Setting Up the 289 LAN Controller Card with the 289H LSS and PressureMAP

This document explains how to set up the LAN Controller Card for communication between a System Studies 289H LSS^{TM} monitor and PressureMAP^{TM} server connected to a network. The 289H LAN Controller setup process requires the following:

- 289H LAN Controller Card (P/N 9010-0030), equipped with Firmware EPROM Rev. F02 (P/N 9030-0050) or higher

- Windows computer with a DB-9 serial connection and HyperTerminal

- Standard DB-9 straight-through serial cable (P/N 9800-6002)

- Cat. 5 Ethernet cable

- This setup guide

To configure the LAN Controller, you will need a computer running Windows 95 (or greater) with HyperTerminal. You will also need to obtain a local IP address, Port Number, Gateway address and Subnet address information for the 289H LAN Controller from your network administrator. For your reference during the procedures that follow, record the information in the spaces below. (In Appendix A is a worksheet for sharing information between the network administrator and the air pressure technician who is installing the 289H with LAN Controller card.)

The LAN Controller uses 10 Mbps Ethernet. The network hub or Ethernet adapter to which the LAN Controller is connected must be either a 10 Mbps unit or a 10/100 unit that can adapt to either 10 or 100 Mbps.

IP ADDRESS	‾‾‾‾‾ IP BYTE 1	‾‾‾‾‾ IP BYTE 2	‾‾‾‾‾ IP BYTE 3	‾‾‾‾‾ IP BYTE 4
PORT NUMBER	————			
GATEWAY	‾‾‾‾‾ SM BYTE 1	‾‾‾‾‾ SM BYTE 2	‾‾‾‾‾ SM BYTE 3	‾‾‾‾‾ SM BYTE 4
SUBNET	‾‾‾‾‾ GW BYTE 1	‾‾‾‾‾ GW BYTE 2	‾‾‾‾‾ GW BYTE 3	‾‾‾‾‾ GW BYTE 4

If you are converting an existing 289H monitor for network communication, you will need to replace the Controller Card with a LAN Controller Card.

Procedure

Replacing the Controller Card

1. Turn off the 289H LSS using the main power switch at the front of the Utility Card (see Figure 1, lower left corner). This card is typically located in the slot labeled AUX 1 or AUX 2.

Figure 1: Power Switch on Utility Card

2. Unplug the Modem RJ-11 Connector on the back of the Controller Card. This card is in the slot labeled CTLR.

   Note: Make sure that you are grounded before removing the circuit boards or any of the chips. If available, put on an anti-static wrist strap and clip the strap wire to a piece of metal grounded to the frame. If you do not have access to an anti-static strap, touch the grounded metal 289H LSS chassis before proceeding.

3. Push the card ejectors to the open position (straight out, away from card) and remove the Controller Card.

4. Slide the LAN Controller card into the first slot of the chassis (labeled **CTRL**), using the 289H's top and bottom guide rails. Make sure it is seated properly in the backplane. Close the card ejectors.

   Note: Do not power the 289H back on.

Network Hardware Connections

Make sure that the 289H LSS is powered off before connecting the network cable to the LAN. Connect the network cable from the local network hub to LAN module's RJ-45 (J2) jack on the LAN Controller Card.

Configuring the LAN Controller

These instructions describe the process for programming an IP address into the LAN Controller Card (P/N 9010-0030). The information for **Local IP Address**, **Port Number**, **Gateway Address**, and **Subnet Mask** should be obtained from your Network Administrator.

1. Make sure that the 289H LSS monitor is powered off. If the unit is on, turn off the power switch SW1 at the front of the Utility Card.

