PressNet

Production Software

Toledo Transducers, Inc.

4-1

File   Reprog

Press: 4-1	Part#: 94BG 17D960AN				Line#: 4		Equip#: 010	Prog#: 00	
	Outer	LR	RR	LF	RF	Inner	LR	RR	LF	RF
Capacity	600	150	150	150	150	1000	250	250	250	250
High Set Point	334	82	87	83	83	438	108	120	111	120
Upper Count Limit	2000									
Current Tonnage	304	67	85	72	81	359	86	92	91	90
Cookbook Values	94	22	27	23	23	38	8	10	11	9
Lower Count Limit	0									
Low Set Point	0	0	0	0	0	0	0	0	0	0
Threshold	600									
Benchmark High %	30	30	30	30	30	30	30	30	30	30
Benchmark Low %	0	0	0	0	0	0	0	0	0	0
Preset Counter Hi	1	1	1	1	1	1	1	1	1	1
Preset Counter Lo	1	1	1	1	1	1	1	1	1	1
Highest Load	306	73	86	74	82	470	112	119	121	118
# High Alarms	0	0	0	0	0	1	1	2	1	3
Last High Alarm	168	40	47	41	42	433	103	110	110	109
Last Alarm	168	40	47	41	42	433	103	110	110	109
Last Low Alarm	0	0	0	0	0	0	0	0	0	0
# Low Alarms	0	0	0	0	0	0	0	0	0	0
Lowest Load	167	40	47	41	42	356	85	91	91	89

Batch Set: 0	DownTime: 00:00:00	Parts/Min: 6	Time Delay: 0.000
Parts to go: 0	State Code: 1 - RUNNING		Dec. Pl.: 0
Part Count: 944	Reason Code: 99 - AUTO RUN		Channels: 9
Probe: /AC OK		Mode: Peak	

Version _____   Serial # _____

USING PRESSNET 4.0

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Introduction to PressNet

PressNet 4.0 is a data gathering program written specifically for the N260 Series Production Monitor. PressNet provides a central location for the viewing and storage of both load and production information. Additionally, PressNet provides a convenient way to reprogram the N260 Monitors without leaving your office.

PressNet 4.0 is the first version of the program to operate under Microsoft's Windows 3.0 Graphical Environment. Since Windows is a multitasking environment the computer may be used for other tasks while PressNet runs in the background.

PressNet 4.0 also introduces a new ASC file format which is compatible with many spreadsheets and editors. Microsoft's Excel spreadsheet software is especially suited to work with these new PressNet files. Excel can load the files directly and then sort, format, summarize, and even graph the data. PressNet tracks and stores part counts, down times, load information, and much more. This information is stored with codes that allow compilation by part, press, down reason, operator codes and other parameters.

PressNet 4.0 was also written with Local Area Networks in mind. PressNet may be run on several computers at once, each of which has complete control just as if it were connected directly to the N260 Monitors.

Chapter 1 : Getting Started

Installing PressNet

Windows First

Your first task in installing PressNet is to install and execute Windows 3.0. Use the Setup program provided with the Windows disks to complete the installation and then run Windows. Configure the desk top to your preferences and install any additional programs.

If you will be running PressNet on a Local Area Network, install and run Windows on each computer that will be running PressNet. This will assure that you are not exceeding your network's limitations.

The PressNet Directories

The PressNet executable files and PressNet data may reside in the same or separate directories. It is recommended that at least one directory be set up specifically for PressNet. The directory for PressNet data is specified when PressNet is started. The command line used to start PressNet determines what directory the data will be stored in and is explained further in "Starting PressNet" later in this document.

Copy the Files

After creating the directory for PressNet you may copy the PressNet executable files directly into it. Use the DOS COPY command or Windows File Manager to copy ALL of the supplied PressNet files into the directory. All of the program files supplied on the PressNet disks must be placed together in a single directory.

Starting PressNet

The Command Line

Once the executable files are copied to your hard disk and Windows 3.0 has been started you are ready to run PressNet. The Windows environment must be operating before PressNet will start.

PressNet must be started with a command line that specifies two things. First, a path for the accumulated data and second, a file name for the PressNet configuration file. These two items are combined since the configuration file is always stored with the PressNet data. The following command is an example for starting PressNet.

