATERIAL		
990-6000-001	ND-AM SYSTEM ASSY		REV A

ITM	PART NUMBER	DESCRIPTION	QTY	REF DESIG
1	725-6000-025	CABLE DETECTOR ND-AM 25FT	1	W1
2	995-6000-001	ND-AM REMOTE DETECTOR UNIT	1	E2
3	980-6001-003	PC3 ND-AM ASSY	1	PC3
5	800-6000-001	METER/RELAY 0-50 uA DC	1	M1
6	390-6000-002	SWITCH PUSHBUTTON TEST	1	S1
7	390-2200-001	SWITCH TOGGLE SPDT	1	S2
8	390-6000-001	SWITCH TOGGLE SPDT POWER	1	S3
9	715-6000-003	CONNECTOR PLUG PANEL FM	1	J2
10	250-0050-333	RES CF 1/2W 5% 33.0 K OHM	4	R1-4
11	580-6000-001	LAMP HOLDER .75 DIA	4	XDS1-4
12	575-6000-001	LAMP NEON	4	DS1-4
13	577-6000-003	LENS DOME TRANSPARENT RED	1	DS1
14	577-6000-001	LENS DOME TRANSPARENT AMBER	3	DS2,3,4
15	665-4000-001	FUSE HOLDER PANEL MOUNT	2	XF1, 2
17	670-0250-005	FUSE 250 VAC 5 AMP 1.25 LG	2	F1, 2
18	715-6000-050	CONNECTOR SCKT AC POLARIZED/GRD	2	J3,J4
19	675-4000-001	HANDLE MONITOR CASE	1	
20	700-4000-008	CABLE POWER 8 FT PLUG	1	W2
22	660-0100-001	GROMMET FOOT	4	
23	690-5000-001	DECAL ND-AM AREA MONITOR	1	
24	490-4000-008	TERM STRIP 8 CC	1	TS1
	670-6000-001	CASE ND-AM CONTROL PANEL	1	

29-Aug-97 BILL OF MATERIAL

980-6000-001 PC1 ND-AM MSB PC ASSY REV A

ITM	PART NUMBER	DESCRIPTION	QTY	REF DESIG
1	551-6000-002	PC1 MSB ND-AM BOARD	1	PC1
2	100-1000-222	CAP CER DISC .0022 uF 1 KV 20%	1	C6
3	100-1000-103	CAP CER DISC .01 uF 1 KV 20%	1	C9
4	100-0100-103	CAP CER DISC .01 uF 100V 20%	1	C8
5	100-1000-223	CAP CER DISC .022 uF 1 KV 20%	1	C17
6	105-0035-685	CAP ELE ALUM 6.8 uF 35V 20%	1	C10
7	105-0035-226	CAP ELE ALUM 22.0 uF 35V 20%	1	C7
8	105-0025-477	CAP ELE ALUM 470.0 uF 25V 20%	1	C2
9	115-0100-222	CAP PLY FILM .0022 uF 100V 10%	1	C3
10	115-0100-223	CAP PLY FILM .022 uF 100V 10%	1	C5
11	150-0100-001	DIODE 1N4007 STANDARD RECOVERY	1	CR5
12	150-0200-001	DIODE 1N457A SWITCHING	2	CR3, 4
13	150-0400-001	DIODE 1N5281B ZENER	3	Z1,2,3
14	250-0100-222	RES CF 1/4W 5% 2.2 K OHM	1	R6
15	250-0100-335	RES CF 1/4W 5% 3.3 M OHM	1	R19
16	250-0100-103	RES CF 1/4W 5% 10.0 K OHM	1	R2
17	250-0100-183	RES CF 1/4W 5% 18.0 K OHM	1	R10
18	250-0100-393	RES CF 1/4W 5% 39.0 K OHM	1	R11
19	250-0100-470	RES CF 1/4W 5% 47.0 OHM	1	R16
20	250-0100-473	RES CF 1/4W 5% 47.0 K OHM	1	R7
21	250-0100-154	RES CF 1/4W 5% 150.0 K OHM	1	R8
22	250-0100-334	RES CF 1/4W 5% 330.0 K OHM	1	R12
23	265-0200-252	RES POT TRIMMER 2.5 K 1/2W	1	R17
24	265-0200-253	RES POT TRIMMER 25.0 K 1/2W	OPT	R5
25	265-0200-254	RES POT TRIMMER 250.0 K 1/2W	OPT	R3,R20
26	250-1500-185	RES TF 1/2W 5% 1.8 M OHM 1KV 350PPM	1	R13
27	475-0150-001	TRANSISTOR 2N5086 PNP	2	Q1, 2
28	475-0200-001	TRANSISTOR SK3004 POWER	1	Q3
29	450-8050-001	TRANSFORMER DC-DC 8050	1	T1
30	500-0714-001	TUBE GM 714	OPT	V1
30	500-0716-001	TUBE GM 716	OPT	V1
30	500-0716-001	TUBE GM 3G10	OPT	V1

