



**MERIDIAN
LOADER CONTROL
INSTRUCTION MANUAL**

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WIRING DIAGRAM

IN THIS CHAPTER WE SHOW THE ELECTRICAL SPECIFICATIONS OF THE BOARDS.
THERE ARE FOUR BASIC BOARDS:

- 1 POWER SUPPLY
- 2 MAIN CPU
- 3 MAIN OUTPUT
- 4 INPUT OUTPUT

SPECIFICATIONS

INPUT VOLTAGE	:110V AC 60 Hz
OUTPUT VOLTAGE	:5 VDC
OUTPUT CURRENT	:800Ma max
INPUT FUSE	:500Ma MAX

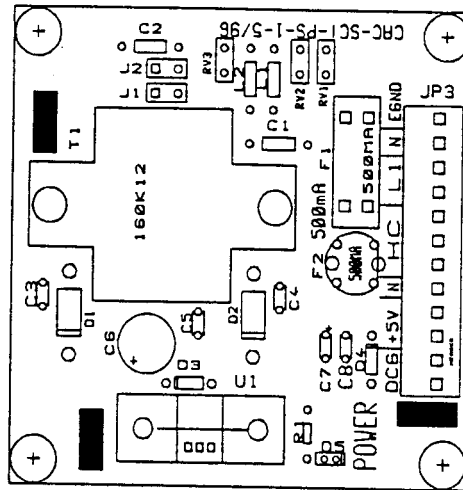


FIGURE 2.1

SPECIFICATIONS

SUPPLY VOLTAGE :5 VDC
CURRENT :300Ma MAX

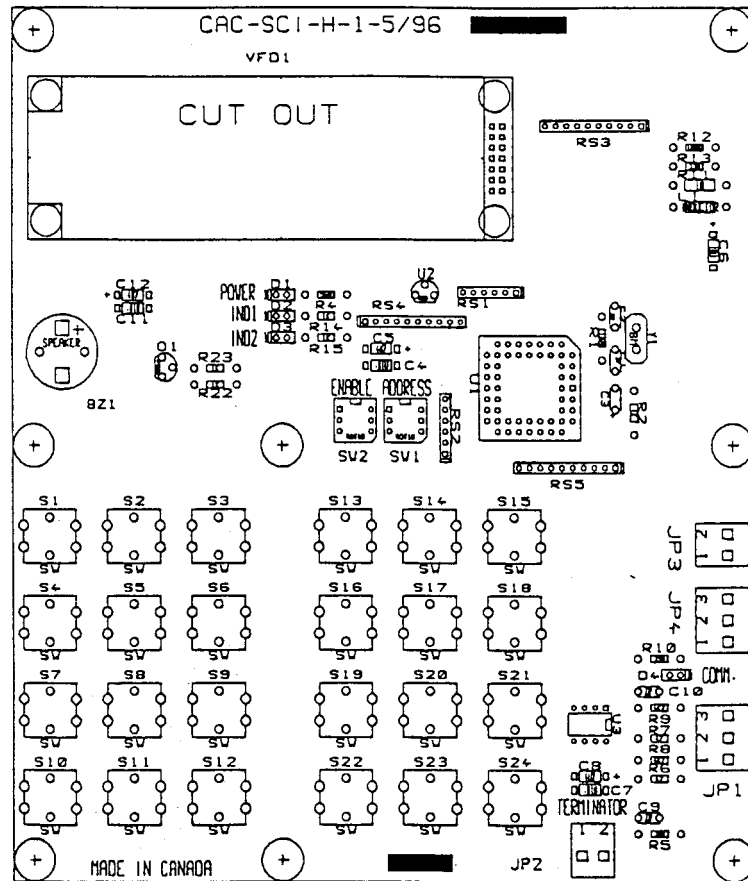


FIGURE 2.2

MAIN OUTPUT SPECIFICATIONS

INPUT MODULE VOLTAGE	:110 V AC 60 Hz
RELAY OUTPUT VOLTAGE	:110 V AC 60 Hz
RELAY OUTPUT FUSE	:1 AMP
SUPPLY VOLTAGE	: 5 VDC
CURRENT	:300 Ma MAX

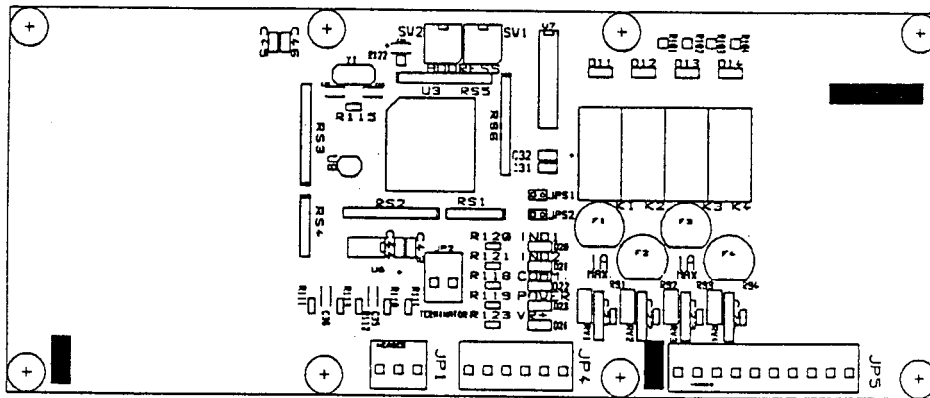


FIGURE 2.3

INPUT OUTPUT SPECIFICATION

INPUT MODULE VOLTAGE	:110 V AC 60 HZ
RELAY OUTPUT VOLTAGE	:110 V AC 60 HZ
SUPPLY VOLTAGE	:5 VDC
CURRENT	:300 MA MAX

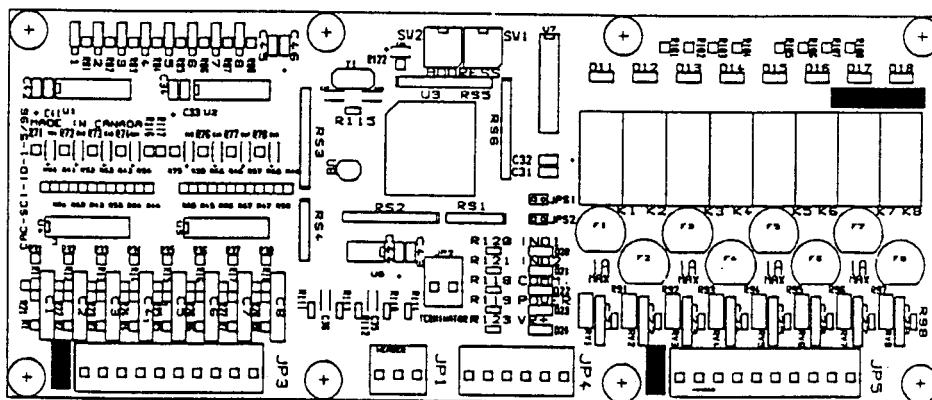


FIGURE 2.4

3.1 INTRODUCTION

WARNING

TO MINIMIZE POTENTIAL INJURY TO PERSONNEL OR DAMAGE TO THE BOARDS DO NOT INSERT OR REMOVE THE CONNECTORS ON THE BOARDS WITH THE POWER ON

3.2 WIRING GUIDELINES

CONSIDER THE FOLLOWING GUIDELINES BEFORE INSTALLING ANY SYSTEM OR POWER WIRING.

- ALWAYS USE THE SHORTEST POSSIBLE WIRE, WITH SLACK OR LOOPS TO RELIEVE STRESS.
- AVOID SHARP BENDS TO POWER AND DATA CABLES.
- WHEN YOU DRILL HOLES, AVOID ALLOWING METAL SHAVINGS TO DROP INTO THE BOARDS.