C:\PRESSNET\PNCOMM.EXE C:\PRESSNET\DATA\COMPORT1.CFG

PNCOMM.EXE is the PressNet executable file and COMPORT1.CFG is the name of a configuration file. The above example starts PressNet from the \PRESSNET directory on the C: drive and directs PressNet to store its data in the sub directory \PRESSNET\DATA on the same drive. Additionally, it indicates that the data in the file COMPORT1.CFG be used for PressNet configurations. If COMPORT1.CFG does not exist, it is created using default values which are discussed in greater detail in "Configuring PressNet" below.

NOTE: The configuration file must be specified in order for PressNet to start properly.

Although the File Manager utility supplied with Windows can be used to start PressNet, it is far more convenient to set up an icon with the Program Manager (also supplied with Windows). This is done with the **File-New-Program Item** command in Program Manager. This command will prompt you for a description (ie:"PressNet 4.0") and a command line for the new application. Use the example shown above as a model for the command line. If the command line is a valid path and file name for PressNet an icon in the form of the Toledo Transducers logo will be placed in the current program group. Here is an example for reference:

1) If necessary, move to the Program Manager window.

2) Select <Alt> **File** and then **New**.

3) Select the "New Program Item" button then press <Enter>.

4) Enter a description such as "PressNet 4.0"

5) Enter the command line. Be sure to include the path and file name for PNCOMM.EXE as well as the path and file name for the configuration file.

6) If the paths and file names are correct and valid the Toledo Transducers logo will appear.

Once the logo is displayed, you can start PressNet by moving the cursor over the icon title and pressing <Enter> or by double clicking the logo with a mouse.

Command Line for Network Application

If PressNet is to retrieve N260 data from a network drive instead of through the serial port it must use "NETPORT1.CFG" as the name of its configuration file. Additionally, the path for the PressNet data must be a network path to the drive specified in the command line of the computer which is accessing the N260 data via the serial port. This means that ALL PressNet computers are linked to the same drive and directory and that they all share the same information. An example command line for a networked PressNet application is shown below:

```
C:\PRESSNET\PNCOMM.EXE S:\NETPORT1.CFG
```

where C: is the local drive containing the PressNet executable file, S:\ is the network path, and NETPORT1.CFG is the network configuration file.

The PressNet Main Window

When PressNet is started successfully it displays its main screen which consists of a caption bar, a menu bar and 32 Press Blocks. The caption bar contains the program title and is highlighted when PressNet is the active application. The menu bar contains the menu titles. Each menu is selected by pressing the <Alt> key and then the underlined character in the menu title. These are pop up menus and will display a number of functions when the menu is selected. The arrow keys will move the menu cursor from option to option. When the appropriate option is highlighted pressing <Enter> will active the function.

Each Press Block on the main screen represents an N260 Series Monitor. Since the Monitors are mounted one per press, each block represents an individual press as well. The blocks are arranged sequentially with regard to the "address" of the N260 Monitors. Address 0 is in the top left corner and, reading from left to right, is followed by address 1 through 31 which is in the bottom right corner of the screen. Setting the addresses on the N260 is discussed in greater detail in Chapter 2 : "Getting Connected".

The Press Blocks consist of a press name, a status bar and a count field. The displayed press name can be changed in the Press Id field on the Detail screen discussed later. The status bar indicates whether the press is producing parts (green bar), idle (yellow bar) or in an alarm condition (red bar). The count field is at the bottom of the block and displays the part count as recorded by the N260 Monitor.

There are two buttons to the left of the title bar. The button with the arrow pointing down is the minimize button. Pressing this button will shrink PressNet to an icon which is displayed at the bottom of the Windows screen. The PressNet icon resembles the Toledo Transducers logo. Minimizing PressNet does not disrupt the flow of data between the computer and the N260 Monitors.

The second box, with the up arrow, is the maximize box. Pressing this button expands the PressNet window to fill the screen.

Configuring PressNet

PressNet 4.0 was written for a wide variety of applications and thus is very flexible. PressNet allows you to configure several of its parameters to better suit your needs. This section discusses these parameters, their default values when first started and how to change each of them.

