HOST UNIT 1   HOST UNIT 2   HOST UNIT 3

NET IN   NET OUT   NET IN   NET OUT   NET IN   NET OUT   16900-B

CONTROLLER AREA NETWORK
INTERFACE CABLES

TO NEXT HOST UNIT
(NOTE: LAST HOST HAS NO
CONNECTION AT NET OUT)

Figure 3-12. Configuring CAN Connections with Multiple Host Units

9   SERVICE INTERFACE CONNECTION

The service interface connection between the HU and the DEMS computer is supported by a single DB-9 female connector. The service connector provides an RS-232 DTE interface. A three meter long straight-through RS-232 interface cable is provided with the HU for connecting the DEMS computer to the HU. Use the following procedure to install the service interface cable:

1. Connect one end of the service interface cable (provided with HU) to the SERVICE port as shown in Figure 3-13.

2. Route the service interface cable to the DEMS computer and connect the free end of the cable to the computer's RS-232 DCE port. Refer to the user manual provided with the computer to locate the required port.
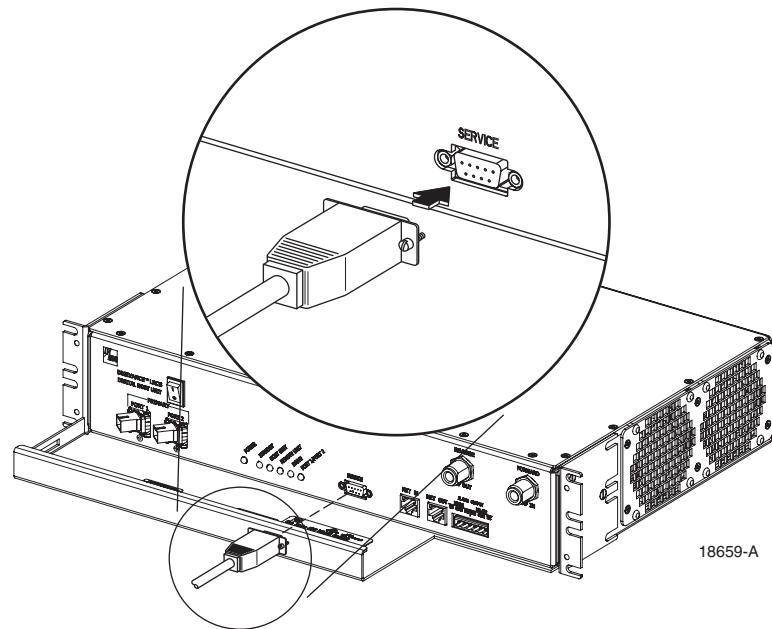
SERVICE

18659-A

Figure 3-13. Service Interface Connection

10 EXTERNAL ALARM SYSTEM CONNECTIONS

The alarm interface between the HU and an external alarm system is supported by a six-terminal plug (with screw-type terminals) that connects to a receptacle mounted on the HU front panel. The terminal plug provides connections to normally open (NO) and normally closed (NC) dry type alarm contacts for both major and minor alarms. A category 3 or 5 cable is typically used to connect the HU to the external alarm system. Use the following procedure to install the alarm wiring and connect it to the HU:

1. Obtain the required length of category 3 or 5 cable.

2. Route the cable between the HU and the external alarm system (if not already routed) and then cut to the required length. Allow sufficient slack for dressing and organizing the cable at the HU.

3. Strip back the outer cable sheath and insulation to expose the wires at both ends of the cable and strip back 0.2 inches (5 mm) of insulation from each wire.