3.3 GROUNDING

- A GOOD LOW GROUND IMPEDANCE OF 0.1 OHM OR LESS MUST BE USED IN THE PANEL

3.4 AVOIDING ELECTRICAL NOISE

- USE A SINGLE LENGTH OF CABLE BETWEEN COMPONENTS.
- AVOID PLACING SYSTEM AND FIELD WIRING IN THE VICINITY OF HIGH-ENERGY WIRING.
- KEEP FIELD INPUT OUTPUT WIRING AND ALL OTHER TYPES OF WIRING IN THE PANEL PHYSICALLY SEPARATED.
- CONSIDER SEPARATING DC FIELD WIRING FROM AC FIELD WIRING WHEREVER POSSIBLE.
- KEEP WIRE STRIPPING FROM FALLING ON THE BOARDS

POWER SUPPLY

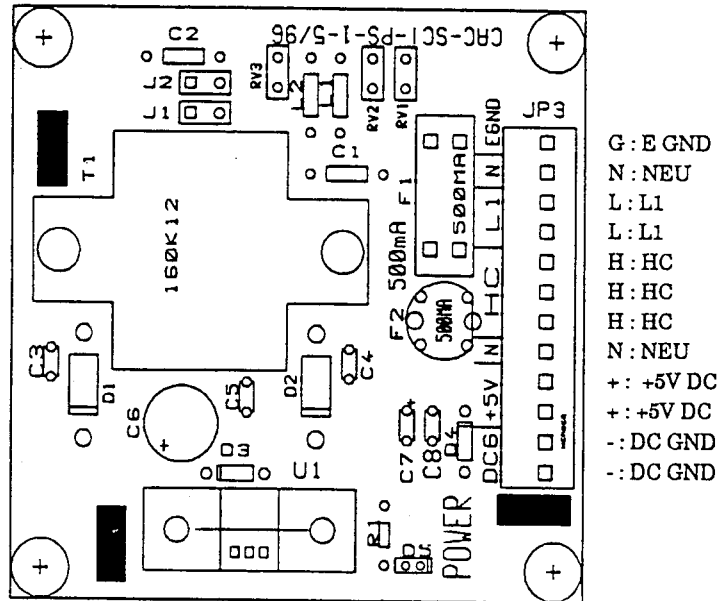


FIGURE 3.1

INPUT OUTPUT

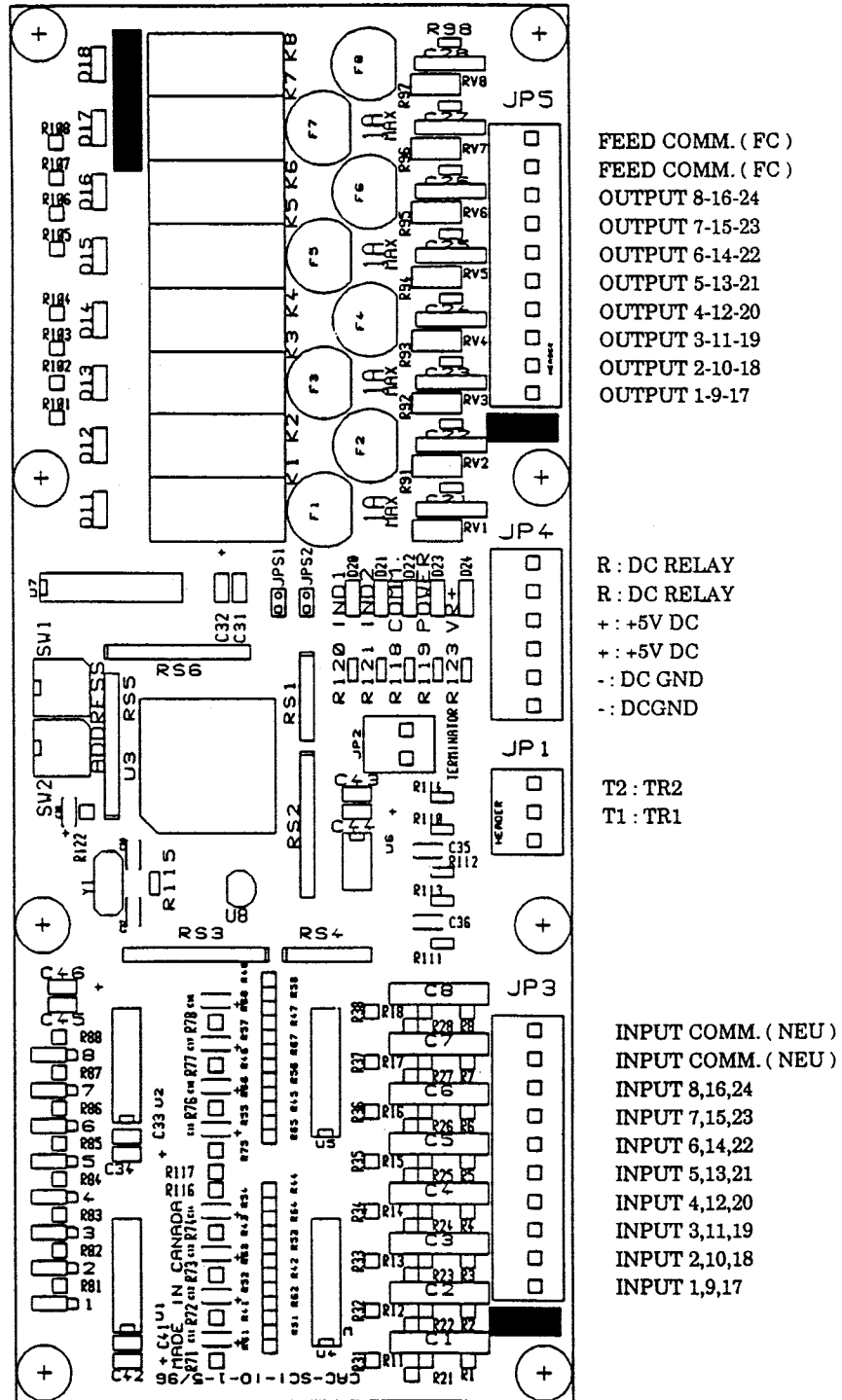


FIGURE 3.2

MAIN OUTPUT

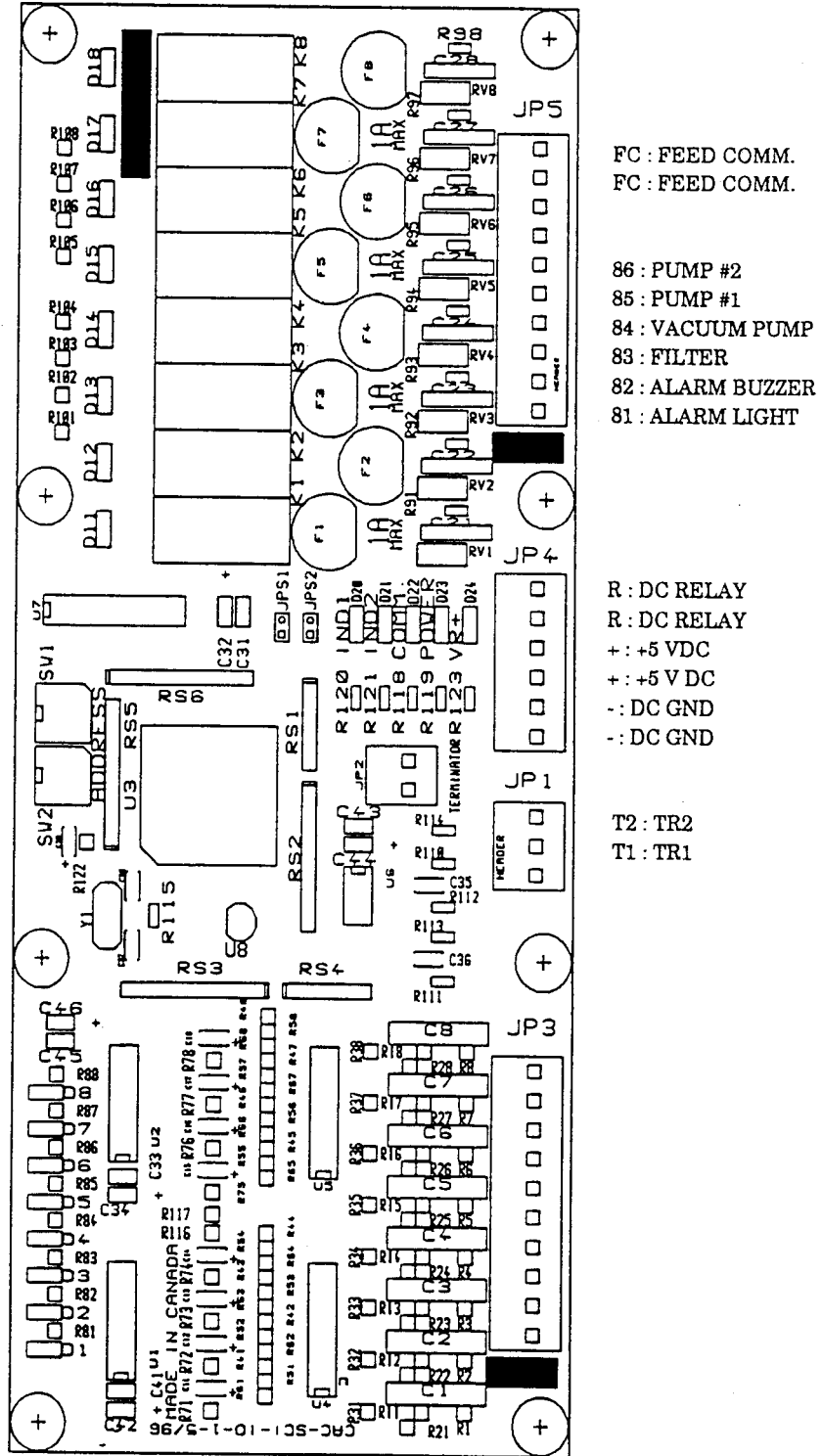


FIGURE 3.3

MAIN CPU

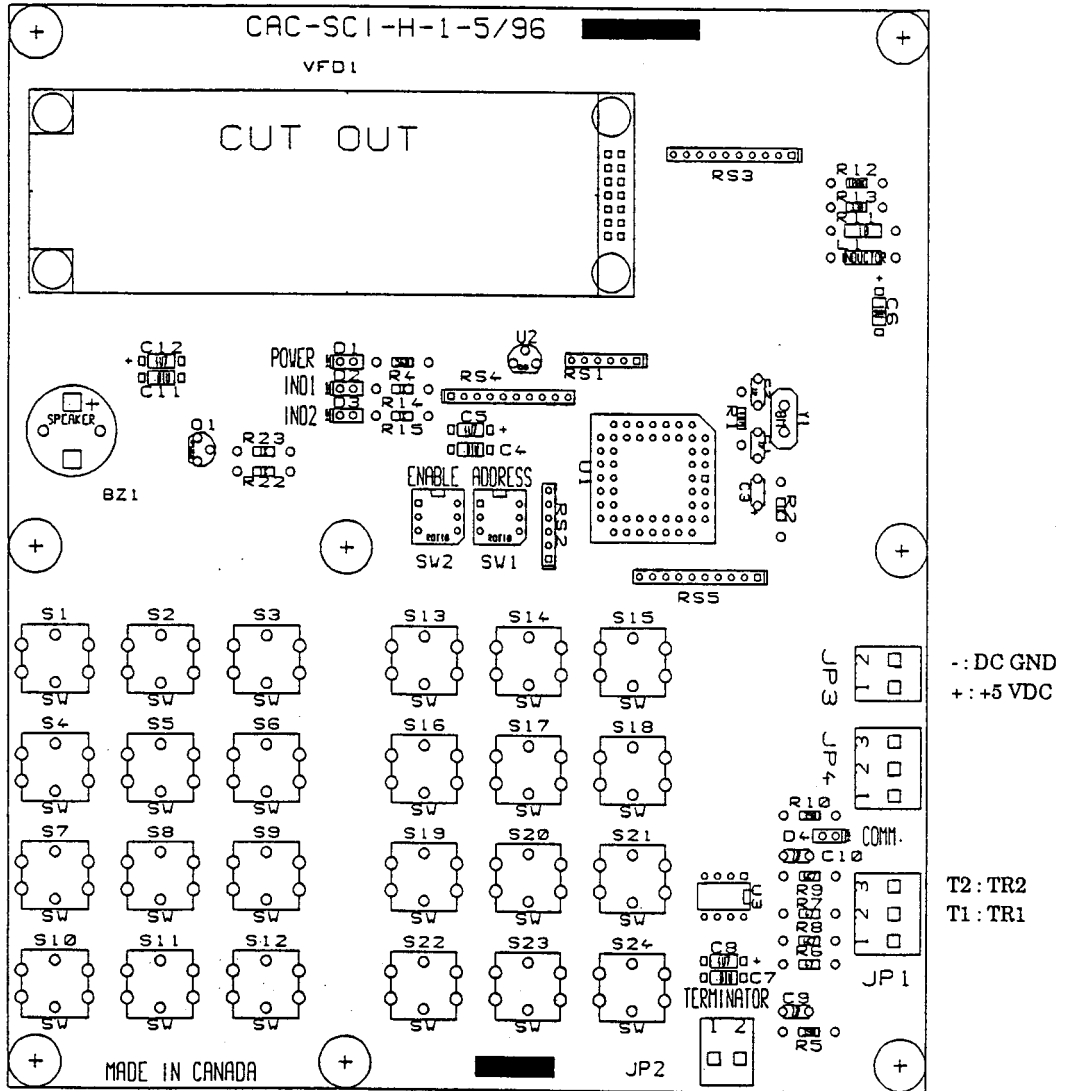


FIGURE 3.4

WIRING CONSIDERATIONS FOR THE EXPANSION UNITS

1. FOR RS485 COMMUNICATION, USE BELDEN 9841 TWISTED CABLE FOR CONNECTIONS OF THE MAIN PANEL AND EXPANSION UNITS
2. IN TWISTED PAIR CABLE CONNECT "TR1" OF THE MAIN PANEL TO "TR1 OF THE EXPANSION UNITS.
