Instruction Manual

Model 2082-14x-47

Redundant Unit Controller

December 2013, Rev. B

POWER	STATUS	MODE	STATUS	MODEL 2082

```
          STATUS        MODE
                        AUTO ○        UNIT 1   UNIT 2   UNIT 3           MODEL 2082
  POWER   ALARM ○ ○ ○  MANUAL ○  STATUS   450     470     380    MENU    CONTROLLER
          STDBY ○ ○ ○  LOCAL ○   PATH         1>1     2>2                CROSS TECHNOLOGIES INC.
  ○  ○    ONLINE ○ ○ ○ REMOTE ○                              EXECUTE
  1  2          1 2 3
```
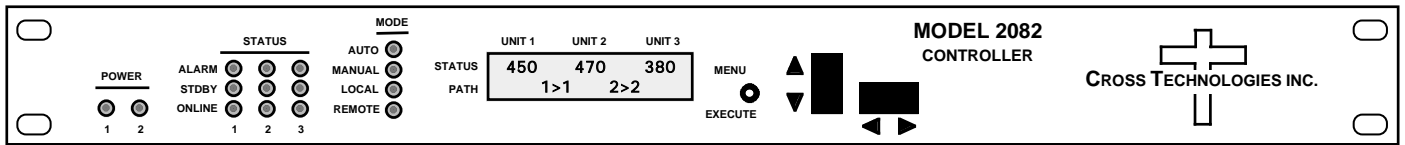
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CROSS TECHNOLOGIES, INC.

6170 Shiloh Road

Alpharetta, Georgia 30005

(770) 886-8005

FAX (770) 886-7964

Toll Free 888-900-5588

WEB www.crosstechnologies.com

E-MAIL info@crosstechnologies.com

INSTRUCTION MANUAL

MODEL 2082-14x-47 Redundant Unit Controller

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MODEL 2082-14x-47 Redundant Unit Controller

1.0 General

1.1 Equipment Description

The Model 2082-14x-47 Redundant Unit Controller is used to power, monitor and control LNA or LNB amplifiers configured in 1:1 (2082-141-47) or 1:2 (2082-142-47) redundancy. Front panel LEDs indicate power, status (online, standby, alarm), and mode (auto, manual, local, remote). Up to 600 ma is available to power each amplifier and +47 VDC is provided for 1:1 (1.5A) or 1:2 (3A) waveguide switch drive. The Model 2082-141-47 has +47 volts common and the 2082-141-47P has ground common. LNA or LNB current is measured and a fault is signaled if the current deviates from user selected thresholds. Multi-function switches select Auto, Local, or Remote operation, priorities for 1:2, and the signal path in the Manual mode. Remote operation via the RS232/RS485 M&C interface allows selection of priorities (1:2) and the signal path. Ethernet is available as option, -W8, -W18, or -W28. Contact closure to ground inputs allow selection of Local/Remote, and Auto/Manual Modes. An LCD display shows each amplifier's current, and signal path. Form C relay contact closures indicate amplifier and power supply status, waveguide switch position, Auto, Remote, and Manual operation. Connectors are DB37 for contact closure I/Os, MS3112E16-23S for the amplifier plate signals, and DB9s for monitor and control and auxiliary external contact closure alarm inputs. The 2082-14x-47 is housed in a 1RU chassis and is powered by redundant power supplies fed by separate, fused 100-240 ±10% VAC AC input connectors.
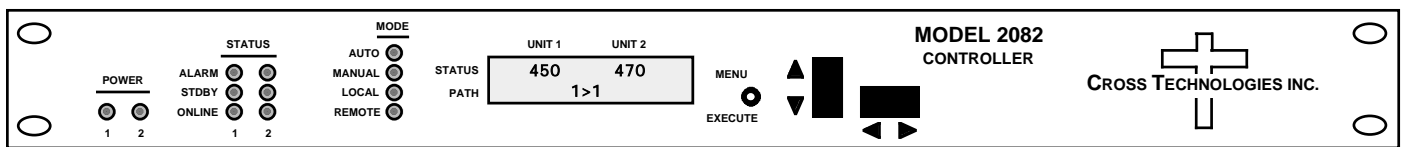
FRONT PANEL
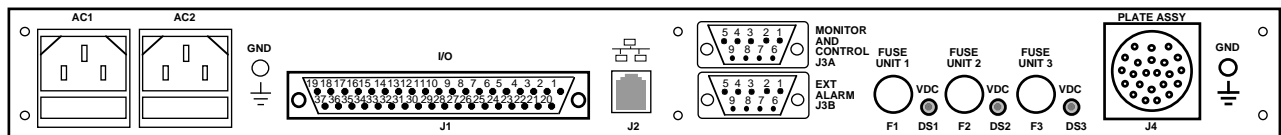
REAR PANEL - Shown with optional Ethernet Connector (J2)
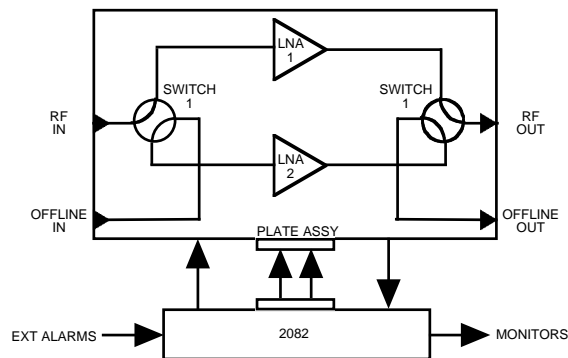
FIGURE 1.1   Front and Rear Panels

FIGURE 1.2   Block Diagram (Upconverter Scenario)

1.2 Technical Characteristics

TABLE 1.0	2082-47X-47 Switch Specifications*
LNA/LNB Power	
Output Voltage/Current	+15 ±1 Volts/0.6 amps max., each unit
Number Powered	2 (for -141), 3 (for -142)
Switch Drive Characteristics	
Fault Detection time	50 ms max.
Total Switch over time	100 ms max., based on switch specifications
Drive Voltage	47 Volts, 1.5A (for -141-47), 3A (for -142-47)
Alarm and Control, M&C	
Alarm Output Signal	Form C relay: 100 VDC, 0.5A, 3W max.
M&C Interface	RS232C or RS485, Selectable, Ethernet Optional
M&C Signal	900 baud rate, no parity, 8 data bits, 1 start bit
Controls, Indicators	
Mode Select	Local/Remote, Auto/Manual push-button switches, contact closures, or remote selection.
Power On Status	Green LED's (PS1, PS2), External Form C contact closure, M&C serial
Remote Select Status	Yellow LED, External Form C contact closure, M&C serial
Manual Select Status	Yellow LED, External Form C contact closure, M&C serial
Alarm Status	Red LED's, External Form C contact closure, M&C serial (for amplifiers, Ext. and Summary alarm)
Controls, Others	
Parallel I/O Connector	DB37, female
External Alarm	DB9, female
M&C Connector	DB9, female
Amp Plate Connector	MS3112E16-23S
Size	1 RU, 19 inch standard chassis, 1.75" high x 16.0" deep
Power	Redundant 100-240 ±10% VAC, 47-63 Hz, 150 Watts max. power supplies
Remote M&C Ethernet Options	
W8-	Ethernet with Web Browser Interface
W18-	Ethernet with SNMP (and MIB) Interface
W28-	Ethernet with Direct TCP/IP Interface
Other Options	
Input Closure Alarm Option: Call Cross Technologies	
Models	
2082-141-47	1:1 Redundant Unit Controller, +47 VDC Common
2082-142-47	1:2 Redundant Unit Controller, +47 VDC Common
2082-141-47P	1:1 Redundant Unit Controller, Ground Common
2082-142-47P	1:2 Redundant Unit Controller, Ground Common
*+10˚C to +40˚C; Specifications subject to change without notice	2012 Cross Technologies, Inc.

1.3 Control & Operation

The 2082-14x-47 Redundant Unit Controller is designed to be 'controlled' either Locally or Remotely (Local/Remote) and the 'switching' is either Automatic or Manual (Auto/Manual). The controller defaults to Local (control)/Auto (switching) mode. These are described in more detail below.

1.3.1 Local/Remote (Control) Mode

Local mode is the default 'control' mode of the controller. When the unit is in the local mode it will ignore any serial commands it receives through serial M&C connector J3 or through the ethernet interface. Local mode means control of the system is managed with front panel commands and external "ground to activate" inputs. A grounded external input will override the front panel input that controls the same function. The following table describes the "ground to activate" pins located on the DB37 parallel I/O connector and their function. When the unit is in the remote mode it will respond only to serial M&C commands or ethernet Webpage and SNMP commands.