4. Connect the Major alarm wire pair to the MAJOR COM/NC or MAJOR COM/NO terminals (whichever is required by the external alarm system) on the HU alarm terminal connector (supplied with HU) as shown in Figure 3-14.
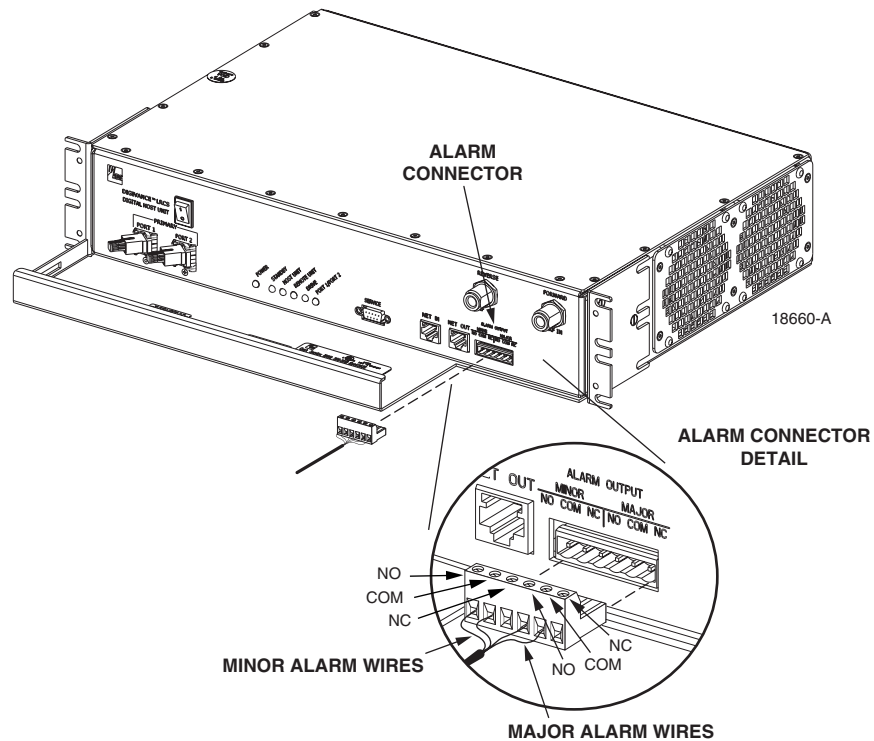

Figure 3-14. External Alarm System Connections

5. Connect the Minor alarm wire pair to the MINOR COM/NC or MINOR COM/NO terminals (whichever is required by the external alarm system) on the HU alarm terminal connector (see Figure 3-14).

6. Connect the Major and Minor alarm wire pairs to the appropriate terminals on the external alarm system.

7. Dress and secure cable per standard industry practice.

11 DC POWER CONNECTIONS

The HU is powered by ± 24 or ± 48 Vdc power. The power is fed to the HU through a screw-down type terminal strip located on the rear side of the unit. Power to the HU must be supplied through a fuse panel such as the 20 position PowerWorx fuse panel (available separately) and the power must be protected with a 3 Amp GMT fuse. Use the following procedure to install the power wiring:

1. Obtain one pair of #18 AWG (1.00 mm) red and black insulated copper wire for use as the power wiring.

2. Terminate one end of each wire with a fork terminal as shown in Figure 3-15.

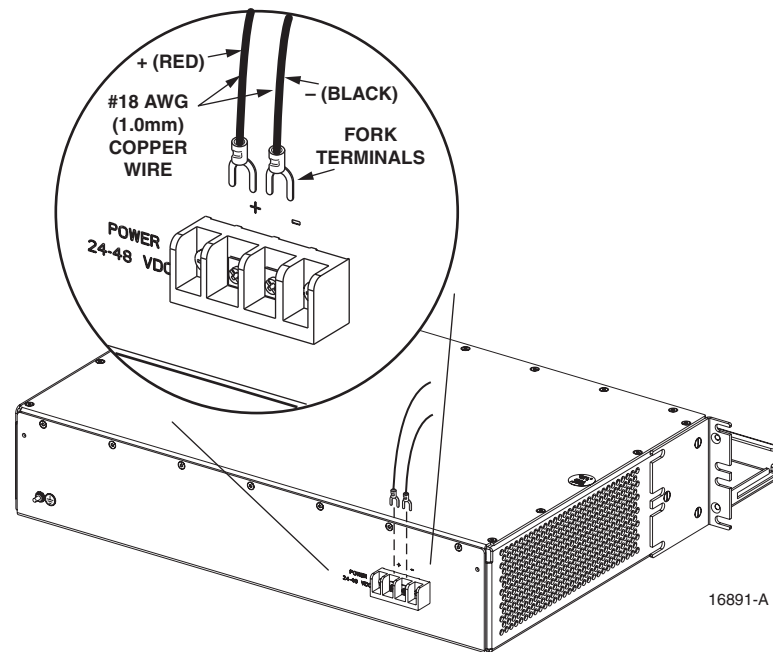3. Connect the power wires to the power terminal strip at the rear of the HU.