29-Aug-97 BILL OF MATERIAL

980-6001-002 PC2 ND-AM PC ASSY REV A

ITM	PART NUMBER	DESCRIPTION	QTY	REF DESIG
1	551-6001-002	PC2 ND-AM BOARD	1	PC2
2	105-0016-477	CAP ELE ALUM 470.0 uF 16V 20%	1	C1
3	111-0035-275	CAP ELE TANT 2.7 uF 35V 10%	1	C2
4	150-0100-001	DIODE 1N4007 STANDARD RECOVERY	2	CR1, 2
5	450-6210-001	TRANSFORMER AC-DC 6210	1	T1
6	590-0005-001	VOLTAGE REGULATOR 78L05CG 5V	1	VR1

29-Aug-97 BILL OF MATERIAL

980-6001-003 PC3 ND-AM PC ASSY REV A

ITM	PART NUMBER	DESCRIPTION	QTY	REF DESIG
1	551-6001-002	PC3 ND-AM BOARD	1	PC3
2	111-0150-105	CAP ELE TANT 1.00 uF 150V 10%	1	C3
3	150-0100-001	DIODE 1N4007 STANDARD RECOVERY	1	CR3
5	250-0100-683	RES CF 1/2W 5% 68.0 K OHM	1	R1
4	250-0100-473	RES CF 1/2W 5% 4.7 K OHM	1	R2

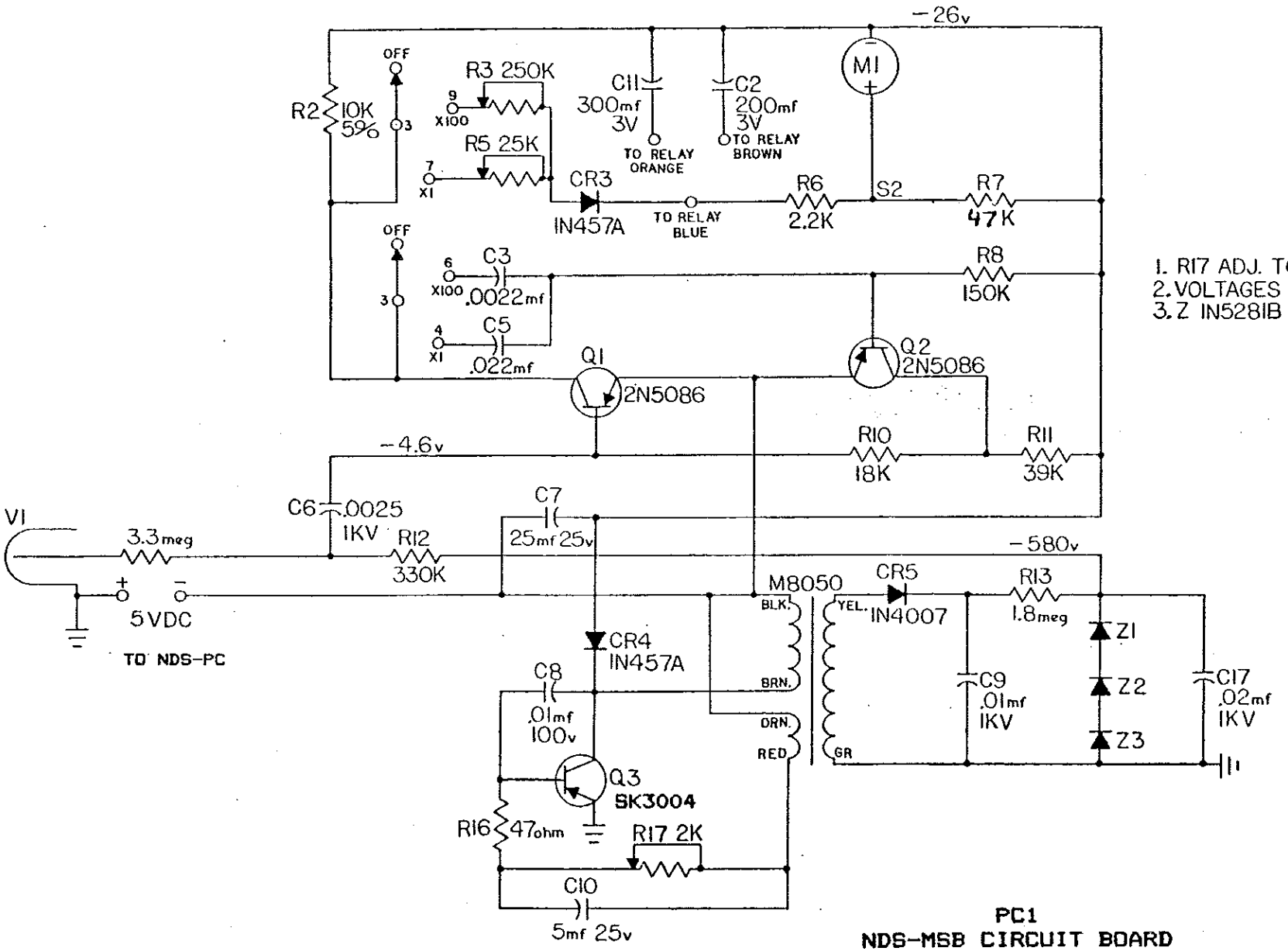
	23-Mar-00	BILL OF MATERIAL		
	990-6000-003	ND-AM-1 OPTION WARNING LIGHT/STAND/CORD		REV B
ITM	PART NUMBER	DESCRIPTION	QTY	REF DESIG
1	670-6000-002	CASE ND-AM OPTION	1	
2	700-6000-025	CABLE POWER 25 FT PLUG	1	W3
4	585-4000-120	LIGHT ASSY ROTATING RED 120V	1	DS6
5	911-6000-001	STAND, ROTATING WARNING LIGHT	1	