DB37 (J1) Pin	Function
18	Auto/Manual Select: Ground to activate Manual Mode.

1.3.2 Auto/Manual (Switching) Mode

Auto mode is the default 'switching' mode of the controller. When in the auto mode the controller is continuously monitoring the status of AMP1 and AMP2. If a fault is detected from AMP1 then AMP2 is switched into the signal path of the faulted unit.

Manual mode may be set via a front panel command, an M&C port command, or by grounding the AUTO/MAN external input (J1, pin 18). When the controller is in the manual mode it ignores fault and alarm inputs and allows the user to manually operate the waveguide switch.

There are 3 methods available to manually operate the waveguide switch.

Method 1 is locally from the front panel interface. The unit must be in Manual Mode and Local Mode to use this method.

Method 2 is remotely from the serial M&C or Ethernet (optional) interface. The unit must be in Manual Mode and Remote Mode to use this method.

Method 3 allows the user to physically ("manually") turn the waveguide switch by hand. The unit must be in Manual Mode but may be in either Local or Remote Mode when using this method.

1.4 Setup/Testing

At the time of installation / testing the user needs to verify that the controller is properly installed and that the 'back-up' signal path and LNA are functioning properly. The 2082-14x-xx must first be properly wired to a waveguide switch in order to perform any testing. The 2082-14x-xx will not send any waveguide switch control signals if the unit cannot read a valid position from the waveguide switch(s). The switch position read from the waveguide switch is displayed on the bottom line of the main LCD display screen. If "ERROR!" is displayed then the unit cannot read a valid position.

From the optional Webpage Interface there is a Switch Position status field. If "ERROR!" is displayed in that field then the unit cannot read a valid position.

From the optional SNMP interface there is an Object ID named switchPos2082141. If the value 99 is read from that object ID then the unit cannot read a valid position.

The 2082-14x-xx reads the waveguide switch position through the MS connector J4 on the rear panel. Typical waveguide switch wiring for Models 2082-141-47, 2082-141-47P, 2082-142-47 and 2082-142-47P are shown in the following 4 diagrams:
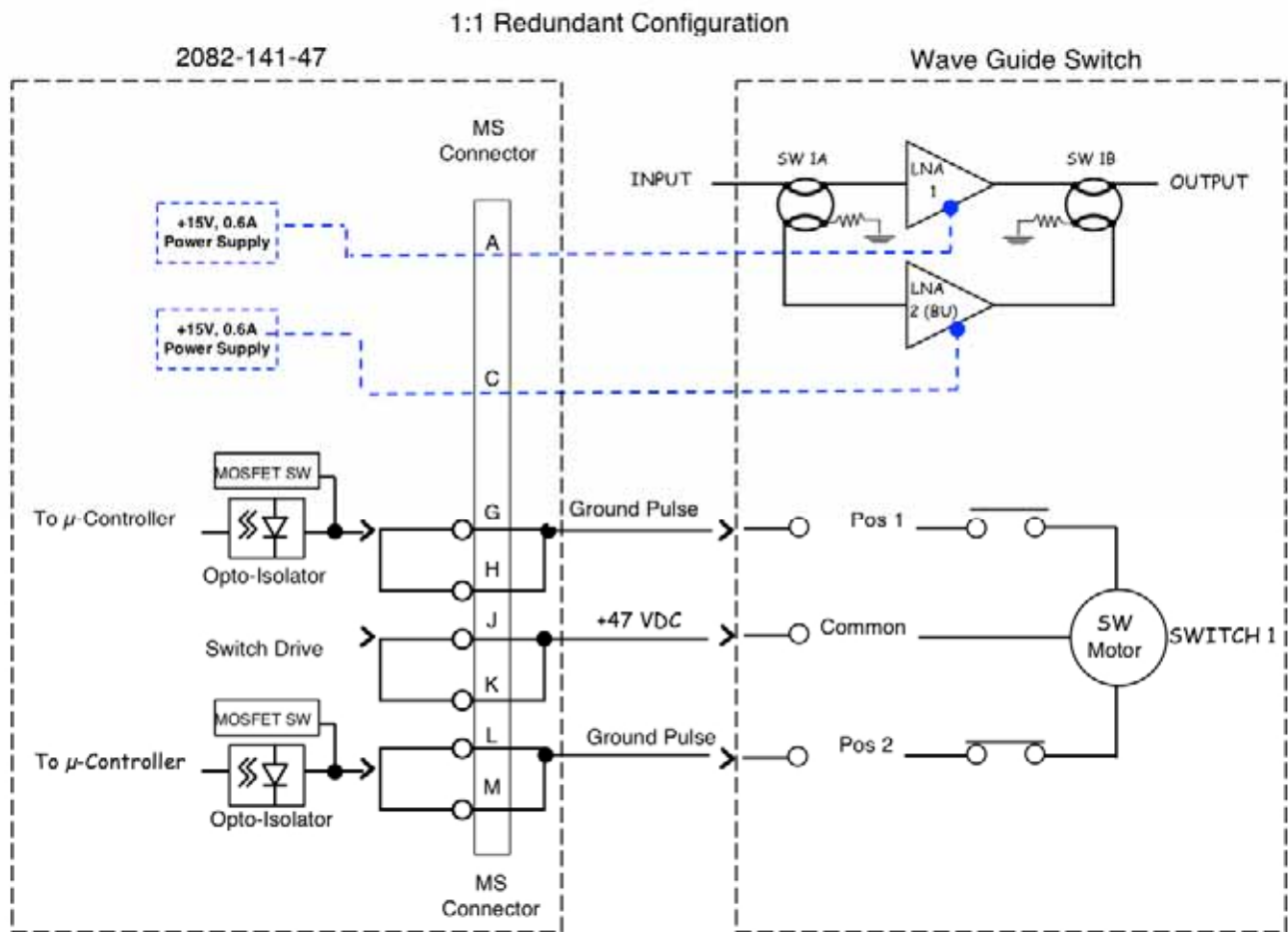
2082-141-47 (+47 VDC Common) Wave Guide SW Wiring Diagram

1:1 Redundant Configuration

2082-141-47P   Wave Guide Switch

2082-141-47P (Ground Common) Wave Guide SW Wiring Diagram
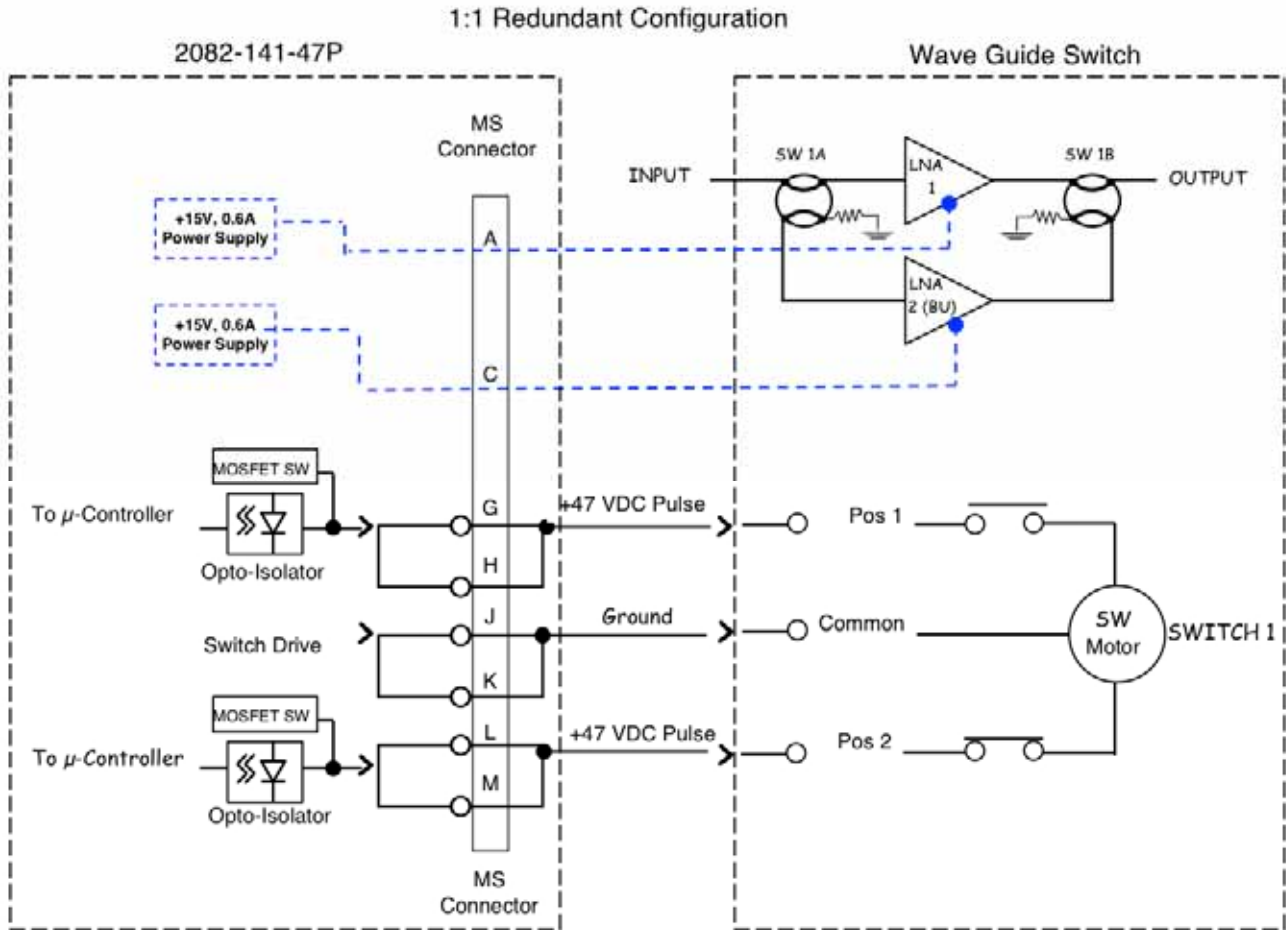
The micro controller in the 2082-141-xx determines the switch position by detecting the presence of switch common voltage on either Pos1 or Pos2. If no presence of switch common voltage is detected then the position is reported as "ERROR!". The 2082-141-xx will not send waveguide switch control signals if it cannot determine a valid switch position.