2. Identify the **S3** dipswitch set module that controls communication mode, located in the lower left corner of the LAN Controller Card (see Figure 2). Switch 1 is the upper switch (away from bottom edge of card), and Switch 2 is the lower switch (closer to bottom edge of card).
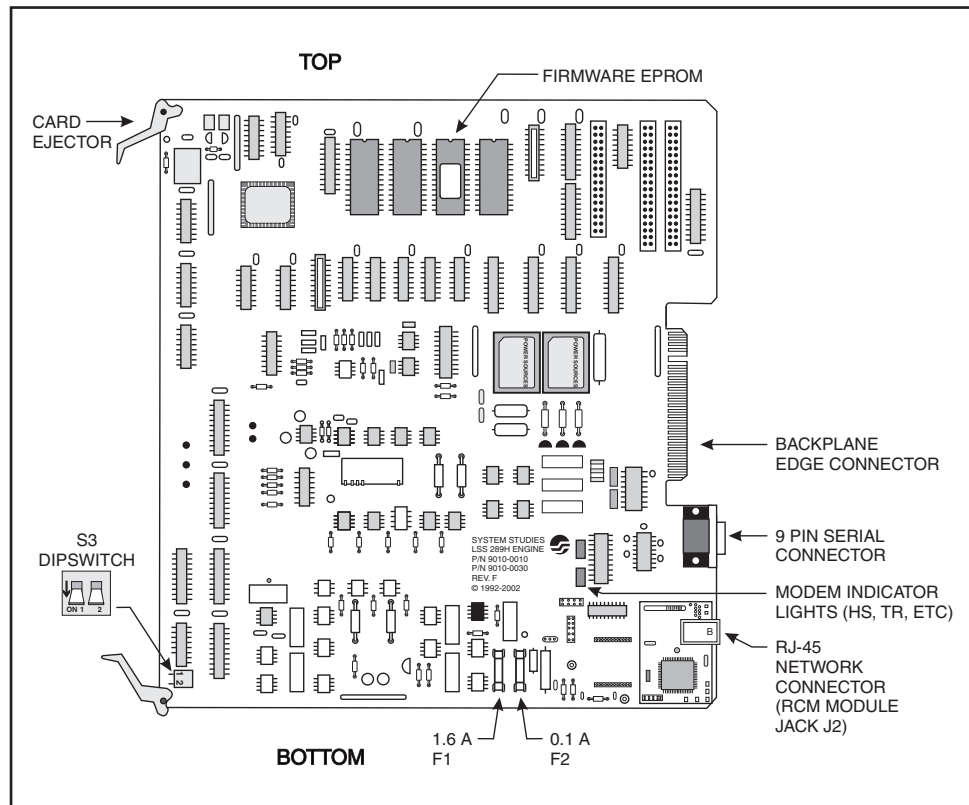
Figure 2: LAN Controller Card (P/N 9010-0030)

Set the two dipswitches to Configure Mode (Figure 3):

1 = up (OFF), away from card surface
2 = down (ON), toward card surface
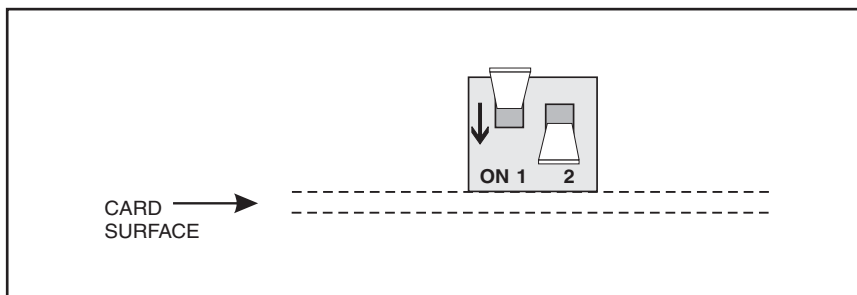
Figure 3: LAN Controller Dipswitch Settings for Configure Mode

3. Using the 9800-6002 serial cable, connect the DB-9 connector (**J8** at the back of the LAN Controller Card) to the DB-9 connector on the computer.