Figure 3-15. DC Power Connections

4. Route the free ends of the wires to the fuse panel and locate the terminals that will be used for the power feed. Refer to the user manual provided with the fuse panel for specific information.

5. Remove the fuse from the circuit that will power the HU.

6. Connect the power wires to the appropriate terminals as specified in the fuse panel user manual.

7. Dress and secure the power wiring at the fuse panel and the HU. The procedure for checking the voltage level and verifying that the HU is ready to power up is provided in SECTION 4: OPERATION.

Blank

SECTION 4: OPERATION

_____

1   BEFORE STARTING OPERATION

This section provides guidelines for turning-up the Digivance system, verifying that all units are operating properly, testing to ensure that all performance requirements are satisfied, and correcting any installation problems. This process assumes that the various units have been installed in accordance with the system design plan.

1.1   Tools and Materials

The following tools and materials are required in order to complete the procedures in this section:

- Portable spectrum analyzer or RF power meter
- AC/DC voltmeter
- External attenuators (if specified in system design plan)
- PC-type computer with Digivance Element Management System (DEMS) software installed
- Straight-through RS-232 DB-9 interface cable (ADC part # 1192835)
- Handset
- Pencil or pen
- Writing pad

1.2   Readiness Check

Before starting the turn-up process, inspect the complete Digivance system to verify that all components of the system are ready to be powered-up. This will ensure that no units of the system will be damaged during turn-up and that all existing systems will continue to function properly.

1.2.1   Host Unit Installation Checks

Complete the following checks at the HU prior to starting the turn-up process:

1. Verify that the ON/OFF switch on the HU is in the **OFF** position (press **0**).

2. At the fuse panel, install a 3 Amp GMT fuse in the circuit that supplies DC power to the HU.

3. Using a DC voltmeter, verify that the DC voltage level at the HU power terminals is between ± 24 or ± 48 Vdc (can be either polarity).

4. Verify that all electrical and optical connections have been completed and that all optical fibers, coaxial cables, and wires are properly routed and secured.

1.2.2   Remote Unit Installation Checks

Complete the following checks at the RU prior to starting the turn-up process:

1. Verify that the ON/OFF switch on the STM is in the **OFF** position (press **0**).

2. Verify that the MUTE/NORM/RESET switch on the LPA in the **MUTE** position.

3. At the AC breaker box, close the circuit breaker for the circuit that supplies AC power to the RU.

4. Using an AC voltmeter, verify that the AC voltage level at the AC outlet is between 110 and 120 Vac (for 120 Vac powered systems) or between 220 and 240 Vac (for 240 Vac powered systems).

5. Verify that all electrical and optical connections have been completed and that all optical fibers, coaxial cables, and wires are properly routed and secured.

2   TURN-UP SYSTEM AND VERIFY OPERATION

The process of turning-up the system and verifying operation involves powering up the various system components, verifying that the LED indicators show normal operation, setting the site number and name, adjusting the RF signal levels, and adjusting the path delay.

2.1   Turn-Up Procedure

Use the following procedure to turn-up the system:

1. Temporarily disconnect the external alarm system or notify the alarm system provider that testing is in progress.

2. If turning-up multiple HU and RU systems that have not been configured for operation before, temporarily disconnect the CAN cables from the NET IN and NET OUT ports of each HU.

▶ **Note:** By default, all HU's and RU's are programmed with the same site number and name. This can cause problems for DEMS if multiple HU's with the same site number and site name are networked together through the CAN interface. It is therefore advisable to temporarily disconnect the CAN interface cables from the HU until a unique site number and name can be entered for each HU and its corresponding RU.

3. Determine if the forward path composite input signal level at the Host Unit FORWARD RF IN port is appropriate for the required RF output signal level and adjust by installing an **external attenuator** if necessary. Refer to Section 2.3 for the calculation and adjustment procedure.

4. Connect the DEMS computer (if not already connected) to the SERVICE connector on the HU or STM front panel. If necessary, a separate laptop computer loaded with the DEMS software can be temporarily connected and used to initially configure the system.