There are three possible methods for a user to override auto switching while in Manual mode to perform waveguide switch testing. These methods are referred to as LOCAL (which provides two (2) possible ways) and REMOTE (one (1) way). These are described below.

1:2 Redundant Configuration

2082-142-47
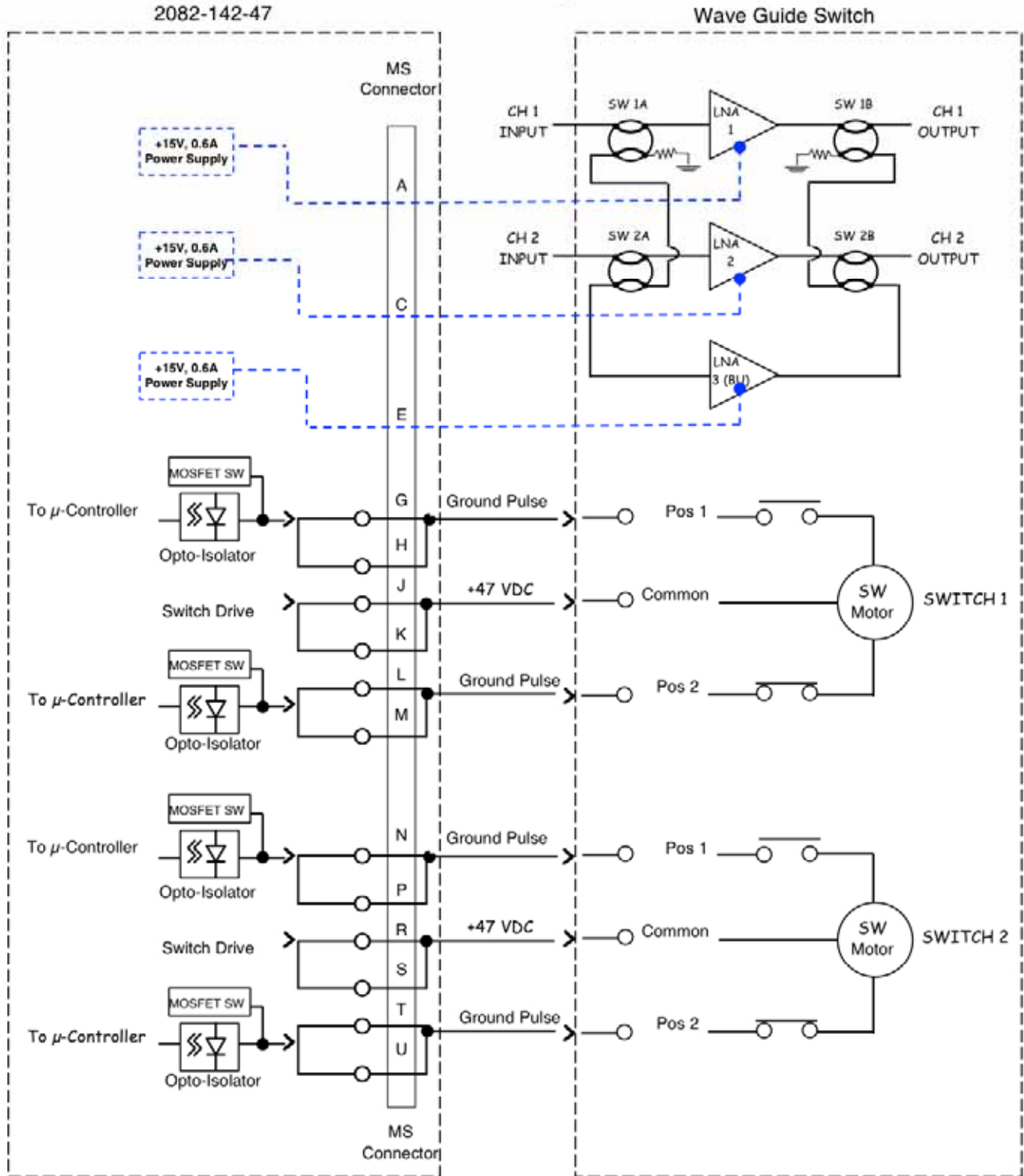
Wave Guide Switch

2082-142-47 (+47 VDC Common) Wave Guide SW Wiring Diagram

1:2 Redundant Configuration
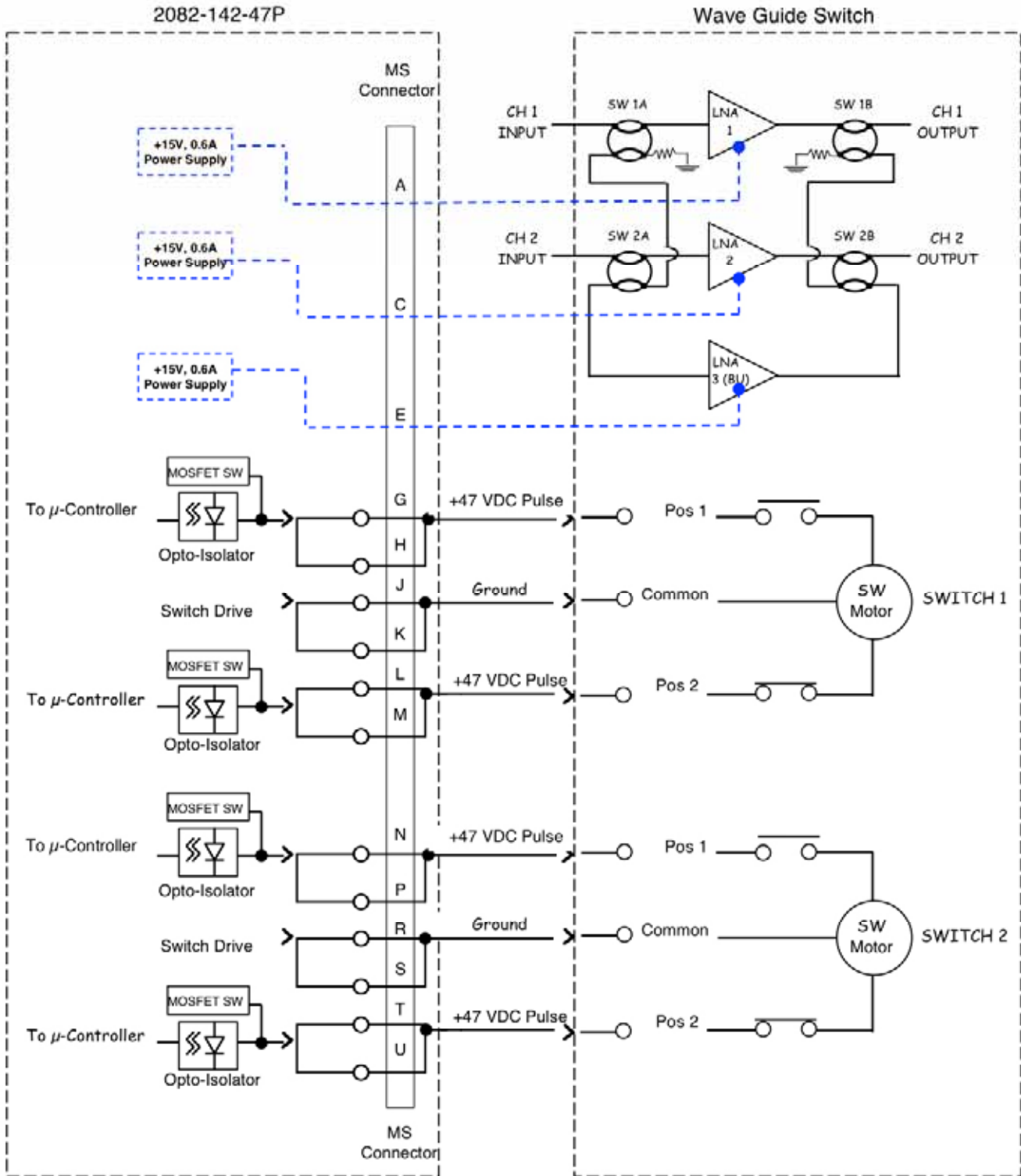
2082-142-47P (Ground Common) Wave Guide SW Wiring Diagram