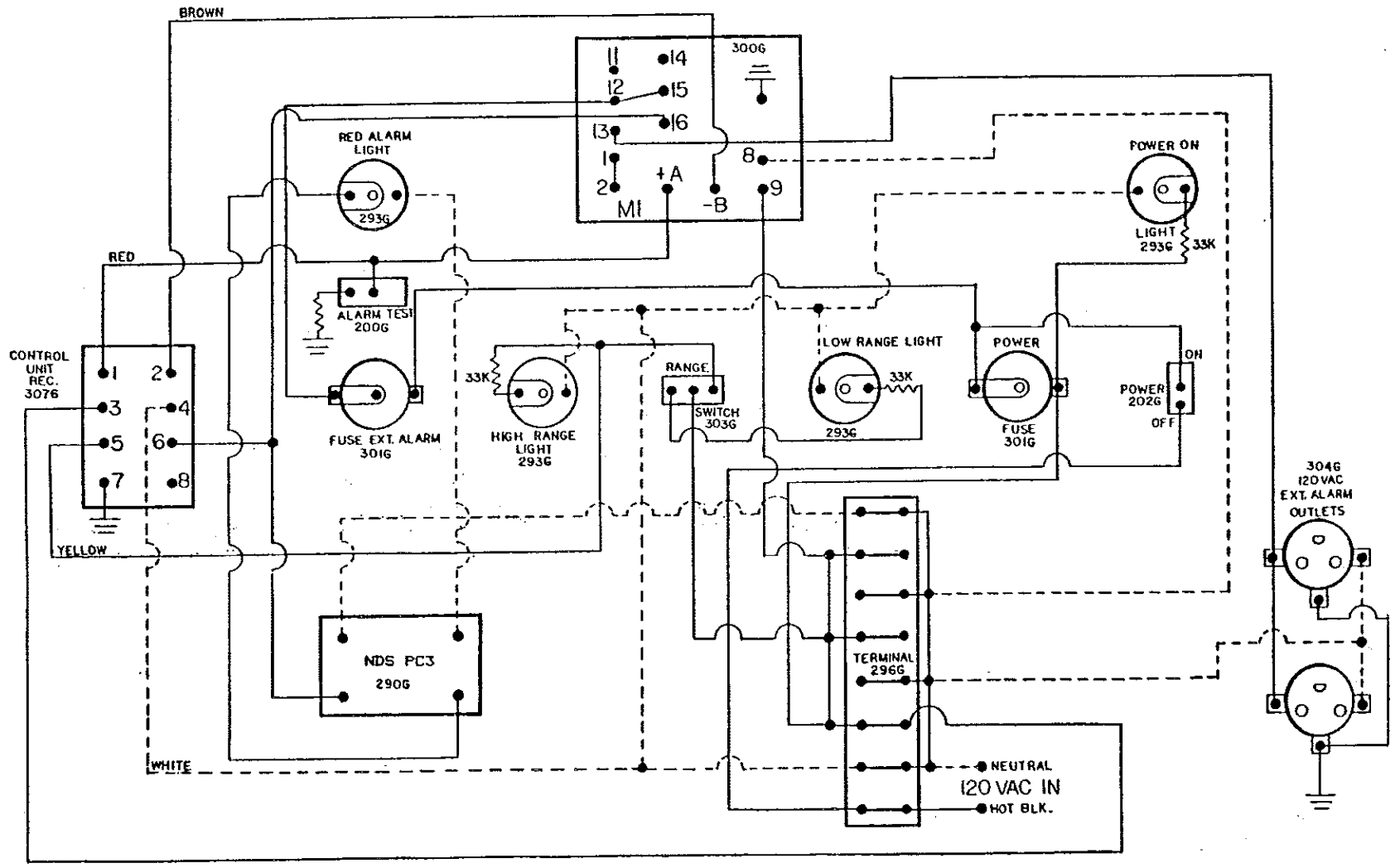
	23-Mar-00	BILL OF MATERIAL		
	990-6000-004	ND-AM-2 OPTION SIREN/WARNING LIGHT		REV B
ITM	PART NUMBER	DESCRIPTION	QTY	REF DESIG
1	400-6000-120	AUDIO SONALERT 120V AC	1	LS1
2	700-6000-025	CABLE POWER 25 FT PLUG	1	W3
3	670-6000-002	CASE ND-AM OPTION	1	
5	585-4000-120	LIGHT ASSY ROTATING RED 120V	1	DS6
6	911-6000-001	STAND, ROTATING WARNING LIGHT	1	