Port Assignment

PressNet can input data from any one serial port or from a network path. When PressNet is first started it automatically chooses the first serial port, COM1, and attempts to communicate with the N260 Monitors connected to that port. To change to a different port choose the **Port Config** option in the **Config** menu of PressNets main window. Move the highlight to the desired port with the <TAB> key and press the space bar or click your selection with the mouse. If your computer is not connected directly to the N260 monitors via the serial port but is instead accessing data from a network you should choose the Network option.

Once you've made your selection, press <Enter> or click the OK button with the mouse. If the port is available, PressNet will access the port and attempt communications with the N260 Monitors. If you've chosen the network option, PressNet attempts to retrieve information from the network drive specified in the command line used to start PressNet.

Press Selection

PressNet may be configured to communicate with as many as 32 N260 Monitors. When PressNet is started for the first time it automatically begins polling each of the 32 Monitors. If your system has fewer Monitors connected, PressNet should be configured to ignore the unused addresses.

To ignore or "deselect" any address choose the **Press Select** option in the **Config** menu on PressNets main window. A screen displaying the polling status for all addresses will appear. Selected presses (the ones that are being polled) will have an "X" beside their address. To select or deselect an address move the cursor with the <TAB> key over the address to change and press the space bar. You may also click the desired box with the mouse to toggle it on or off. After modifying all of the addresses you wish to change, press <Enter> or click the OK button with the mouse.

PressNets main window reflects the selection of an address with a darkened border around the Press Block.

SPC Configuration

PressNet is capable of gathering and storing load information for SPC purposes. The information is collected in subgroups ranging in size from 1 to 25 pieces per subgroup (each "piece" corresponds to a single press stroke). Subgroups are collected on a timely basis ranging from

once every minute to once every 24 hours. PressNets default configuration is 0 pieces every 60 minutes or in other words no load data is stored.

To begin gathering the load information you must configure PressNet using the **S**PC Config option in the **C**onfig menu. Enter the size and frequency information in the appropriate fields and press <Enter>. PressNet will begin gathering data at the interval you specified. Notice that each press can be configured separately. You may scroll through the presses' configurations one by one if you do not hit <Enter> after entering the frequencies and subgroup sizes. Pressing the **Set all** button will configure all presses with the values currently displayed.

PressNet stores the SPC data in individual files with each press having its own file. These files are ASCII files and may be imported into many different programs as data. The name for a specific press file is the press name (as seen on PressNets main window) with the extension ".LOD". For example, a press called "Press 0" would store its data in a file named "PRESS__0.LOD". As shown in this example, any spaces in the press name are replaced with the underline character,'_', in order to conform to DOS file naming conventions.

Each subgroup in the load files (extension .LOD) consists of a header and the sample data. The header contains pertinent information for the subgroup as a whole. The subgroup's sample data immediately follows the header. Each sample constitutes one record which consists of the individual channel tonnages read from the N260 Monitor. Channel 0 is the first field in the record, channel 1 is in the second field and so on up to the last channel of the Monitor. The fields are separated by tab characters (ASC 9) and the record is terminated with a carriage return (ASC 13) and a line feed character (ASC 10). The header and sample records are discussed in further detail in Appendix 2 : PressNet Data Files.

For further processing of the load files, a conversion utility, PNSPC.EXE, is included with PressNet. This utility separates the individual channel data into separate files and converts the files into various formats for software written specifically for SPC analysis. Please refer to the manual supplied with PNSPC for further information.

Password Assignment

In order to insure uninterrupted data processing and safe press operation several of PressNets features have been protected. Passwords are required whenever a change to either the functionality of PressNet or the operation of an N260 Monitor is requested. Up to twenty passwords may be defined. Each password may be assigned a "system" level of access or may be limited to a specific function such as clearing the counts in an N260 Monitor or resetting an alarm condition.

Only one password, "MANAGER", is defined when PressNet is

started for the first time. This password is a system password allowing you to access ANY protected function. "MANAGER" may be changed to anything you want but the first password in the password list is always a system password.

To change, add or remove a password, choose the **Passwords** option under the **Assign** menu. You must enter a valid password before going any further. If you enter a valid non-system password (a password with out system access) you will simply be prompted for a new password to replace the old. A non-system password can NOT be used to change the access level of that password nor can it be used to change other passwords. If, however, a system level password is entered at the initial prompt, the entire password list is displayed and may be modified in any way.