1.4.1 LOCAL. As mentioned above, local provides two possibilities to override auto switching. The first is via the <u>Front Panel Menu</u> and the second is via the <u>Manual Override Knob</u> located on the waveguide switch (if so equipped.) Both of these require that the 2082-14x-47 be placed in the MANUAL MODE.

1.4.2 Front Panel Menu.

To override auto switching via the Front Panel Menu …

1) Place the unit in MANUAL MODE.

2) The LCD display will display the following message showing the current location of the switch:

```
Manually Set        R
POS=1>1
```

3) You may now select switch positions using the UP/DOWN switch. For a 2082-14x-47, 1 for 1 controller, the switch position choices are: 1>1 (Primary active), or 2>1 (Backup active).

4) Once the Switch position is selected, push the PROGRAM/EXECUTE switch to go to the next menu.

5) Use the LEFT/RIGHT switch to move the cursor to <u>R</u> (return), then push the PROGRAM/EXECUTE switch to jump to the SAVE SETTINGS menu.

1.4.3 Manual Override Knob.

To override auto switching via Manual Override Knob …

1) Place the unit in MANUAL MODE.

2) The LCD display will display the following message showing the current location of the switch:

```
Manually Set        R
POS=1>1
```

3) Once testing has been completed, the 2082-14x-47 Redundant Unit Controller should be restored to AUTO mode.

1.4.4 REMOTE

To override auto switching remotely…

[The unit must be in the REMOTE mode to execute any remote commands.]

From the serial M&C Interface:

1) SET the unit to MANUAL mode through the following command…

   {aaC9x}

   where x = 1 sets switch to MANUAL.
2) To manually test the switches, send the following remote M&C command to the unit.

   {aaCAx}

   where x = 1 sets switch to position 1 (Primary active),

   and x = 2 sets switch to position 2 (Backup active.)
3) When testing is completed, return the unit to AUTO mode through the following command…

   {aaC9x}

   where x = 0 sets switch to AUTO.

From the (optional) Ethernet Interface:
   Webpage:
   1. Select "Manual" control mode.
   2. Select "Remote" control mode.
   3. Select the desired set position, either 1 to 1 or 2 to 1.
   4. Click "Update Other".

   SNMP:
   1. Set ObjectID ctrlMode to 1 (MANUAL).
   2. Set ObjectID ctrlSource to 1 (REMOTE).
   3. Set ObjectID switchPos to the desired position, either 1 (AMP1 to 1) or 2 (AMP2 to 1).

1.5   M&C Interface

1.5.1 Remote Serial Interface

Protocol: RS232C, 9600 baud rate, no parity, 8 data bits, 1 start bit, and 1 stop bit. (RS232C, RS422, or RS485 - **option Q**)

Connectors: Rear panel, DB9 female

TABLE 2.1 J3A Monitor & Control Pinout	
Pin	Function
1	RS422/RS485 Tx-
2	RS232C Tx, RS422/RS485 Tx+
3	RS232C Rx, RS422/RS485 Rx+
4	RS422/RS485 Tx-
5	GND
6	Not Used
7	Not Used
8	Not Used
9	Not Used

1.5.2 Status Requests Table 1.1 lists the status requests for the 2082-14x-47 and briefly describes them.

* PLEASE NOTE: The two character {aa}(00-31) prefix, in the table below, should be used ONLY when RS-485, (OPTION-Q), is selected.

TABLE 1.1 2082-14x-47 Status Requests		
Command	Syntax *	Description
Model and Firmware version	{aaSM}	Returns {aaSMbbbbbbbbvercccc} where:
		• bbbbbbbb = Model number
		• cccc = Firmware version
AMP1 Status	{aaS1}	Returns {aaS1bbbcccdd} where:
		• bbb = AMP1 measured current
		• ccc = AMP1 nominal current setting
		• dd = AMP1 window
AMP2 Status	{aaS2}	Returns {aaS2bbbcccdd} where:
		• bbb = AMP2 measured current
		• ccc = AMP2 nominal current setting
		• dd = AMP2 window
Controller Status	{aaS4}	Returns {aaS4bcdefg} where:
		• b = 0 if in AUTO, 1 if in MANUAL
		• c = 0 if in LOCAL, 1 if in REMOTE
		• d = 0 if PRIORITY1, 1 if PRIORITY2
		• e = 0 if no backup, 1 if AMP1 backed up
		• g = Power Supply 2 Status: 0 = good, 1 = alarm
		• f = Power Supply 1 Status: 0 = good, 1 = alarm

1.5.3 Commands Table 1.2 lists the commands for the 2082-14x-47 and briefly describes them. After a command is sent the 2082-14x-47 sends a return ">" indicating the command has been received and executed.

General Command Format - The general command format is {aaCND...}, where:

    { = start byte
    aa = address of unit (only used if in RS485 mode, **option -Q only**)
    C = 1 character, either C (command) or S (status)
    N = 1 character command or status request
    D = 1 character or more of data (depends on command)
    } = stop byte

  * PLEASE NOTE: The two character {aa}(00-31) prefix, in the table below,
      should be used ONLY when RS-485, (OPTION-Q), is selected.

Table 1.2 2082-14x-47 Commands		
Command	**Syntax***	**Description**
Set AMP1 Nominal Value	{aaC1xx}	where:
	or {aaC1}	• xx = 10 (0.100A) to 50 (0.500A)
		• NOTE: Omit xx to set nominal value to currently measured value
Set AMP2 Nominal Value	{aaC2xx}	where:
	or {aaC2}	• xx = 10 (0.100A) to 50 (0.500A)
		• NOTE: Omit xx to set nominal value to currently measured value
Set AMP1 Window	{aaC4xx}	where:
		• xx = 10 (10%) to 30 (30%) in increments of 5
Set AMP2 Window	{aaC5xx}	where:
		• xx = 10 (10%) to 30 (30%) in increments of 5
Set Local/Remote	{aaC8x}	where:
		• x = 0 for LOCAL mode, 1 for REMOTE mode
Set Auto/Manual	{aaC9x}	where:
		• x = 0 for AUTO mode, 1 for MANUAL mode
Set Switch Position	{aaCAx}	where:
		2082-141:
		• x = 1 to set to:1 to 1, 2 to 2
		• x = 2 to set to: 2 to 1,1 to 2
		2082-142:
		• x = 1 to set to: 1 to 1, 2 to 2
		• x = 2 to set to: 3 to 1, 2 to 2
		• x = 3 to set to: 1 to 1, 3 to 2
		• NOTE: The unit will ignore the set switch position command when not in MANUAL mode.

1.6 Environmental Use Information

A. **Rack-Mounting** - To mount this equipment in a rack, please refer to the installation instructions located in the user manual furnished by the manufacturer of your equipment rack.