	23-Mar-00	BILL OF MATERIAL		
	990-6000-005	ND-AM-3 OPTION SIREN/POWER CORD		REV B
ITM	PART NUMBER	DESCRIPTION	QTY	REF DESIG
1	400-6000-120	AUDIO SONALERT 120V AC	1	LS1
2	700-6000-025	CABLE POWER 25 FT PLUG	1	W3
3	670-6000-002	CASE ND-AM OPTION	1	

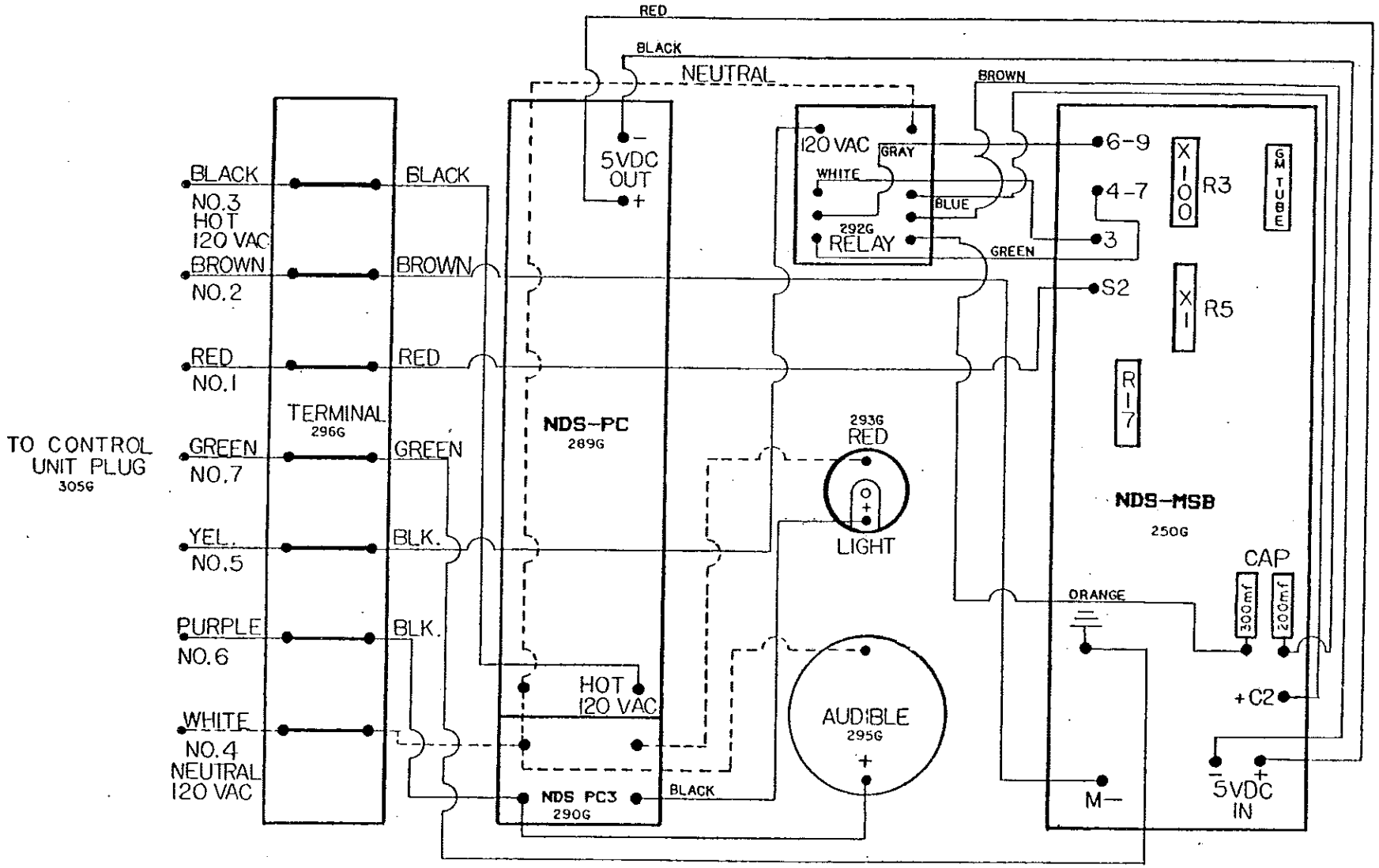
	23-Mar-00	BILL OF MATERIAL		
	995-6000-001	ND-AM REMOTE DETECTOR UNIT		REV B
ITM	PART NUMBER	DESCRIPTION	QTY	REF DESIG
1	980-6000-001	MSB PC ASSY	1	MSB
2	980-6001-002	PC2 ND-AM PC ASSY	1	PC2
3	980-6001-003	PC3 ND-AM PC ASSY	1	PC3
4	400-6000-125	AUDIO SONALERT 120V AC	1	LS1
5	415-6000-125	RELAY SS 125VAC	1	K1
6	715-6000-004	CONNECTOR SCKT PANEL MALE	1	J1
7	576-6000-001	LAMP HOLDER .75 DIA	1	XDS5
8	575-6000-001	LAMP NEON	1	DS5
9	577-6000-003	LENS DOME TRANSPARENT RED	1	DS5
10	670-6000-002	CASE ND-AM REMOTE DETECTOR	1	

	23-Mar-00	BILL OF MATERIAL		
	725-6000-025	CABLE DETECTOR ND-AM 25FT	W1	REV A
ITM	PART NUMBER	DESCRIPTION	QTY	REF DESIG
1	715-6000-001	CONNECTOR CABLE PLUG FEMALE	1	P1
2	715-6000-002	CONNECTOR CABLE SCKT MALE	1	P2
3	700-6000-018	CABLE 18AWG 7 COND SHIELDED	25	