3. IN TWISTED PAIR CABLE CONNECT "TR2" OF THE MAIN PANEL TO "TR2" OF THE EXPANSION UNITS.
4. DO NOT WIRE THE MAIN PANEL DIRECTLY TO MORE THAN STATION (FIGURE 3.7)
5. START THE WIRING FROM THE MAIN PANEL AND END ITTO THE LAST EXPANSION PANEL. (FIGURE 3.5)
6. DO NOT RUN THE TWISTED WIRES PARALLEL TO OR IN THE VICINITY OF HIGH VOLTAGE OR HIGH CURRENT LINES.
7. THE TOTAL TWISTED PAIR CABLE LENGTH MUST BE 500 METERS OR LESS FROM THEMMAIN PANEL TO THE LAST EXPANSION PANEL]
8. TO EXPAND FROM 8 TO 16 STATION REMOVE THE TERMINATOR WIRE FROM THE I/O BOARD OF THE MAIN PANEL AND PLACE IT ON THE EXPANSION I/O BOARD TERMINATOR CONNECTOR. (FIGURE 3.9)
9. TO EXPAND FROM 16 TO 24 STATION REMOVE THE TERMINATOR WIRE FROM I/O BOARD OF FIRST EXPANSION PANEL AND PLACE IT ON THE LAST EXPANSION I/O BOARD TERMINATOR CONNECTOR. (FIGURE 3.9)
10. BEFORE TURNING ON THE PANELS MAKE SHURE THAT THE ADDRESS OF THE I/O BOARDS OF ALL PANELS ARE PROPERLY SET. (FIGURE3.8) (1 FOR MAIN PANEL, 2 FOR FIRST EXPANSION UNIT AND 3 FOR THE LAST EXPANSION PANEL)