B. **Mechanical loading** - Mounting of equipment in a rack should be such that a hazardous condition does not exist due to uneven weight distribution.

C. **Elevated operating ambient temperature** - if installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack may be greater than room ambient temperature. Therefore, consideration should be given to Tmra.

D. **Reduced air flow** - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised. Additional space between units may be required.

E. **Circuit Overloading** - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits could have on over current protection and supply wiring. Appropriate consideration of equipment name plate rating should be used, when addressing this concern.

F. **Reliable Earthing** - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connection to the Branch (use of power strips).

G. **Top Cover** - There are no serviceable parts inside the product so, the Top Cover should not be removed. If the Top Cover is removed the ground strap and associated screw MUST BE RE-INSTALLED prior to Top Cover screw replacement. FAILURE TO DO this may cause INGRESS and/or EGRESS emission problems.

G. **Top Cover** - There are no serviceable parts inside the product so, the Top Cover should not be removed. If the Top Cover is removed the ground strap and associated screw MUST BE RE-INSTALLED prior to Top Cover screw replacement. FAILURE TO DO this may cause INGRESS and/or EGRESS emission problems.

2.0 Installation

2.1 Mechanical

The 2082-14x-47 consists of one PCB housed in a 1 RU (1 3/4 inch high) by 16 inch deep chassis.
Two redundant switching +27 VDC power supplies are diode "OR'ed to provide +26 VDC for the assembly.
The 2082-14x-47 can be secured to a rack using the 4 holes on the front panel. Figure 2.0 shows how the
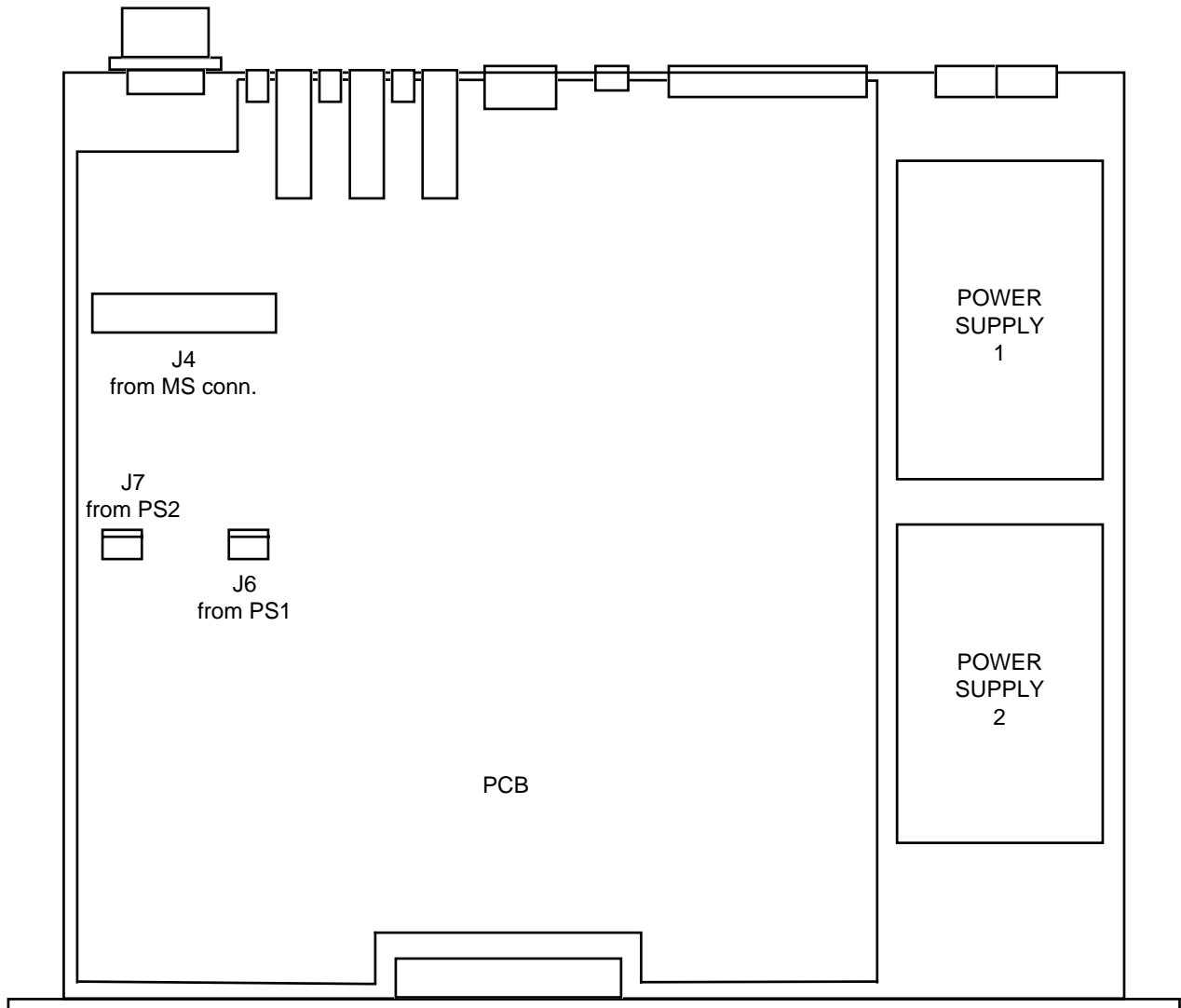2082-14x-47 is assembled.

FIGURE 2.0   2082-141-47 Mechanical Assembly

2.2 Rear Panel Input/Output Signals

Figure 2.1 shows the input and output connectors on the rear panel.

J2 -
Optional RJ45 Ethernet Connector

J3A - MONITOR AND CONTROL
Allows for monitoring and controlling of the 2082 (see Table 2.1). DB-9 connector

DS1, DS2 - VDC LEDs
LEDs light yellow to indicate voltage to AMP1, AMP2, and AMP3.

AC1, AC2 - POWER IN
AC inputs for redundant switching power supplies. 100-240 ±10% VAC, 47-60 Hz.

J1 - PARALLEL I/O
See table 2.3 DB-37 connector

J3B - EXT ALARM
External additional alarm inputs for future expansion. DB-9 connector

F1,F2 - FUSES
Fuses for the +15V going to AMP1, AMP2, and AMP3 of the plate assembly. 0.75A Fast Blo fuse.

J4 - PLATE ASSY
MS connector used to connect external Amplifier Plate Assembly. see Table 2.2

FIGURE 2.1   2082-141-47 Rear Panel I/O's

TABLE 2.1	J3A Monitor & Control Pinout
Pin	**Function**
1	RS422/RS485 Tx-
2	RS232C Tx, RS422/RS485 Tx+
3	RS232C Rx, RS422/RS485 Rx+
4	RS422/RS485 Tx-
5	GND
6	Not Used
7	Not Used
8	Not Used
9	Not Used

*Remote Serial Interface
Interface: DB9 Male
Protocol: RS232C (RS232C/422/485 **option Q only**), 9600 baud rate, no parity, 8 data bits, 1 start bit, 1 stop bit.

TABLE 2.2	J4 (Plate Assy) MS Connector Pinout	
Pins	**Functional Description**	
A	AMP1 +15VDC, 0.6A (Fused - F1, LED DS1)	
C	AMP2 +15VDC, 0.6A (Fused - F2, LED DS2)	
E	AMP3 +15VDC, 0.6A (Fused - F3, LED DS3)	-142 ONLY
B,D,F,V	GROUND	
J,K,R,S	Switch Common, +26VDC, 5A max	
G,H	Switch #1 - Position 1	
L,M	Switch #1 - Position 2	
N,P	Switch #2 - Position 1 (-142 ONLY)	-142 ONLY
T,U	Switch #2 - Position 2 (-142 ONLY)	-142 ONLY