There are two edit fields for each password in the list, 'User' and 'Password'. The Password field is the operational field while the 'User' field is simply for referencing who owns the password. The Password and User entries may both be up to 20 characters in length.

Directly beneath the 2 edit fields are the access assignment check boxes. An allowed access has a check in the box. The checks may be toggled on or off by moving the cursor to the desired field with the <TAB> key and then pressing the space bar. Boxes may also be toggled with the mouse. A description of each type of access follows:

Change Access: A password with this access level can change any operational setting in the N260 Monitor. Operational settings include high set points, thresholds, modes and any other non-historic values. These changes are implemented on the Detail screens.

Reset Access: This access allows the resetting of an alarm condition in an N260 Monitor.

WARNING: When the alarm condition is reset, the N260 closes the press shut down relay thus allowing the press to cycle as normal. Never reset the alarm condition from the computer terminal unless the exact cause for the alarm is known AND the safety of those maintaining the press is assured.

Save Access: This access allows the user to save files to the disk with PressNet.

Delete Access: This access allows the deletion of files on the disk

Clear Access: This access allows the user to clear historical information stored within the N260 Monitor. Clearing such settings does not affect the operation of the Monitor.

System Access: This access allows the password to perform any and all functions including the modification of the entire password list. Any change to PressNets configuration requires a system level password.

Down and Assist Code Definitions

PressNet can assign alphanumeric strings to the optional Down Code and Assist Code thumbwheels on the N260 Monitor. This makes the recognition of the codes much easier since alphanumeric strings are more descriptive than numeric codes. The assigned strings may be up to eight characters in length. The thumbwheel codes range from 00 to 99 and each value may be given a unique description. The code value and the descriptive string are both displayed on PressNet's Detail screens.

Initially, none of the code values have assigned strings. Use the **DCode Definitions** or **ACode Definitions** options under the **Assign** menu on PressNet's main window to define you own strings. A system level password is required to view and edit the strings.

To change or add a string to the list, tab to the edit field next to the code value to be defined. Type in any eight character string. Pressing <Enter> at this point will record the change and return you to the PressNet main screen. If you wish to change several codes, use the <TAB> key to move from field to field and type in the new values but wait until after the last edit before pressing <Enter>.

Probe Definitions

The N260 Series Monitors are equipped with three standard and five optional inputs. The standard inputs are the AC Power input, the Time Probe input and the Threshold probe input. PressNet is automatically configured to recognize and display the status of these inputs. The optional inputs are not dedicated to a specific purpose by default and therefore are not defined when PressNet is initially started. If your systems include the optional inputs you may wish to define each input alphanumerically for easier recognition on the PressNet Detail screen and reports generated from the PressNet data.

To define an input use the **Input Definitions** option under the **Assign** menu on the PressNet main window. A system level password is required to view or edit the definition list. Any of the eight edit fields displayed may be moved to with the <TAB> key and changed as desired. When <Enter> is pressed or the OK button is clicked the new values will be stored and control will return to the main window.

Shift Assignment

PressNet can store production information for up to six shifts. Shifts may be as brief as 1 minute or as long as twenty four hours. Shifts may overlap and can even be nested one within another. Generally speaking, a simple shift setup is easier to comprehend and maintain. The default shift setup in PressNet is three shifts at eight hours apiece. The first shift starts at 7:00 am, the second at 3:00 pm and the third at 11:00 pm. These shifts are not overlapped.

To change the shift set up to match your plant, choose the **Shift Assignment** option under the **Assign** menu on PressNets main window.

A system level password is required for this option. All six possible shifts are listed with their respective start and end times. Time is displayed and entered in military format. To change a shifts time value, move to the field to be changed with the <TAB> key and type the new time (in military format). Pressing <Enter> or clicking the OK button records any changes made and returns control to the PressNet main window. If a shift is to be disabled or unused, match the start time to the end time.

Stopping PressNet

The **Exit** command under the **File** menu on PressNet's main window will terminate PressNet. A 'System' level password is required if the program is directly connected to the N260 Monitors.