EACH PANEL HAS ITS OWN POWER SUPPLY

STATION 1 – 8

ADDRESS : 1

TERMINATOR : NO

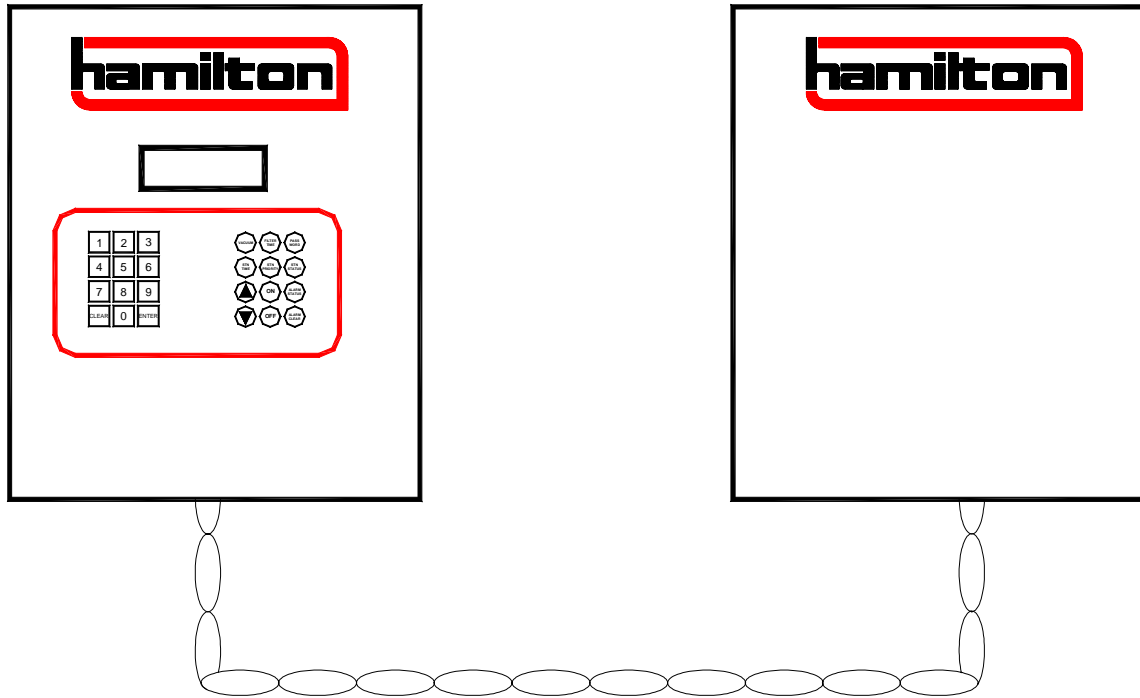
MASTER

STATION 9 – 16

ADDRESS : 2

TERMINATOR : YES

EXPANSION UNIT



TWISTED PAIR CABLE

FIGURE 3.5
EXPANSION OF 8 STATIONS

EACH PANEL HAS ITS OWN POWER SUPPLY

STATION 1 – 8

STATION 9 – 16

STATION 17 – 24

ADDRESS : 1

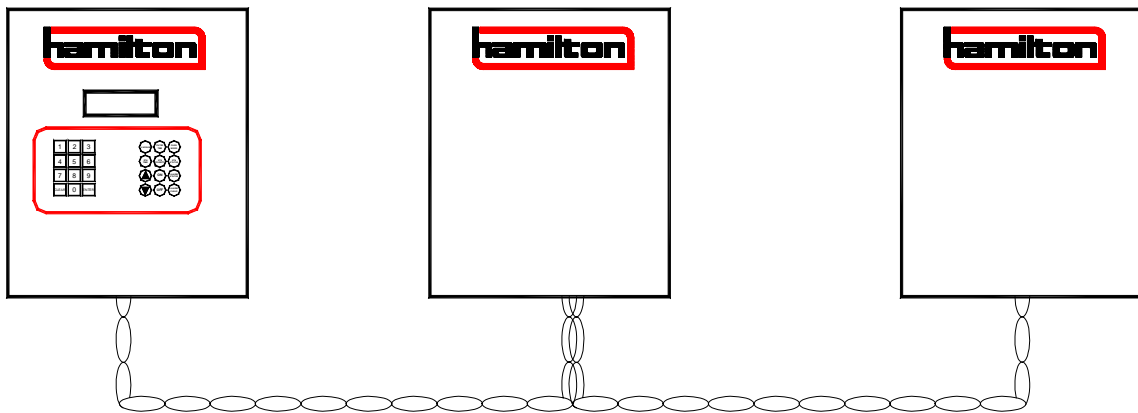
ADDRESS : 2

ADDRESS : 3

TERMINATOR : NO

TERMINATOR : NO

TERMINATOR : YES



TWISTED PAIR CABLE

FIGURE 3.6
EXPANSION OF 16 STATIONS

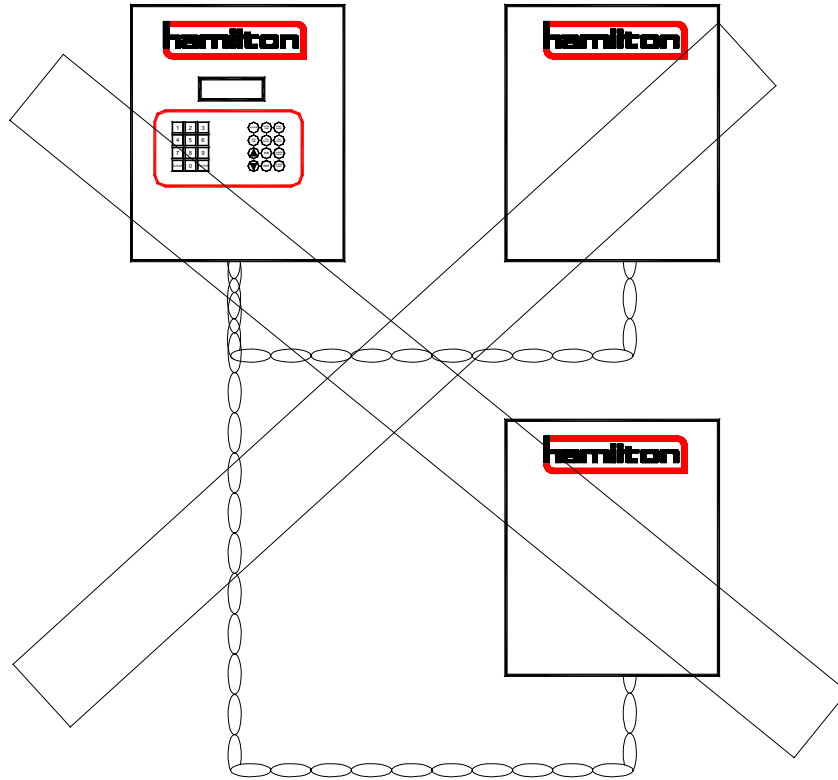
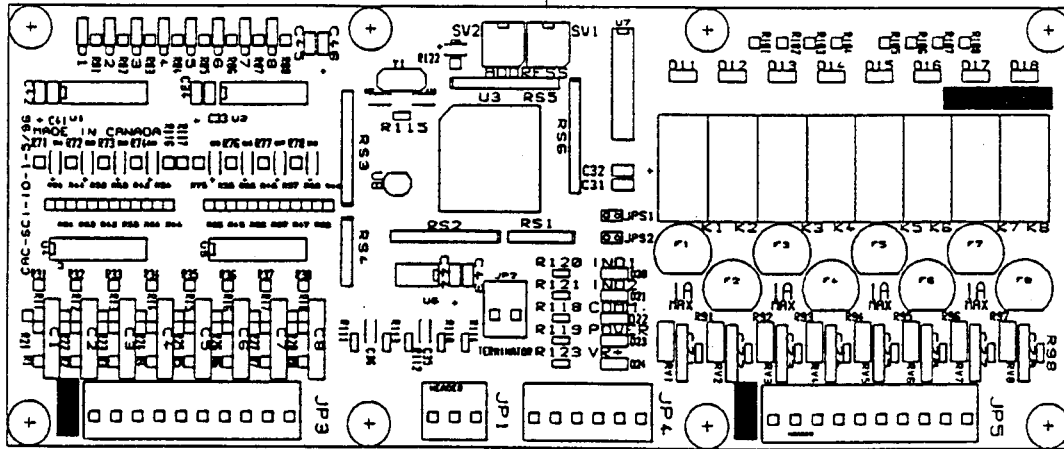


FIGURE 3.7
WRONG WIRING

ADDRESS OF I/O BOARDS



ROTARY SWITCH TO CHANGE THE ADDRESS OF I/O BOARDS



ROTARY POSITION

- 1
- 2
- 3

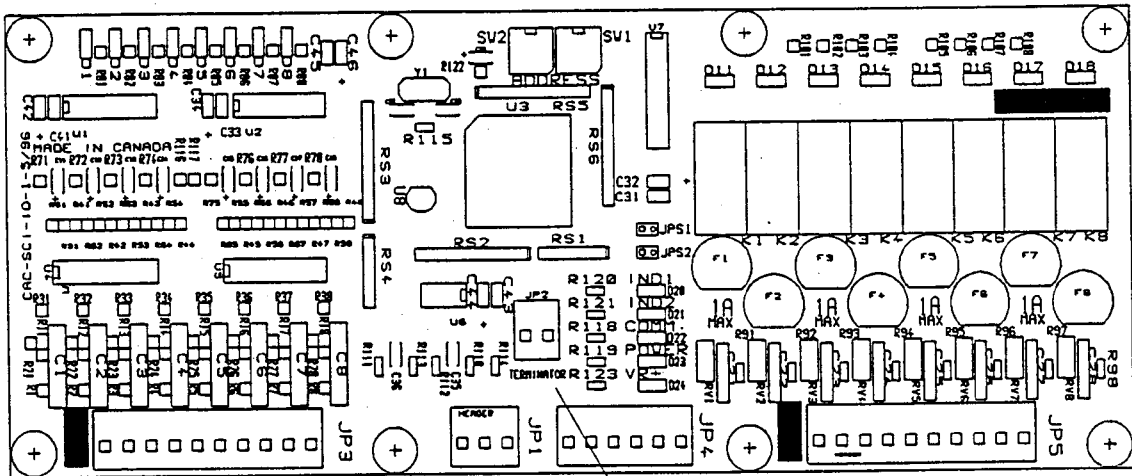
STATIONS

- 1 - 8
- 9 - 16
- 17 - 24

WARNING:
IF TWO CARDS HAVE THE SAME ADDRESS THE SYSTEM WILL NOT FUNCTION PROPERLY.