TABLE 2.3   J1 Parallel I/O Pins

Pin	Direction	Functional Description
1	output	RF AMP1 status; normally closed (to pin 20); opens if a fault is detected from AMP1
20	output	RF AMP1 status; common for AMP1 fault indicators
2	output	RF AMP1 status; normally open (to pin 20); closes if a fault is detected from AMP1
21	output	RF AMP2 status; normally closed (to pin 3); opens if a fault is detected from AMP2
3	output	RF AMP2 status; common for AMP2 fault indicators
22	output	RF AMP2 status; normally open (to pin 3); closes if a fault is detected from AMP2
25	output	AUTO indication; closed (to pin 6) when in AUTO mode
6	output	AUTO/MANUAL mode indication; common for AUTO/MANUAL indication
24	output	MANUAL indication; closed (to pin 6) when in MANUAL mode
7	output	REMOTE mode indication; normally closed (to pin 26); open when in REMOTE mode
26	output	REMOTE mode indication; common for REMOTE indication
8	output	REMOTE mode indication; normally open (to pin 26); closed when in REMOTE mode
27	output	SW1 - POSITION 1 indication; closed (to pin 9) when SW1 is in POSITION 1
9	output	SW1 - POSITION indication; common
28	output	SW1 - POSITION 2 indication; closed (to pin 9) when SW1 is in POSITION 2
31	output	PS1 ALARM; normally closed (to pin 12); open when a Power Supply 1 fault occurs
12	output	PS1 ALARM; common
30	output	PS1 ALARM; normally open (to pin 12); closed when a Power Supply 1 fault occurs
14	output	PS2 ALARM; normally closed (to pin 32); open when a Power Supply 2 fault occurs
32	output	PS2 ALARM; common
13	output	PS2 ALARM; normally open (to pin 32); closed when a Power Supply 2 fault occurs
16	input	AUXILIARY; Ground to activate
18	input	AUTO/MANUAL SELECT; Ground to activate MANUAL mode
36	input	AMP2 STANDBY; Ground to activate
37	input	AMP1 STANDBY; Ground to activate
19	output	GROUND

2.3 Front Panel Controls and Indicators

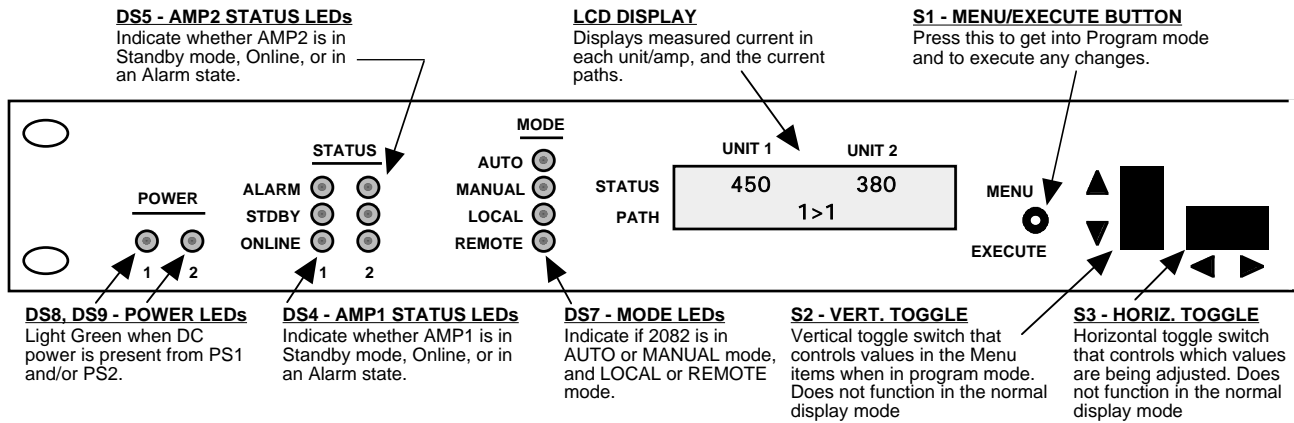Figure 2.2 shows the front panel controls and indicators.

DS5 - AMP2 STATUS LEDs
Indicate whether AMP2 is in Standby mode, Online, or in an Alarm state.

LCD DISPLAY
Displays measured current in each unit/amp, and the current paths.

S1 - MENU/EXECUTE BUTTON
Press this to get into Program mode and to execute any changes.

DS8, DS9 - POWER LEDs
Light Green when DC power is present from PS1 and/or PS2.

DS4 - AMP1 STATUS LEDs
Indicate whether AMP1 is in Standby mode, Online, or in an Alarm state.

DS7 - MODE LEDs
Indicate if 2082 is in AUTO or MANUAL mode, and LOCAL or REMOTE mode.

S2 - VERT. TOGGLE
Vertical toggle switch that controls values in the Menu items when in program mode. Does not function in the normal display mode

S3 - HORIZ. TOGGLE
Horizontal toggle switch that controls which values are being adjusted. Does not function in the normal display mode

FIGURE 2.2   2082-14x-47 Front Panel Controls and Indicators

TABLE 2.4 LED Indicators	
LED	**Function**
POWER1	Illuminates GREEN when power supply 1 is on
POWER2	Illuminates GREEN when power supply 2 is on
STATUS1, ALARM	Illuminates RED when a fault is detected from AMP1 monitor
STATUS1, ONLINE	Illuminates GREEN when AMP1 is online
STATUS2, ALARM	Illuminates RED when a fault is detected from AMP2 monitor
STATUS2, STDBY	Illuminates YELLOW when AMP2 is not backing up AMP1
STATUS2, ONLINE	Illuminates GREEN when AMP2 is online
AUTO	Illuminates GREEN when controller is in auto mode
MANUAL	Illuminates YELLOW when controller is in manual mode
LOCAL	Illuminates GREEN when unit is in local mode
REMOTE	Illuminates YELLOW when unit is in remote mode

2.4 Installation / Operation

2.4.1 Installing and Operating the 2082-14x-47

1. Connect external Amplifier Plate Assembly to 2082 via MS connector, J4.(Figure 2.1).
2. Connect two 100-240 ±10% VAC, 47 - 63 Hz power cords to AC1 and AC2 on the back panel (Figure 2.1).
3. Be sure DS8 & DS9 (green, DC Power) are on and red Alarm indicators are off (Figure 2.2).
4. Check that DS1 and DS2 are lit. If not, then either a fuse is missing or blown in F1 or F2, respectively (Figure 2.1).
5. Set the current windows for AMP1 and AMP2 (See Section 2.5 Menu Settings).
6. AC Fuses **-** The fuses are 5 mm X 20 mm, 2 amp slow blow (Type T) and are inserted in the far slot in the drawer below the AC inputs as shown in Figure 2.3. There is a spare fuse in the near slot.
7. If a fuse continues to open, the corresponding power supply is most likely defective.
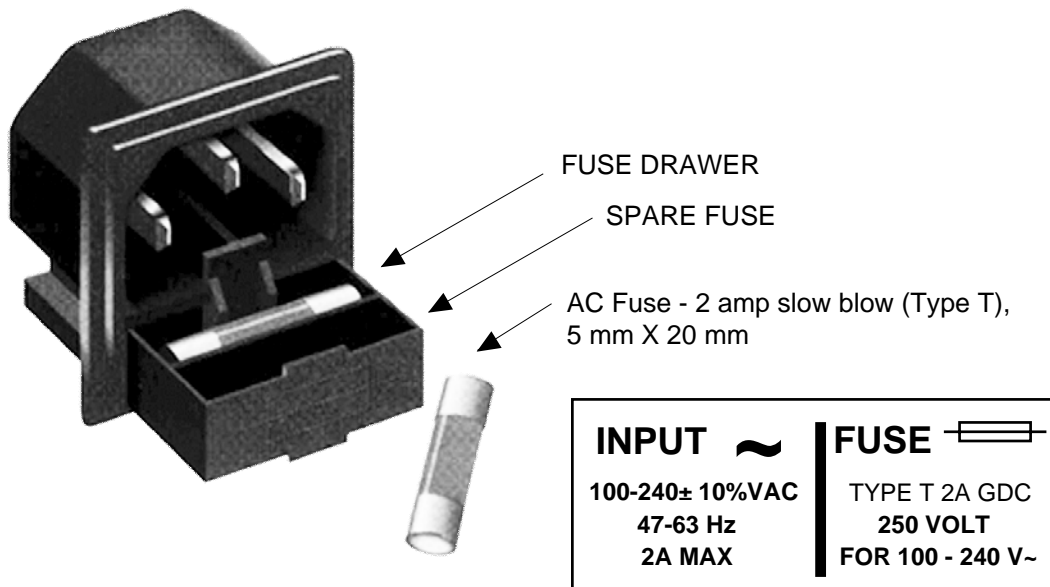
FUSE DRAWER