5. Place the ON/OFF switch on the HU in the **ON** position (press **I**).

6. Make sure the switch on the LPA is in the **MUTE** position and then place the ON/OFF switch on the STM in the **ON** position (press **I**).

7. Wait 6 to 8 seconds for the HU and the RU modules to initialize and then observe the LED indicators on the HU, STM and LPA. Refer to Section 5 for the troubleshooting procedures if the indicators do not respond as specified.

HOST UNIT	SPECTRUM TRANSPORT MODULE	LINEAR POWER AMPLIFIER
POWER – Green	AC POWER – Green	STATUS – Steady green
STANDBY – Off	STANDBY – Off	
HOST UNIT – Green	HOST UNIT – Green	
REMOTE UNIT – Green	STM – Green	
DRIVE – Green, Yellow, or Red	PA – Green	
PORT 1/PORT 2 – Green	VSWR – Green	
	PORT 1/PORT 2 – Green	

8. Start up the DEMS software program. The DEMS main window will open as shown in Figure 4-1. Note: The DEMS software should be installed on a PC-type computer and the PC's COM port should be configured to interface with the HU. For information about installing the DEMS software and configuring the PC's COM port, refer to the Digivance Element Management System Software User Manual (ADCP-75-125).
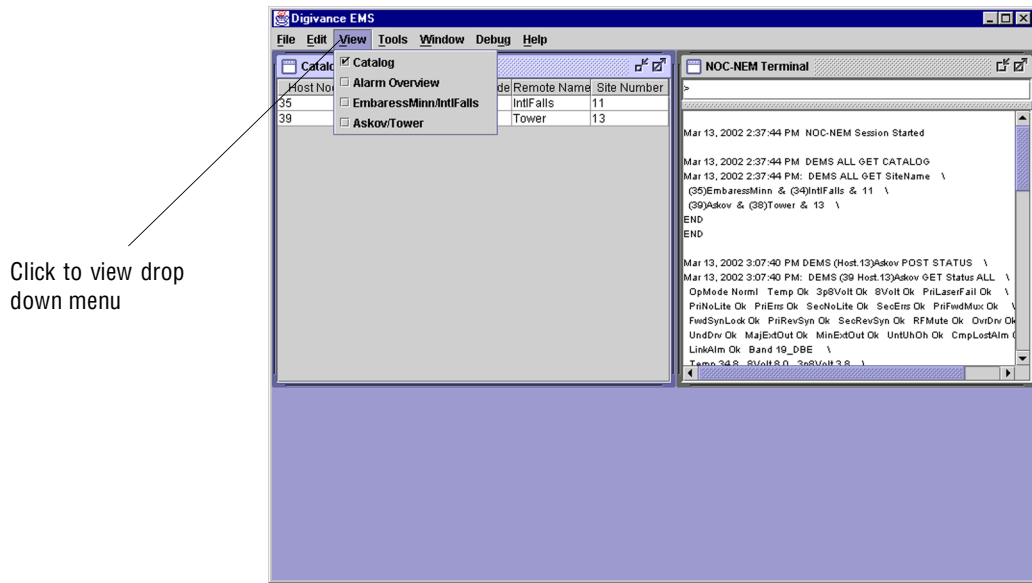
Click to view drop down menu

Figure 4-1. Digivance Element Management System Main Window

9. Open the **View** drop down menu and connect to the Host and Remote pair by selecting "NotNamed/NotNamed". The HOST **Alarms** display and the REMOTE **Alarms** display will open within the main window as shown in Figure 4-2.