FIGURE 3.8
 ADDRESS

TERMINATOR WIRE



TERMINATOR CONNECTOR

FIGURE 3.9
TERMINATOR

INTRODUCTION

IN THIS CHAPTER WE WILL SEE HOW TO OPERATE THE PANEL.

HERE IS SOME GENERAL INFORMATION:

- ANY TIME A KEY IS PUSHED, A SMALL BUZZER (ON MAIN CPU BOARD) BEEPS TO CONFIRM THE KEY
- MAIN CPU ACCAPTS ONE KEY SEQUENCE AT ANY TIME.
- A SMALL RED LED (INDICATOR) SHOWS THE PRESENCE OF POWER FOR MAIN CPU.
- TO ACTIVATE THE DISPLAY SIMPLY PUSH ANY KEY.
- CYCLE BEGINS WITH CLEARING THE FILTER.
- A NEW CYCLE WILL BEGIN, IF IN THE END OF THE CYCLE PUMP IS RUNNING FOR MORE THAN 24 STATIONS.

DISPLAY INFORMATION

THE DISPLAY HAS 2 LINES WITH 20 CHARACTERS.
THE FIRST LINE IS FOR ENTERING THE DATA.

FILTER TIME = 09s <00
STN #1 15s

09 IS THE CURRENT VALUE
00 IS THE NEW DATA

TO ACCEPT THE NEW DATA PRESS ENTER.



TO IGNORE THE NEW DATA PRESS CLEAR.



THE SECOND LINE SHOWS THE CYCLING STATUS OF THE PANEL.

NO DEMAND
FILTER 05s
STN#1 15s
VACUUM 08s

NONE OF THE STATIONS ARE DEMANDING
CENTRAL FILTER IS ON FOR 5 SECONDS
THAT STATION NUMBER 1 IS FILLING FOR 15 SECONDS
VACUUM PUMP IS OFF FOR 8 SECONDS

FILTER TIME =09s <00
STN#1 15s VAC.=OFF

VAC.= OFF VACUUM PUMP STATUS IS OFF
IF NO KEY IS PRESSED AFTER 30 SECONDS THE FIRST DISPLAY WILL TURN OFF.
IF NO KEY IS PRESSED AFTER 4.5 MINUTES THE SECOND LINE WILL TURN OFF.
TO ACCESS THE DISPLAY STATUS SIMPLY PUSH ANY KEY.

CHANGING THE PASSWORD

- 01 TURN ON THE SWITCH (SW2) ON THE MAIN BOARD ON THE DOOR.
(POSITION "ENABLE")

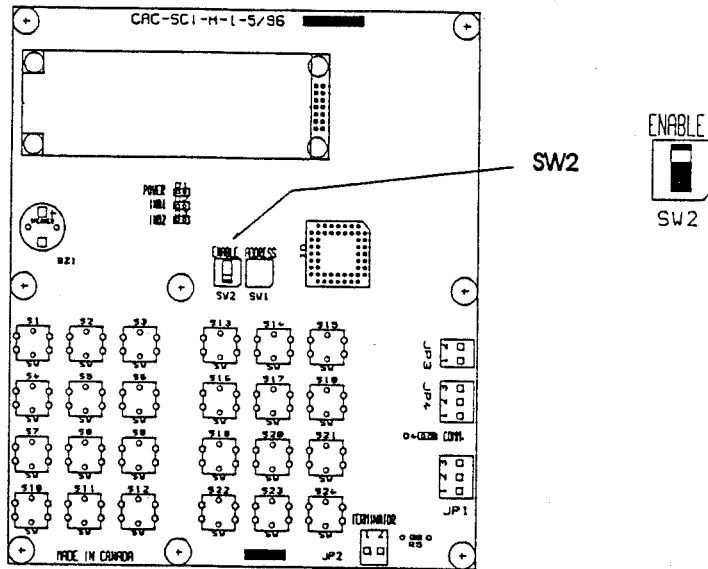


FIGURE 4-1

DISPLAY SHOWS:

NEW PASSWORD = 34 <00

- 2 ENTER THE NEW PASSWORD (00 TO 99).

1

2

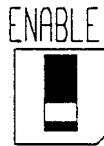
NEW PASSWORD = 34 <12

CHANGING THE PASSWORD

02 PUSH ENTER

**NEW PASSWORD = 12 <12**

03 TURN OFF THE SWITCH (SW2)



SW2

FIGURE 4-2

04 THIS IS THE NEW PASSWORD TO CHANGE ANY SETUP.

CHANGING THE SETUP.

TO CHANGE ANY SETUP IN THE PANEL THE VERY FIRST THING TO DO IS TO ENTER THE PROPER PASSWORD

01 PUSH THE PASSWORD



PASSWORD = <00

02 ENTER THE PASSWORD
(IN THIS EXAMPLE 12)



PASSWORD = <12

03 THEN PRESS ENTER



04 IF THE PASSWORD IS OK THE DISPLAY WILL SHOW:

PASSWORD OK

05 IF THE PASSWORD IS NOT VALID THE DISPLAY WILL SHOW:

PASSWORD NOT VALID

CHANGING STATION PARAMETERS

STATION TIME

LETS ASSUME IN THIS EXAMPLE YOU WANT TO CHANGE THE TIME OF STATION NUMBER 5 FROM 20 SECONDS TO 30 SECONDS.

01 ENTER THE PROPER PASSWORD

02 DISPLAY SHOWS:

PASSWORD OK

03 PRESS STATION TIME



STATION# <00

04 NOW ENTER STATION NUMBER
(5 IN THIS EXAMPLE).

5

STATION# <05

05 PRESS ENTER

ENTER

STN=05 TIME=20s <00

IF THE NUMBER IS NOT IN RANGE OF 1 TO 24 THE DISPLAY WILL SHOW

STATION #1 TO 24

06 NOW ENTER THE DESIRED TIME FOR THIS STATION
(30 IN THIS EXAMPLE)

3 0

STN=05 TIME=20s <30

07 PRESS ENTER

ENTER

STN=05 TIME=30s <30

08 TO CHANGE OR MONITOR TIMING OF THE NEXT STATION(6)
PRESS UP ARROW.



STN=06 TIME=20s <00

09 TO CHANGE OR MONITOR TIMING OF PREVIOUS STATION
(4) PRESS DOWN ARROW.



STN=04 TIME=15s <00

STATION PRIORITY

LETS ASSUME IN THIS EXAMPLE YOU WANT TO TURN ON THE PRIORITY OF STATION NUMBER 15.

1. ENTER THE PROPER PASSWORD
2. THE DISPLAY SHOWS:

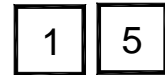
PASSWORD OK

3. PRESS STATION PRIORITY



STATION # <00

4. NOW ENTER THE STATION NUMBER (15 IN THIS EXAMPLE).



STATION # <15

5. PRESS ENTER



STN=15 PRI.=OFF <OFF

6. TO TURN ON THE PRIORITY PRESS ON.



STATION PRIORITY

STN=15 PRI.=OFF <ON

7 PRESS ENTER.



STN=15 PRI.=ON <ON

8 TO TURN OFF THE PRIORITY PRESS OFF.



STN=15 PRI.=ON <OFF

9 PRESS ENTER



STN=15 PRI.=OFF <OFF

10 TO CHANGE OR MONITOR PRIORITY OF THE NEXT STATION (16)
PRESS UP ARROW.



STN=16 PRI.=OFF <OFF

11 TO CHANGE OR MONITOR PRIORITY OF PREVIOUS STATION (14)
PRESS DOWN ARROW.



STN=14 PRI.=OFF <OFF

STATION STATUS

LETS ASSUME IN THIS EXAMPLE YOU WANT TO TURN OFF THE STATION NUMBER 21

- 1 ENTER THE PROPER PASSWORD
- 2 DISPLAY SHOWS:

PASSWORD OK

- 3 PRESS STATION STATUS



STATION # <00

- 4 NOW ENTER THE STATION NUMBER.(21 IN THIS EXAMPLE)

2 **1**

STATION# <21

- 5 PRESS ENTER



STN=21 STA.=OFF <OFF

- 6 TO TURN ON THE STATION PRESS ON.