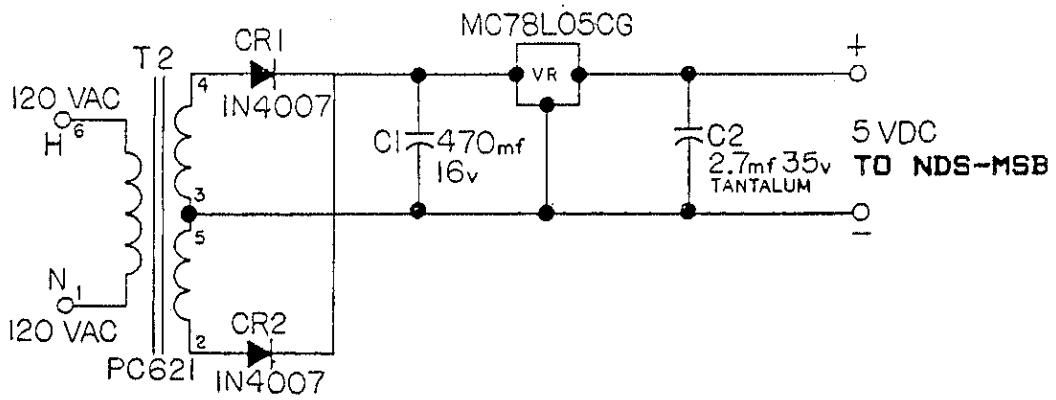

-26v
OFF
R2 10K 5%
R3 250K
X100
R5 25K
X1
C11 300mf 3V
TO RELAY ORANGE
C2 200mf 3V
TO RELAY BROWN
M1
CR3 IN457A
TO RELAY BLUE
R6 2.2K
S2
R7 47K
R8 150K
C3 .0022mf
C5 .022mf
Q1 2N5086
Q2 2N5086
-4.6v
R10 18K
R11 39K
C6 .0025 1KV
C7 25mf 25v
V1
3.3meg
R12 330K
-580v
5VDC
TO NDS-PC
M8050
BLK.
BRN.
ORN.
RED
YEL.
GR
CR5 IN4007
R13 1.8meg
Z1
Z2
Z3
C9 .01mf 1KV
C17 .02mf 1KV
CR4 IN457A
C8 .01mf 100v
Q3 SK3004
R16 47ohm
R17 2K
C10 5mf 25v
1. R17 ADJ. TO 20ma
2. VOLTAGES ±5%
3. Z IN5281B
PC1
NDS-MSB CIRCUIT BOARD