The HyperTerminal screens displayed may vary slightly from those described in the following steps, depending on the Windows version running on the workstation computer.

4. On the Windows workstation, click **Start**, **Programs**, **Accessories**, **HyperTerminal**. From the *HyperTerminal* window, double-click on the HYPERTERM.EXE icon. This will launch the HyperTerminal program.

5. In the *Connection Description* box, choose a name (such as "LAN_Controller") and an icon for the setup. Click **OK**. In the *Connect To* box that appears, click the "Connect using" drop-down menu, then select "Direct to Com1". Click **OK**.

6. In the *COM1 Properties* box, configure the Port Settings as follows:

    Bits per second: **9600 Baud**
    Data bits: **8**
    Parity: **None**
    Stop bits: **1**
    Flow Control: **None**

    Click **OK**.

! Important !   Before you perform Step 7 below, please note that there is only a 30 second window from the time you power up the 289H monitor to when you enter the *Setup* command.

7. Power on the 289H LSS using the power switch at the front of the Utility Card. On power-up, HyperTerminal will display the initial message prompt to enter the LAN Controller setup menus.

8. Type *SETUP* and hit *<Return>*.

    Note: Your typed input will not display at the prompt on the screen.

HyperTerminal will display a screen similar to the one below:

```
Your Typing Input will not echo to the screen.

For SETUP:

  Type SETUP and press <ENTER

=>

****************************************************************
*************** SSI NETMODEM 2.00 p/n 9010-0030 ***************
****************************************************************

INSTRUCTIONS: Type "MENU OPTION" NUMBER (0 - 4) then <ENTER>

MENU OPTIONS                          CURRENT SETTINGS
_____
_____

0 - To SAVE and EXIT SETUP
1 - Local IP Address                  10.3.0.31
2 - Port Number                       3001
3 - Gateway Address                   10.3.0.3
4 - Subnet Mask                       255.255.0.0
```

9. To enter the IP address, type *1* and press *<Return>*. If you enter an invalid command (such as 9), the screen will display an error message and re-prompt you to enter a command option.

    The program will then prompt you to enter the Local IP Address. Type the IP address and press *<Return>*. The program will return to the setup menu. The **CURRENT SETTINGS** column will reflect the new value that you just entered.

    Note: Using the side scrollbar allows you to review earlier information in your HyperTerminal session.

10. To enter the Port, type *2* and press *<Return>*. The program will then prompt you to enter the Port Number. Type *3001* and press *<Return>*. The program will return to the setup menu. The **CURRENT SETTINGS** column will reflect the new value that you just entered.

11. To enter the Gateway, type *3* and press *<Return>*. The program will then prompt you to enter the Gateway Address. Type the gateway address and press *<Return>*. The program will return to the setup menu. The **CURRENT SETTINGS** column will reflect the new value that you just entered.

12. To enter the Subnet, type *4* and press *<Return>*. The program will then prompt you to enter the Subnet Address. Type the subnet mask and press *<Return>*. The program will return to the setup menu. The **CURRENT SETTINGS** column will reflect the new value that you just entered.

13. After completing the entry of IP settings, you are ready to exit the setup program. Type *0* and press *<Return>*.

14. You will then see the following message:
    ```
    SAVE & EXIT selected! Are CURRENT SETTINGS correct?
    Press 'y' to SAVE & EXIT, OR 'n' to EXIT w/o saving, then
    <ENTER>
    ```

    If you do not save the changes you made, the LAN Controller will use the previously programmed settings. To save your changes and exit setup, type *Y* and *<Return>*. The screen will display the following message:

    ```
      SAVING SETTINGS.................SETTINGS SAVED!

    To use these new settings:
    1. Please wait.
    2. After 15 seconds turn off the 289H LSS System.
    3. Disconnect the serial cable from the 289H DB9 connector J8.
    4. Move Dip Switch #1 down on Switch S3.
    5. Verify that a network cable is attached to the RCM module
    RJ45 jack J2.