STN=21 STA.=OFF <ON

STATION STATUS

7 PRESS ENTER



STN=21 STA.=ON <ON

8 TO TURN OFF THE STATION PRESS OFF.



STN=21 STA.=ON <OFF

9 PRESS ENTER



STN=21 STA.=OFF <OFF

10 TO CHANGE OR MONITOR STATUS OF THE NEXT STATION
(22) PRESS UP ARROW



STN=22 STA.=OFF <OFF

11 TO CHANGE OR MONITOR STATUS OF THE PRVIOUS STATION
(20) PRESS DOWN ARROW.



STN=20 STA.=OFF <OFF

CHANGING PARAMETERS OF THE VACUUM PUMP

LETS ASSUME IN THIS EXAMPLE YOU WANT TO CHANGE THE VACUUM PUMP PAUSE TIME FROM 10 TO 15 SECONDS.

- 1 ENTER THE PROPRE PASSWORD.
- 2 DISPLAY SHOWS:

PASSWORD OK

- 3 PRESS VACUUM.



V=05<05s ST.=ON <ON

- 4 ENTER THE VACUUM TIME. (IN THIS EXAMPLE 20)

2 0

V=05<20s ST.=ON <ON

- 5 PRESS ENTER



V=20<20s ST.=ON <ON

- 6 TO TURN OFF THE VACUUM PUMP PREEES OFF.



CHANGING PARAMETERS OF THE VACUUM PUMP

V=20<20s ST.=ON <OFF

7 PRESS ENTER



V=20<20s ST.=OFF <OFF

IF THE VACUUM PUMP STATUS IS "OFF" THE PANEL STILL WILL CYCLE, AND THE ONLY DIFFERENCE IS THAT THE PUMP RELAY AND THE FILTER RELAY WILL NOT COME ON. (THIS IS A GOOD WAY TO TEST THE WHOLE CYCLE WITHOUT CONVEYING ANY MATERIAL)

CHANGING THE FILTER TIME

LETS ASSUME IN THIS EXAMPLE YOU WANT TO CHANGE THE FILTER TIME FROM 5 TO 9 SECONDS.

- 1 ENTER THE PROPER PASWORD
- 2 DISPLAY SHOWS:

PASSWORD OK

- 3 PRESS FILTER TIME.



FILTER TIME =05s <00

- 4 ENTER THE FILTER TIME
(09 IN THIS EXAMPLE.)



FILTER TIME =05s <09

- 5 PRESS ENTER



FILTER TIME =09s <09

CHANGING THE STATUS OF THE ALARM

THIS PANEL HAS BOTH AUDIO AND VISUAL ALARM INDICATORS. IN CASE OF ANY ALARM BOTH OF THEM WILL INDICATE THE ALARM SITUATION. TO DEACTIVATE THE AUDIO ALARM INDICATOR YOU CAN TURN THE ALARM STATUS TO OFF, IN CASE OF ANY ALARM THE VISUAL INDICATOR WILL SHOW.

- 1 ENTER THE PROPER PASSWORD
- 2 THE DISPLAY SHOWS:

PASSWORD OK

- 3 PRESS ALARM STATUS



ALARM STATUS = OFF <ON

- 4 TO TURN ON THE ALARM STATUS PRESS



ALARM STATUS = OFF <ON

- 5 PRESS ENTER



ALARM STATUS = ON <ON

CHANGING THE STATUS OF THE ALARM

6 TO TURN OFF THE ALARM STATUS PRESS OFF



ALARM STATUS = ON <OFF

7 PRESS ENTER



ALARM STATUS = OFF <OFF

ALARM CONDITIONS

EACH STATION HAS ITS OWN ALARM COUNTER.
EACH ATTEMPT TO FILL A STATION INCREASES THAT ALARM COUNTER BY ONE.

EACH TIME A STATION HAS BEEN SUCCESSFULLY FILLED THE COUNTER WILL RESET TO ZERO. (SUCCESSFULLY MEANS THAT THE STATION WILL NOT DEMAND FOR AT LEAST 2 SECONDS.)

IF THE ALARM COUNTER REACHES TO COUNT 3, IT IS AN ALARM CONDITION.
IN AN ALARM CONDITION BOTH AUDIO AND VISUAL INDICATOR WILL BE ACTIVATED.
IT IS POSSIBLE TO ACTIVATE OR DEACTIVATE THE AUDIO INDICATOR BY THE ALARM STATUS.

TO MONITOR THE ALARM CONDITION PRESS ALARM CLEAR.



IN CASE OF NO ALARM THE DISPLAY SHOWS:

A rectangular display with a thick black border containing the text "NO ALARM" in bold, uppercase letters.

NO ALARM

AS AN EXAMPLE LETS ASSUME:

ALARM STATUS IS ON.
STATIONS 1 ,3 , 6 ARE IN ALARM CONDITION.
IN THIS SITUATION BOTH AUDIO AND VISUAL ALARM INDICATORS ARE ON.
SILENCE THE AUDIO ALARM

1 TO SILENCE THE AUDIO ALARM PRESS ALARM CLEAR.



THE AUDIO ALARM WILL TURN OFF UNTILL THE NEXT ALARM CONDITION.

ALARM CONDITIONS

- 2 TO MONITOR THE ALARM CONDITION PRESS ALARM STATUS
THE DISPLAY WILL SHOW THE VERY FIRST ALARM CONDITION.



NO FILL STN# 01

- 3 TO MONITOR THE NEXT STATION WITH A ALARM CONDITION PRESS.
(IN THIS EXAMPLE STN # 3)



NO FILL STN# 03

- 4 AND FOR THE NEXT STATION PRESS ALARM STATUS.
(IN THIS EXAMPLE STN # 6)



NO FILL STN# 06

- 5 IF YOU PRESS ALARM STATUS FOR ONE MORE TIME THE DISPLAY WILL SHOW.



NO FILL STN# 01

CLEARING EACH ALARM

IT IS ALSO POSSIBLE TO CLEAR THE ALARM CONDITION OF EACH STATION BY PRESSING ALARM CLEAR

- 1 FIRST MONITOR THE ALARM CONDITION BY PRESSING ALARM STATUS.
(IN THIS EXAMPLE STN # 1)



NO FILL STN# 01

- 2 TO CLEAR ALARM CONDITION FOR THIS STATION PRESS ALARM CLEAR.

DISPLAY SHOWS:



NO FILL STN# 03

PRIORITY OF STATIONS.

EACH STATION HAS ITS OWN PRIORITY OPTION.

PRIORITY OPTION CAN BE TURNED ON OR OFF FOR EACH STATION.

CENTRAL PANEL STARTS FILLING THE STATIONS WHICH PRIORITY ARE SET.

SEQUENCE OF FILLING IS FROM THE LOWEST STATION NUMBER UP.

IN EACH CYCLE THE CONTROL WILL TRY 3 TIMES FOR PRIORITY STATIONS.

HERE IS THE STEP BY STEP WAY TO TROUBLE SHOOT THE CONTROL PANNEL.

START FROM STEP 1 UNTIL YOU FIND THE PROBLEM.

STEP1 PRESENCE OF POWER ON THE MAIN CPU BOARD

- IF THE LED ON THE DOOR IN ON SKIP STEP 1 *

PROBLEM

LED ON THE DOOR IS OFF. (FIGURE 5.1)

CAUSES:

- 1 THE MAIN SWITCH IS OFF (FIGURE 5.1)
- 2 THE MAIN FUSE ON THE PANNEL IS BLOWEN.(FIGURE 5.1).
- 3 FUSE ON THE POWER SUPPLY IS BLOWEN. (FIGURE 5.1)
- 4 BROKEN WIRE FROM THE POWER SUPPLY.

STEP 2 PRESENCE OF POWER ON THE INPUT,OUTPUT BOARDS

IF THE LED ON THE I/O BOARDS ARE ON ON SKIP STEP 2

PROBLEM

POWER LED ON THE I/O BOARDS ARE OFF

CAUSES:

BROKEN WIRE FROM THE POWER SUPPLY.

STEP 3: COMUNICATION OF I/O BOARDS

IF COMM LED ON THE I/O BOARDS ARE ON SKIP STEP 3

PROBLEM

COMM LED ON THE I/O BOARDS ARE OFF (FIGURE 5.3 , 5.5)

CAUSES:

- 1 BROKEN WIRE FROM THE MAIN CPU OR OTHER I/O BOARDS.
- 2 ADDRESS DUPLICATION WITH OTHER I/O BOARDS. (FIGURE 5.5)
- 3 UNEXEPECTED NOISE IN THE SYSTEM.