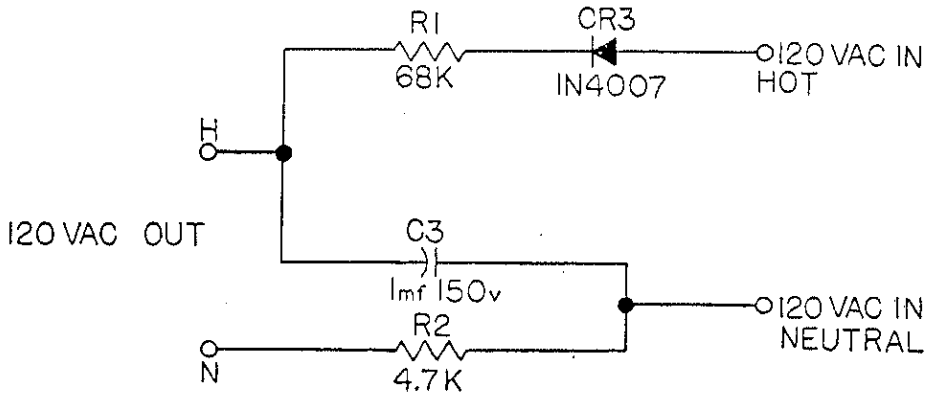
NDS-AM CONTROL PANEL



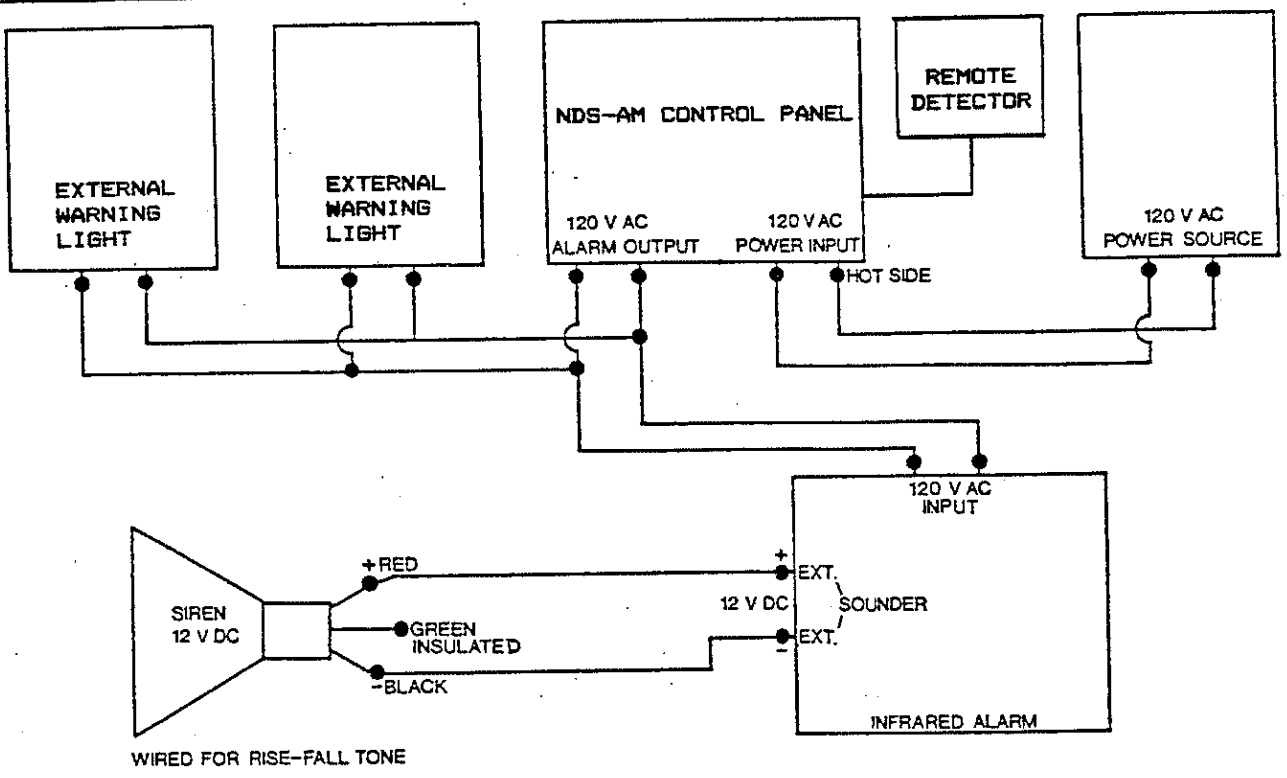
NDS-AM REMOTE DETECTOR



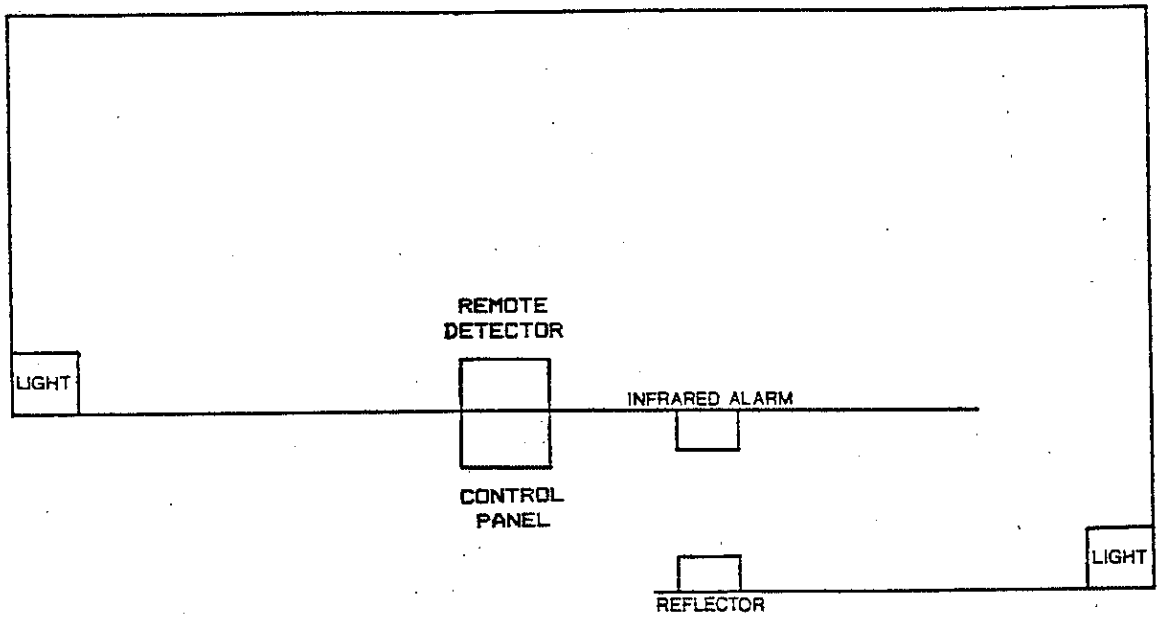
PC2
NDS-PC CIRCUIT BOARD