SPARE FUSE

AC Fuse - 2 amp slow blow (Type T),
5 mm X 20 mm

INPUT ∿	FUSE ▭
100-240± 10%VAC	TYPE T 2A GDC
47-63 Hz	250 VOLT
2A MAX	FOR 100 - 240 V∿

FIGURE 2.3   Fuse Location and Spare Fuse

2.5 Menu Settings

2.5.1 Functions

This section describes operation of the front panel controls. There are three operator switches, the LCD display and alarm indicator LEDs. All functions for the equipment are controlled by these components. The functions are (see Figure 2.4):

Power Up
Normal Display

Menu 1 Select AUTO/MANUAL mode
NOTE: If MANUAL mode, then **-->** Menu 1a Manually set switch positions.
Menu 2 Select LOCAL/REMOTE mode
Menu 3 Set AMP1 Window? Y/N
If Y then **-->** **Menu 3a**   Indication of Nominal value and Actual Measured value of AMP1 current
Menu 3b Set Nominal current to Actual Measured value of AMP1 current? Y/N
IF N then **-->** **Menu 3b.1** Manually Set AMP1 Nominal Current
Menu 3c   Set AMP1 Window
Menu 4   Set AMP2 Window? Y/N
If Y then **-->** **Menu 4a** Indication of Nominal value and Actual Measured value of AMP2 current
Menu 4b Set Nominal current to Actual Measured value of AMP2 current? Y/N
IF N then **-->** **Menu 4b.1** Manually Set AMP2 Nominal Current
Menu 4c Set AMP2 Window
Menu 5 Set Remote Interface
Menu 6 Set RS485 Remote Address

Save Menu When "R" is selected or when get to the end

Alarm indications appear on the LEDs (see Figure 2.2).

All program changes must start with the operation of the Menu/Execute switch and must also end with the operation of the Menu/Execute switch verified by the "Save Settings?" Menu. If this sequence is not followed, none of the changes will take effect.   If programming is initiated and no operator action takes place for approximately 12 seconds (before the final press of the Menu/Execute switch) the display will revert to its previous status and you will need to start over.

2.5.2 Control Switches

1. <u>Menu/Execute</u> - Any change to the programming of the unit must be initiated by pressing the Menu/Execute switch and completed by pressing the Menu/Execute switch.
2. <u>Horizontal Switch</u> - This switch is mounted so its movement is horizontal and moves the cursor left or right.
3. <u>Vertical Switch</u> - This switch is mounted so its movement is vertical, and changes settings in each menu.

2.5.3 Power On Settings and LCD Menu

NOTE: The last status of a unit is retained even when power is removed. When power is restored, the unit will return to it's previous settings.

When power is first applied, the LCD goes black to show all segments are functioning. The current firmware version will then be displayed for approximately 2 seconds.

Power Up

```
REV 1.00
```

Normal Display

	UNIT 1	UNIT 2
STATUS	450	390
PATH	1>1	

The unit is now operational and ready for any changes the operator may desire. The top line displays the current drawn by each unit. The bottom line describes the signal path and switch position. The example above depicts a 1 for 1 unit where RF input 1 is routed through AMP1 (1>1).

Menu 1

```
AUTO/MAN=AUTO        R
```

Toggle between AUTO and MANUAL mode with the UP/DOWN switch. Push the PROGRAM/EXECUTE switch to go to the next menu.   Use the LEFT/RIGHT switch to move the cursor to R, then push the PROGRAM/EXECUTE switch to jump to the SAVE SETTINGS menu.

Menu 1.a

```
Manually set      R
POS= 1>1
```

Toggle between switch positions with the UP/DOWN switch. Push the PROGRAM/EXECUTE switch to go to the next menu. Use the LEFT/RIGHT switch to move the cursor to R, then push the PROGRAM/EXECUTE switch to jump to the SAVE SETTING menu.

Menu 2

```
LOCAL/REMOTE=      R
LOCAL
```

Toggle between LOCAL and REMOTE mode with the UP/DOWN switch. Push the PROGRAM/EXECUTE switch to go to the next menu. Use the LEFT/RIGHT switch to move the cursor to R, then push the PROGRAM/EXECUTE switch to jump to the SAVE SETTINGS menu.

Menu 3

```
SET AMP1    Y/N      R
WINDOW
```

If "Y" is selected then the next sequence of menus prompt the user to either automatically or manually set the high and low current values that will trip AMP1 alarm. Push the PROGRAM/EXECUTE switch to go to the next menu. Use the LEFT/RIGHT switch to move the cursor to R, then push the PROGRAM/EXECUTE switch to jump to the SAVE SETTINGS menu.

Menu 3a

```
AMP1 NOM=.XXX      R
AMP1 ACT=.XXX
```

This menu is simply an indication of the present value of the nominal AMP1 current, as well as the actual measured value of AMP1 current. Press PROGRAM/EXECUTE to proceed.

Menu 3b

```
Set to actual      R
AMP1=.XXX A   Y/N
```

Select "Y" to accept the presently measured value of AMP1 current as the nominal value. Select "N" to manually enter a nominal value of AMP1 current. The nominal current value is used as a reference from which the high and low current thresholds are derived. Push the PROGRAM/EXECUTE switch to go to the next menu.

Menu 3b.1

```
Manually set        R
AMP1 NOM=.XXX A
```

This menu is entered only if "N" is selected from menu 7a. This allows the user to manually enter a nominal value for AMP1 current. Push the PROGRAM/EXECUTE switch to go to the next menu.

Menu 3c

```
AMP1 WINDOW=10%     R
```

Use the up and down switches to set the allowable operating range of AMP1 current. This percentage is the amount of positive or negative deviation from the nominal value before AMP1 alarm is tripped. Push the PROGRAM/EXECUTE switch to go to the next menu.

Menu 4

```
SET AMP2    Y/N     R
WINDOW
```

If "Y" is selected then the next sequence of menus prompt the user to either automatically or manually set the high and low current values that will trip AMP2 alarm. Push the PROGRAM/EXECUTE switch to go to the next menu. Use the LEFT/RIGHT switch to move the cursor to R, then push the PROGRAM/EXECUTE switch to jump to the SAVE SETTINGS menu.

Menu 4a

```
AMP2 NOM=.XXX       R
AMP2 ACT=.XXX
```

This menu is simply an indication of the present value of the nominal AMP2 current, as well as the actual measured value of AMP2 current. Press PROGRAM/EXECUTE to proceed.

Menu 4b

```
Set to actual       R
AMP2=.XXX A   Y/N
```

Select "Y" to accept the presently measured value of AMP2 current as the nominal value. Select "N" to manually enter a nominal value of AMP2 current. The nominal current value is used as a reference from which the high and low current thresholds are derived. Push the PROGRAM/EXECUTE switch to go to the next menu.

Menu 4b.1

```
Manually set         R
AMP2 NOM=.XXX A
```

This menu is entered only if "N" is selected from menu 8a. This allows the user to manually enter a nominal value for AMP2 current. Push the PROGRAM/EXECUTE switch to go to the next menu.

Menu 4c

```
AMP2 WINDOW=10%      R
```

Use the up and down switches to set the allowable operating range of AMP2 current. This percentage is the amount of positive or negative deviation from the nominal value before AMP2 alarm is tripped. Push the PROGRAM/EXECUTE switch to go to the next menu.

Menu 5

```
REMOTE    RS232      R
INTERFACE
```

Use the up and down switches to scroll to the desired interface (RS232, RS422, RS485). Use the LEFT/RIGHT switch to move the cursor to R, then push PROGRAM/EXECUTE switch to jump to the SAVE SETTINGS menu.

Menu 6

```
ADDRESS=00          R
```

Use the up and down switches to set the RS485 address of the unit. This address is only applicable when RS485 is the selected remote interface. The address is used if multiple units are connected in a multidrop configuration. Use the LEFT/RIGHT switch to move the cursor to R, then push PROGRAM/EXECUTE switch to jump to the SAVE SETTINGS menu.

Save Menu

```
SAVE SETTINGS    Y/N
```

Select "Y" to save any changes made in the previous menus. Select "N" to revert back to the previous settings.

2.5.4 Alarm Indications

An alarm condition will occur if AMP1, AMP2, or AMP3 draw current that falls outside of their respective current windows (when connected properly).