STEP 4: PRESENCE OF INPUTS

IF INPUT LED'S ON THE I/O BOARDS ARE ON SKIP STEP 4

PROBLEM

INPUT LED ON THE I/O BOARDS ARE OFF (FIGURE 5.3 , 5.5)

CAUSES:

BROKEN WIRE FROM INPUTS. (FIGURE 5.3 , 5.5)
NONE OF THE STATIONS ARE DEMANDING MATERIAL.
BROKEN WIRE FROM THE MAIN CPU OR OTHER I/O BOARDS.
ADDRESS DUPLICATION WITH OTHER I/O BOARDS. (FIGURE 5.5)

STEP 5: PRESENCE OF OUTPUTS

IF OUTPUT LED'S ON THE I/O BOARDS ARE ON SKIP STEP 5

PROBLEM

OUTPUT LED'S ON THE I/O BOARDS ARE OFF. (FIGURE 5.3 , 5.5)

CAUSES:

BROKEN WIRE FROM INPUTS. (FIGURE 5.3 , 5.5)
NONE OF THE STATIONS ARE DEMANDING MATERIAL.
BROKEN WIRE FROM THE MAIN CPU OR OTHER I/O BOARDS.
ADDRESS DUPLICATION WITH OTHER I/O BOARDS. (FIGURE 5.5)

STEP 6 : PRESENCE OF OUTPUTS

IF OUTPUT LED'S ON THE I/O BOARDS ARE ON SKIP STEP 6

PROBLEM

OUTPUT LED'S ON THE I/O BOARDS ARE ON BUT THERE IS NO OUTPUT.
(FIGURE 5.3 , 5.5)

CAUSES:

OUTPUT FUSES ARE BLOWEN (FIGURE 5.4 , 5.6)
BROKEN WIRE FROM INPUTS.