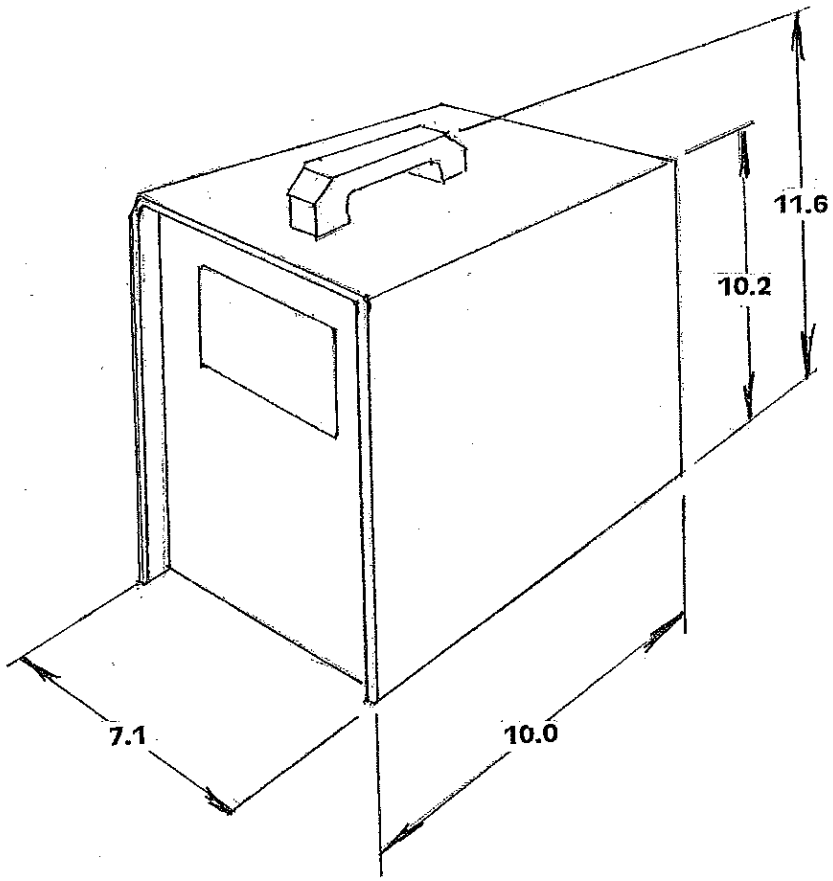
PC3
NDS CIRCUIT BOARD



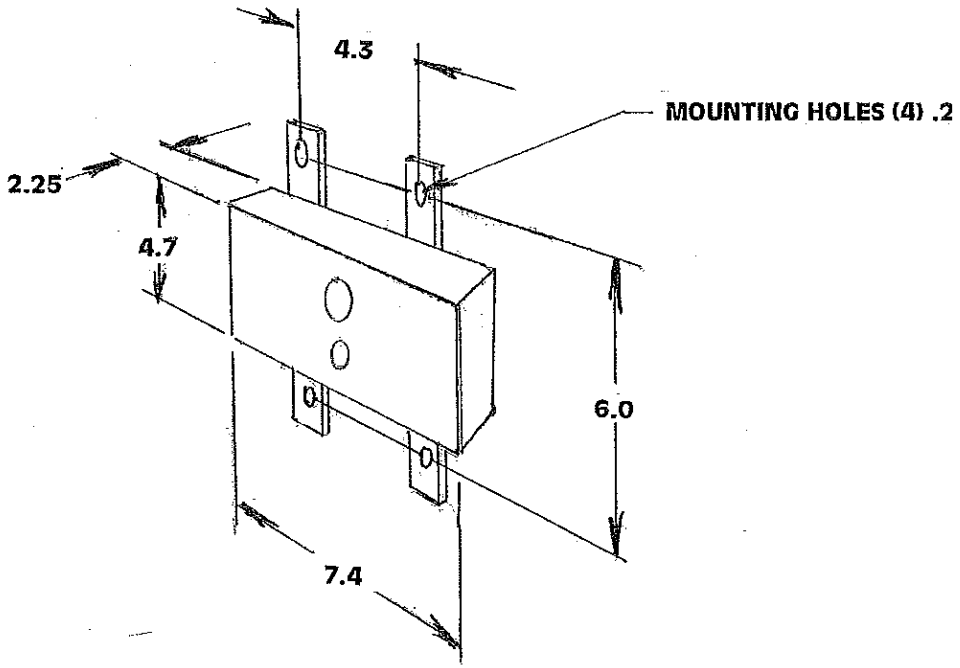
SYSTEM WIRING DIAGRAM



SYSTEM EXAMPLE LAYOUT



ND-AM CONTROL PANEL



REMOTE DETECTOR

DIMENSIONS IN INCHES

FOR NHV AMERICA

NO SCALE

DRAWN: M. SMITH DATE:	NDS PRODUCTS	
CHECKED: DATE:	ND-AM OUTLINE DWG	
ENGINEER: DATE:	DWG 999-6000-001	A
DO NOT COPY, DISPLAY, OR USE DRAWING WITHOUT AUTHORIZATION DO NOT SCALE DRAWING	SCALE: ~ SHEET 1 OF 1	REV