        Thank you for waiting
    ```

    If you do not wish to save your changes, type *N* and *<Return>*. The screen will display the following message:

    ```
    EXITING w/o Saving...  To Re-enter SETUP:
    Turn OFF the 289H LSS System, then back ON.
    Type SETUP and press <ENTER>.

    To use PREVIOUSLY SAVED settings:
    1. Please wait.
    2. After 15 seconds turn off the 289H LSS System.
    3. Disconnect the serial cable from the 289H DB9 connector J8.
    4. Move Dip Switch #1 down on Switch S3.
    5. Verify that a network cable is attached to the RCM module
    RJ45 jack J2.

        Thank you for waiting
    ```

    If you enter an invalid choice, the program will prompt you again to enter Y or N.

15. After exiting the setup program, power off the 289H monitor using the power switch SW1 at the front of the Utility Card. If you wish to re-enter the setup program, go back to step 7.

16. Disconnect the 9800-6002 serial cable from the DB-9 connector on the LAN Controller and the computer. Keep the serial cable for later use in checking or changing IP address settings.

17. Move the #1 switch on the S3 dipswitch set module to the down (ON) position. Also, the #2 switch should be down (Figure 4). This puts the LAN Controller in Server Mode for normal communication with the Pressure-MAP system.
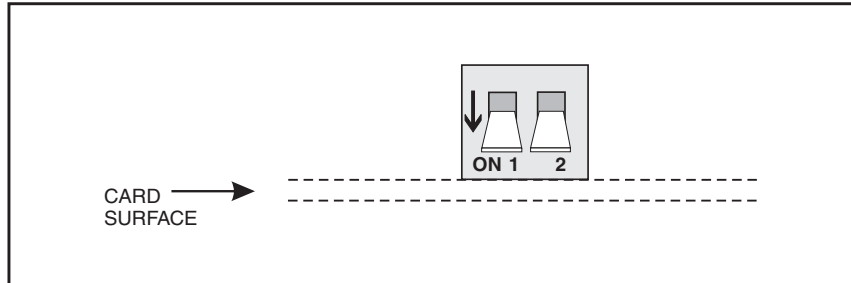

Figure 4: LAN Controller Dipswitch Settings for Server Mode

18. Power on the 289H using the power switch on the Utility Card. The setup is complete.

   Note: Use only ONE connector. Do **not** change the LAN connection while the 289H is powered on.

PressureMAP Data Entry Requirements

Whether this setup is part of an upgrade to a 289H LSS or a new install, the PressureMAP *Office Information* screen needs to be modified or created with the correct IP address information for this LAN Controller in the **Phone Number** data field. Both the **Baudrate** and **MAP Alert Baudrate** data fields should be set to *9600*, and if desired, the correct **MAP Alert #** information entered in order to enable the 289H to call PressureMAP with Alerts. (Please refer to the sample Office Information screen below.) For more detailed information regarding these settings, please refer to Section 2 of the MAP Data Entry manual.

When this data entry procedure is done, a PressureMAP host should be able to communicate with the 289H LSS. Communication can be verified by performing a Real-time Reading via CPAMS Diagnostics, described in Section 8 of the MAP System Operations manual.

```
    Info about <OFFICE NAME>:  Keypad Field Control, <Esc> finish screen,
            <Return> next field, <Backsp> delete char, <Ctrl B> previous field

    Enter Office Information
    -------------------------------------------------------------------------------

    File date:    05/17/02  (137)              Last edited:         05/15/02

    Office name:  289 BOONIES                  Monitor type:        289H LSS
    Phone number: IP=10.3.0.40:3001
    Office mode:  ENABLED
    Baudrate:     9600                         User Defined Devices: ON
    Password 1:   HELLOW                       Trunk/Toll Tolerance: 80 ohms
                                               MAP alert baudrate:   9600
    MAP alert #:  T192.168.0.1:3002:T          Alert sensitivity:    3


    Remarks:

    Pressure:       PSI        Flow:          SCFH       Distance:   S-K
    Aerial std:     2.0        Buried std:    3.0        Undgnd std: 5.0
    Delivery std:   7.5        Flow std:      1.25
    -------------------------------------------------------------------------------
                                                          PressureMAP XX.XX.XX
```