10. Verify that the Host and Remote Unit are loaded with the current system software and download the current software to both the Host and the Remote unit if necessary. Refer to Section 2.2 for details.
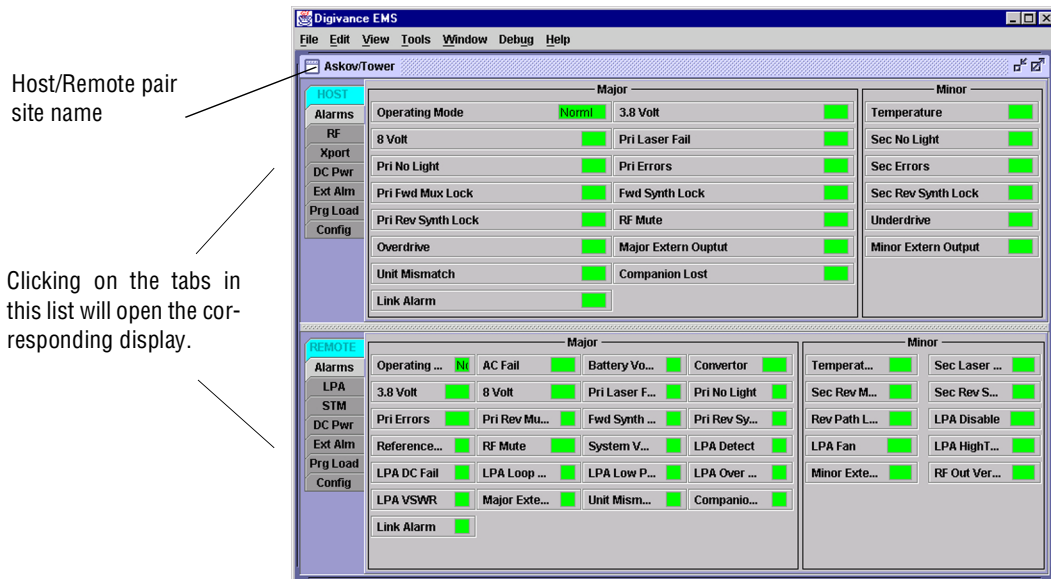

Host/Remote pair site name

Clicking on the tabs in this list will open the corresponding display.

Figure 4-2. Selecting Display Tabs

11. Click on the HOST **Config** tab and on the REMOTE **Config** tab (see Figure 4-2). The HOST **Config** display and the REMOTE **Config** display will open within the main window.

12. Enter the **Site Name** and **Site Number** for both the HOST and the REMOTE unit. Refer to Section 2.4 for details.

13. If the site has multiple host units, reconnect the CAN cables to the HU's NET IN and NET OUT ports.

14. Verify that no Major (except Major Extern Alarm) or Minor alarms are being reported in either the HOST or REMOTE **Alarm** displays and that all alarm fields (except Major Extern Alarm) are green.

15. Click on the HOST **RF** tab (see Figure 4-2). The HOST **RF** display will open within the main window.

16. Enter the **Host Fwd Att** (Forward Attenuation) values. This sets the forward input RF signal level at the HU. Refer to Section 2.5 for details. By default, this value is set to 0 dB. If the DRIVE LED on the HU front panel was red, it should turn green when this step is completed.

17. Determine if the RF output power at the STM ANTENNA is at the correct level per channel up to a composite maximum of +40.5 dBm. Refer to Section 2.6 for details.

18. Place the MUTE/NORM/RESET switch (on LPA front panel) in the **NORM** position.

19. Verify that the STATUS indicator (on LPA front panel) turns from steady green to blinking green.

20. Click on the REMOTE **LPA** tab (see Figure 4-2). The REMOTE **PA** display will open within the main window.

21. Enter the **Remote Fwd Att** value. This adjusts the RF output signal level at the STM ANTENNA port. Refer to Section 2.7 for details. By default this value is set to 0 dB.

22. Click on the HOST **RF** tab (see Figure 4-2). The HOST **RF** display will open within the main window.

23. Enter the **Host Rev Att** (Reverse Attenuation). This sets the reverse output RF signal levels at the HU. Refer to Section 2.8 for details.

24. If a delay adjustment is required per the system design plan, enter the **Host Fwd Delay** and **Host Rev Delay** values. By default, the delay values are set to 0. Refer to Section 2.9 for details.

25. If a separate laptop computer loaded with the DEMS software was used to initially configure the system, disconnect the laptop computer from the SERVICE connector on the HU front panel.

➤ **Note:** Each HU and RU pair will generally remain permanently connected to a PC-type desktop computer loaded with the DEMS software. When two or more systems are connected together through the CAN interface, only one DEMS computer is required to manage the networked HU and RU systems. The DEMS computer may be connected to the SERVICE port on any one of the HUs in the network.

26. Reconnect the external alarm system or notify the alarm system provider that the turn-up process has been completed.