Power Up	ON POWER UP REV 1.00		

	NORMAL DISPLAY			
	UNIT 1	UNIT 2	UNIT 3	
Normal Display	STATUS	450	470	380	
	PATH	1>1			PUSH BUTTON

Menu 1 Select AUTO or MANUAL mode

```
AUTO/MAN=AUTO        R
```
SCROLL <>
SCROLL ⌃⌄   PUSH BUTTON

Menu 1a Manually set POS = 1 > 1

```
Manually set        R
POS = 1>1
```
SCROLL <>
SCROLL ⌃⌄   PUSH BUTTON

Menu 2 Set Unit to REMOTE or LOCAL Operation

```
LOCAL/REMOTE=        R
LOCAL
```
SCROLL <>
SCROLL ⌃⌄   PUSH BUTTON

Menu 3,4 Set AMPX Operational Current Window?

```
SET AMPX   Y/N       R
WINDOW
```
SCROLL <>   PUSH BUTTON

Menu 3a,4a Indication of the current nominal and actual measured current of AMPX

```
AMPX NOM=.243        R
AMPX ACT=.255
```
SCROLL <>   PUSH BUTTON

Menu 3b,4b Set Nominal current value to currently measured value?

```
Set to actual       R
AMPX=.255 A   Y/N
```
SCROLL <>   PUSH BUTTON

Menu 3b.1,4b.1 If N in previous menu, set Nominal value for AMPX current

```
Manually set        R
AMPX NOM=.243 A
```
SCROLL <>
SCROLL ⌃⌄   PUSH BUTTON

Menu 3c,4c Set Allowable Operating Range of AMPX current

```
AMPX                 R
WINDOW=10%
```
SCROLL <>
SCROLL ⌃⌄   PUSH BUTTON

Menu 5 Set Remote Mode

```
REMOTE   RS232       R
INTERFACE
```
SCROLL <>
SCROLL ⌃⌄   PUSH BUTTON

Menu 6 Set RS-485 Address

```
ADDRESS=00           R
```
SCROLL <>
SCROLL ⌃⌄   PUSH BUTTON

Menu 7 Change Network Settings?

```
CHANGE NETWORK      NO
SETTINGS?
```
SCROLL <>
SCROLL ⌃⌄   PUSH BUTTON

Menu 7a. Set IP Address

```
IP ADDRESS           R
192.168.123.002
```
SCROLL <>
SCROLL ⌃⌄   PUSH BUTTON

Menu 7b. Set Subnet Mask

```
SUBNET MASK =
255.255.255.000      C
```
SCROLL <>
SCROLL ⌃⌄   PUSH BUTTON

Menu 7c. Set Gateway Address

```
GATEWAY =
000.000.000.000      R
```
SCROLL <>
SCROLL ⌃⌄   PUSH BUTTON

Menu 7d. Restore Factory Network Settings?

```
RESTORE FACTORY
SETTINGS?            R
```
SCROLL <>
SCROLL ⌃⌄   PUSH BUTTON

Save? When "R" is selected or at the end of the menu options

```
SAVE SETTINGS      Y/N
```
SCROLL <>   PUSH BUTTON

FIGURE 2.4   Menu Display and Sequences

3.0 ETHERNET Interface Installation and Operation

The 2082-14x-47 Block Downconverter is equipped with a 10/100 Base-T compatible Ethernet interface for control and monitoring of its operating parameters. An HTML script interface allows the user to monitor and control the converter using a standard web browser. SNMP (Simple Network Management Protocol) is also supported. Contact Cross Technologies for the SNMP MIB file.

3.1 Methods of Connection

Directly Connected to a PC:
For control from a local PC, attach the 2082-14x-47's Ethernet port to the Ethernet network connector on the PC using a crossover RJ-45 cable.

LAN Connection
For LAN connections, attach the 2082-14x-47 Ethernet port to the LAN using a normal RJ-45 cable.
Use any PC on the LAN to connect to the 2082-14x-47.

3.2 Ethernet Configuration

Each 2082-14x-47 must be configured with an appropriate IP address, Netmask, and Gateway assigned by your network manager. The 2082-14x-47 is set at the factory with the following network settings:

Factory Network Settings
IP Address: **192.168.123.2**
Subnet Mask   **255.255.255.000**
Gateway   **000.000.000.000**

The network settings may be changed via the front panel or from the web browser interface.

3.3 Web page M&C

Enter the following address in a web browser to access the M&C web page:

http://<ip address of 2082-14x-47>/serial/0/setup.htm where <ip address> is the IP address of the unit.

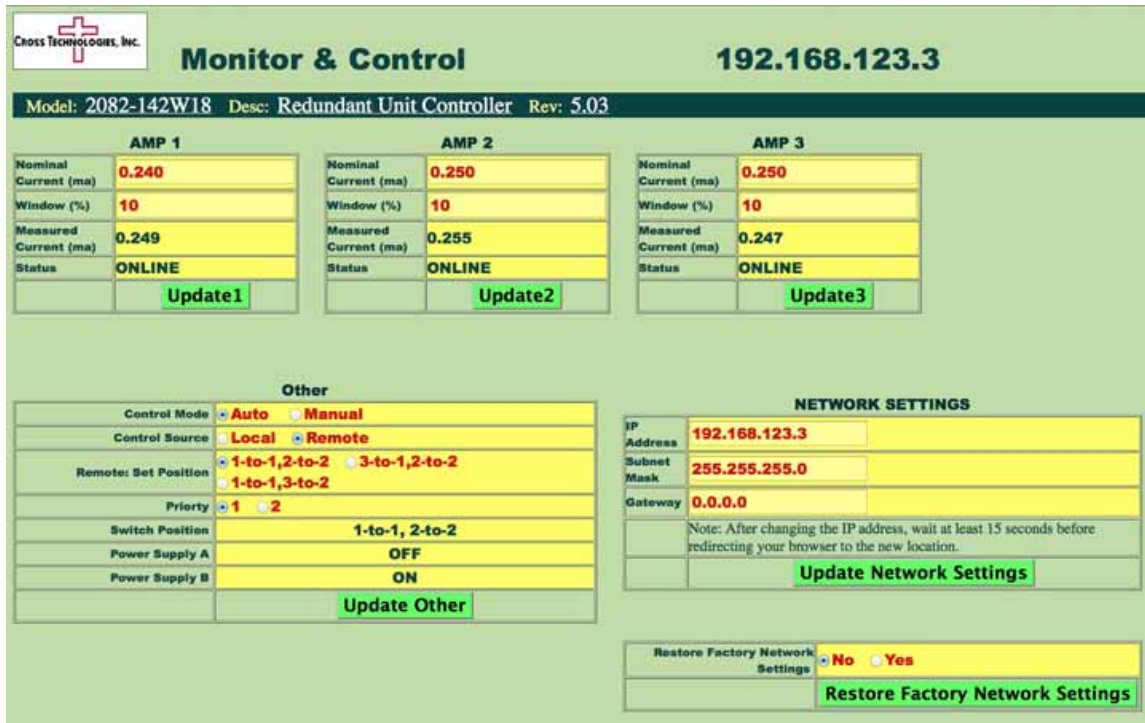Figure 2-C (page 11) shows the web page from a model 2082-14x-47 frequency converter.

Figure 2-C - Model 2082-14x-47 Web page

3.4 SNMP Configuration

Setting of SNMP parameters such as Community Write and Community Read strings requires a *Telnet*® connection to port 9999. The following instructions explain how to establish such a *Telnet*® connection using Windows XP's Hyper Terminal utility.

Start the Hyper Terminal application and select "New Connection" from the "File" drop down menu. The next screen is a "Connect To" dialog box. Select TCP/IP (Winsock) from the "Connect" using drop down menu.

Enter the IP address of the 2082-14x-47 in the "Host address:" field and 9999 in the "Port number" field.

Figure 2-E shows an example of the Hyper Terminal settings required to access the SNMP configuration menu.

Figure 2-E: - Telnet® Settings in Hyper Terminal

Once the *Telnet*® connection is established you will be prompted to "Press Enter for Setup Mode." Press enter and a menu of device server configuration options will appear (see Figure 2-F). Select menu item 3, "SNMP configuration." You will be prompted to enter SNMP community read and write strings. After setting your desired community strings you will be prompted to "Enter IP addresses for SNMP traps" You must enter at least one and up to four IP addresses of SNMP managers that will access the unit. This is required even though SNMP traps are not implemented. The unit will not process SNMP SET and GET requests from an SNMP manager unless the IP address associated with that manager is entered in the device server.

Figure 2-F - Device Server Configuration Menu

CROSS TECHNOLOGIES, INC.

6170 Shiloh Road

Alpharetta, Georgia 30005

(770) 886-8005

FAX (770) 886-7964

Toll Free 888-900-5588

WEB www.crosstechnologies.com

E-MAIL info@crosstechnologies.com

Printed in USA