Figure 5: Sample Office Information Screen for LAN Controller Card Office

Troubleshooting

When attempting to connect from PressureMAP to a 289H office equipped with the LAN Controller Card, verify that the necessary communication data has been entered for the office as outlined in the preceding section. See the MAP System Data Entry manual for detailed instructions on configuring office data.

Once you have verified that the necessary communication data has been entered, check the following:

- Dip switches are set correctly. For the Server Mode (communications with PressureMAP), both switches must be in the down position (pointing to the surface of the card).

- Communication parameters are set correctly.

- Power the 289H off and back on, using the power switch on the Utility Card.

- Power is available (the Power On LED lights up on the Utility Card).

- Network cable from local network hub is connected to the LAN RCM Module's RJ-45 jack (J2) on the LAN Controller card.

The most common problems in running the configuration program pertain to using an incorrect serial cable or the Windows HyperTerminal program not operating correctly.

Checking the Hardware

Before testing any equipment settings, check that the RJ-45 network cable is connected correctly. Do not change the LAN network connection while the 289H monitor is powered on.

Verify that the network cable between the LAN Controller Card and the hub is in good condition.

Verifying Settings via HyperTerminal

Use the setup procedure described previously in "Configuring the LAN Controller" to check the LAN Controller's IP settings for incorrect values. Make corrections, if necessary. For example, if a LAN Controller Card has been moved from one office to another, the IP address information will need to be reconfigured for the new office.

Note: When examining the IP settings, you need to be on site with the 289H monitor so that you can set the LAN Controller Card dipswitches to the Configure Mode (Figure 3) before re-entering the desired information. You will also need to make the serial connection between the LAN Controller and a PC that has the HyperTerminal program (see Step 3 of the procedures for Configuring the LAN Controller). Once the IP settings have been verified and/or changed, remember to reset the LAN Controller Card dipswitches to the Server Mode (Figure 4).

When reconfiguring the IP settings, verify your network cable connection as described previously in "Network Hardware Connections."

If you have any questions regarding this procedure, please call System Studies Technical Support at (831) 475-5777 or (800) 247-8255. You may also e-mail your questions to *support@airtalk.com*.

Appendix A –
Network Information for LAN Controller Operation

The LAN Controller Card uses 10 Mbps Ethernet. The network hub or Ethernet adapter to which the LAN Controller is connected must be either a 10 Mbps unit or a 10/100 unit that can adapt to either 10 or 100 Mbps.

The LAN Controller normally works in "server" or listen mode. In server mode, a 289H with a LAN Controller Card receives calls from PressureMAP. When the 289H sends an alert to the PMAP system, the LAN Controller switches to "client" or call mode. During alerting, the PMAP system becomes the "server."

For the LAN Controller to work properly on a telephone company network, all network firewalls must be configured to allow PMAP calls to the 289H with the LAN Controller Card. For alerting to work properly, network firewalls must also be configured to allow the 289H with the LAN Controller Card to call the PMAP system.

To help the network administrator configure the network to allow two-way communications between the LAN Controller and PressureMAP, please fill out the following two-part worksheet and give it to the network administrator.

LAN Controller Information	
IP Address	
Port Number	3001
Gateway	
Subnet Mask	
Location of LAN Controller	
Information below provided by System Administrator	
Default route for LAN Controller	

PMAP Information	
IP Address	
Port Number	3002
Gateway	
Subnet Mask	
Location of PMAP Engine	
Information below provided by System Administrator	
Default route for PMAP Engine	