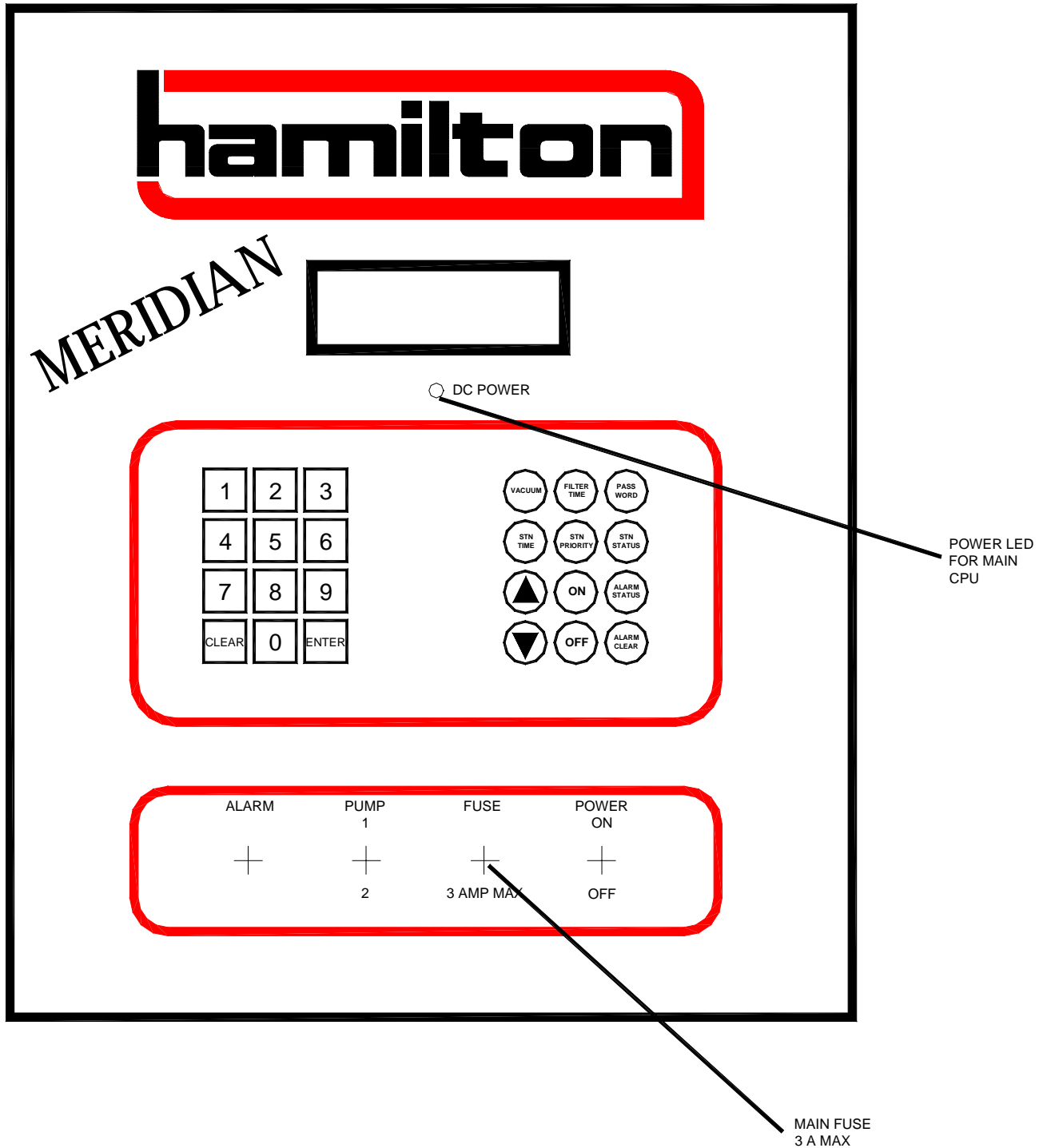


FIGURE 5.1 MAIN PANEL

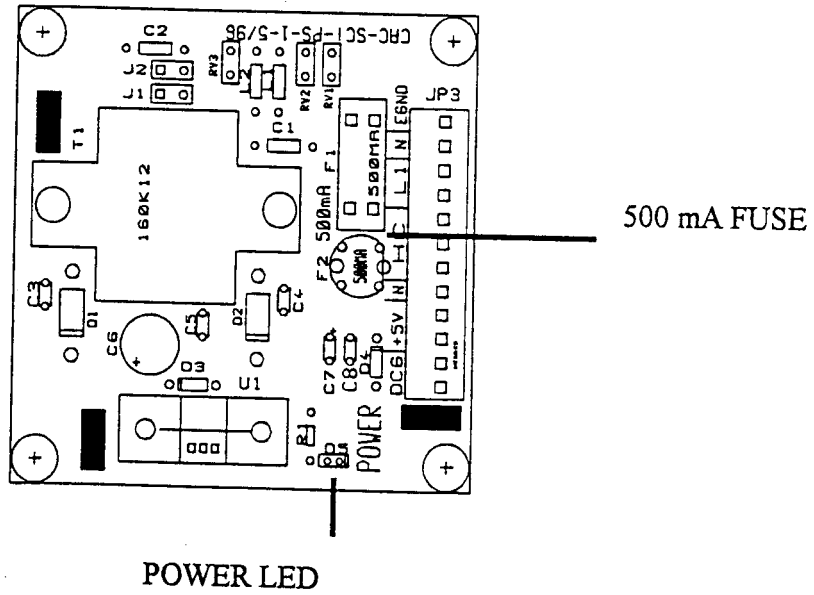


FIGURE 5.2, POWER SUPPLY

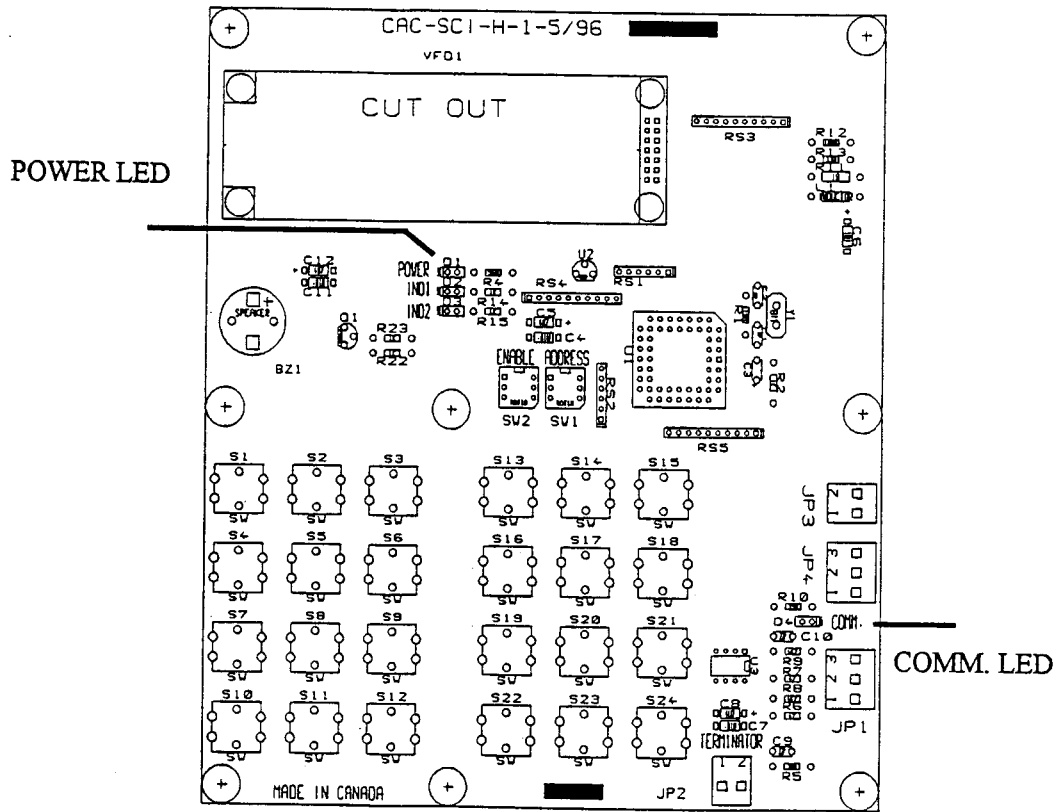


FIGURE 5.3 MAIN CPU

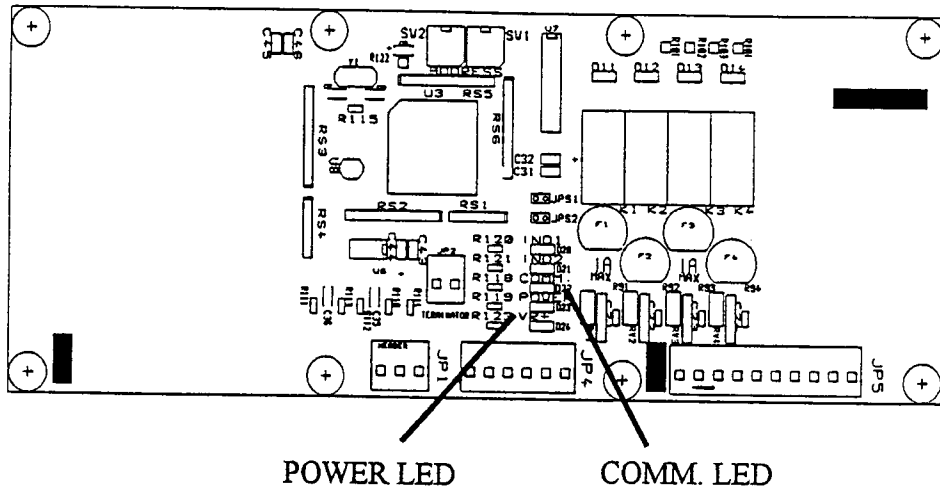


FIGURE 5.3 MAIN OUTPUT LED'S

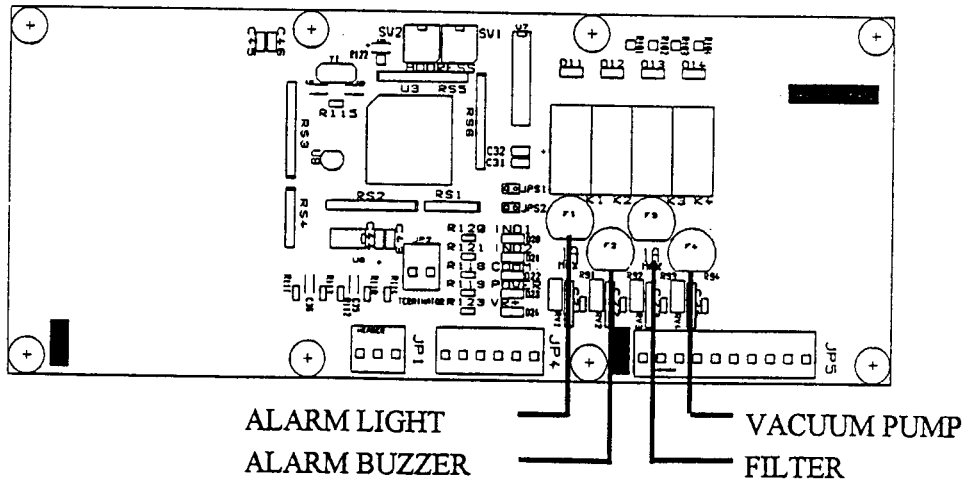


FIGURE 5.4 MAINOUTPUT FUSES

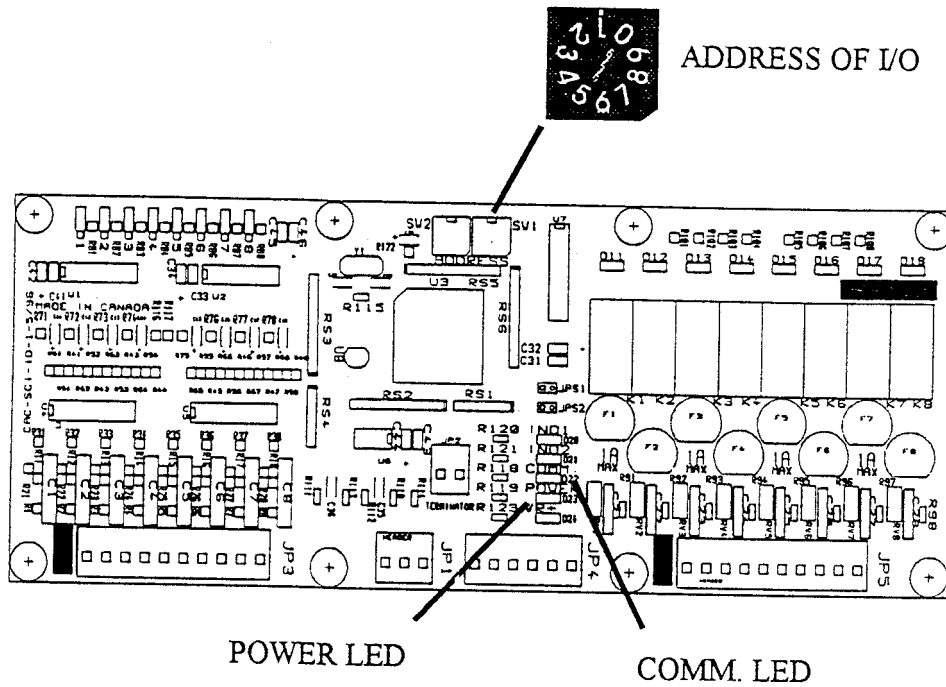


FIGURE 5.5 , I/O LED'S

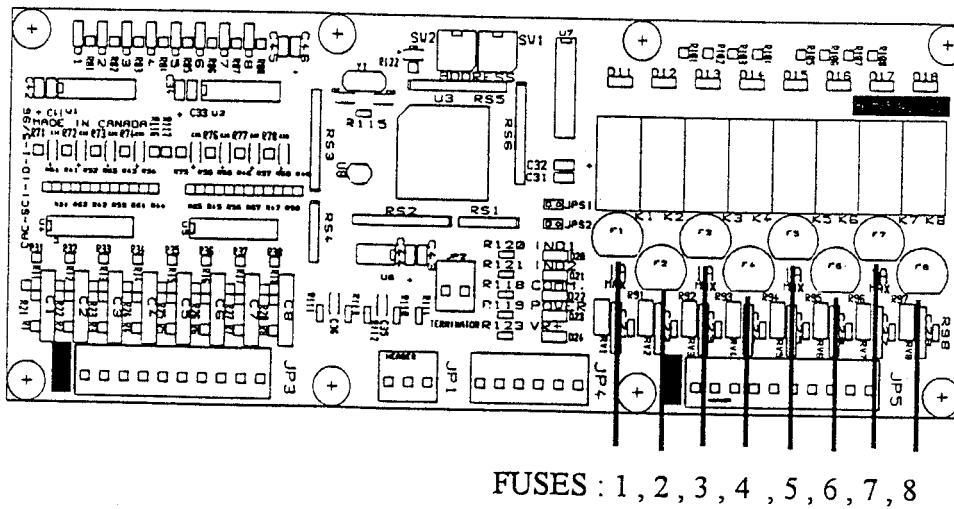


FIGURE 5.6 , I/O FUSES