Chapter 2 : Getting Connected

Overview

The PressNet system utilizes serial communications to transmit data back and forth between the computer and the N260 Monitors. Three basic components make up this interface: the serial port inside the computer, a conversion device which changes RS232 signals from the computer into RS485 signals for the N260 Monitors, and finally, the N260 Monitors themselves. The following diagram illustrates these components.

RS232/RS485 Convertor

Serial Port	TX232		TX485+	R−
			TX485−	R+
				N260 Monitors
	RX232		RX485+	T−
			RX485−	T+
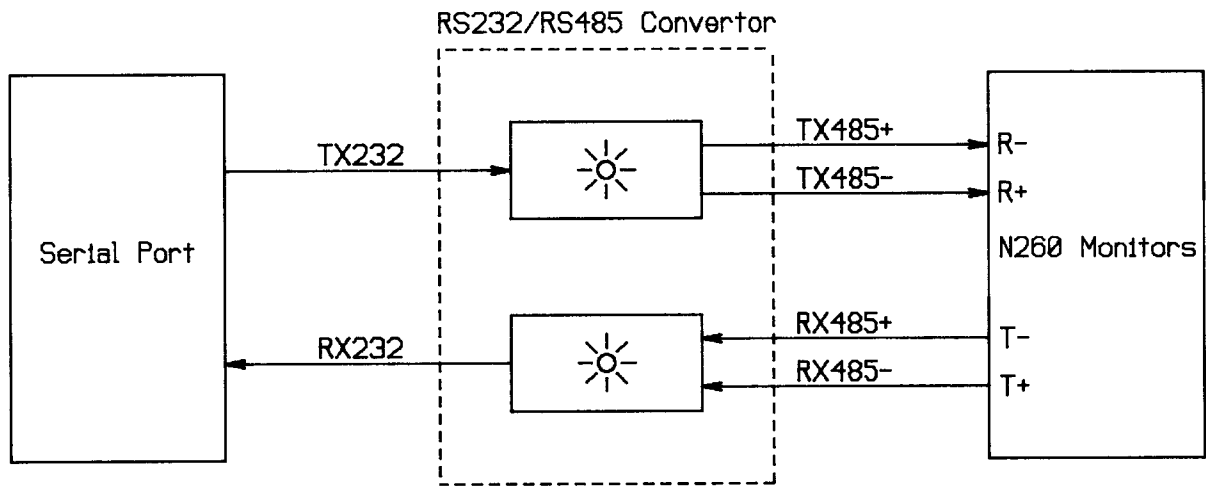
DWG #4338

RS232/RS485 Conversion Block Diagram

The Serial Communication Sequence

The N260 Series Monitor does not transmit data automatically. It responds instead to a request or 'poll'. The request must specify the type of information to be transmitted. Since multiple N260 Monitors can be attached to a single serial line, the request must also specify which Monitor is to respond. The Monitors are identified uniquely for this purpose with an 'address'. The address of a Monitor is determined by a set of dip switches located near the N260 serial port. Addressing the Monitors properly is discussed earlier in this chapter. When a request is received and validated the Monitor responds immediately with its data.

PressNet polls each N260 Monitor frequently. If PressNet is configured to poll more than one Monitor (see Chapter 1 : "Getting Started" for details on selecting presses) it requests data from each Monitor one after the other. After PressNet polls the highest address selected it repeats the sequence.

If you watch the communications lines with some measuring device you will see the request as a brief, rapid burst of data on the lines leading from the computer to the N260 Monitor. The request should be immediately followed by a response on the lines leading from the N260 to the computer.

Configuring the N260

The core of an N260 Monitor is its control board. This is the printed circuit board located directly behind the board which supports the displays and key pads. The serial port is located on the right side of the control board. Its connector is similar to the sensor wire connectors at the bottom of the board. Your N260 Monitor may have one of two different styles of control board. Newer control boards have a second port towards the top of the board. Both boards have a set of DIP switches directly above the first serial port. These switches are used to set the address of the Monitor. The older control boards have an additional set of switched below the port connector. The figure below shows an older control board with the port, switches and jumpers pertinent to serial communications. The newer control board does not have the jumpers shown but is similar in layout. The battery shown has been replaced with the second serial port.
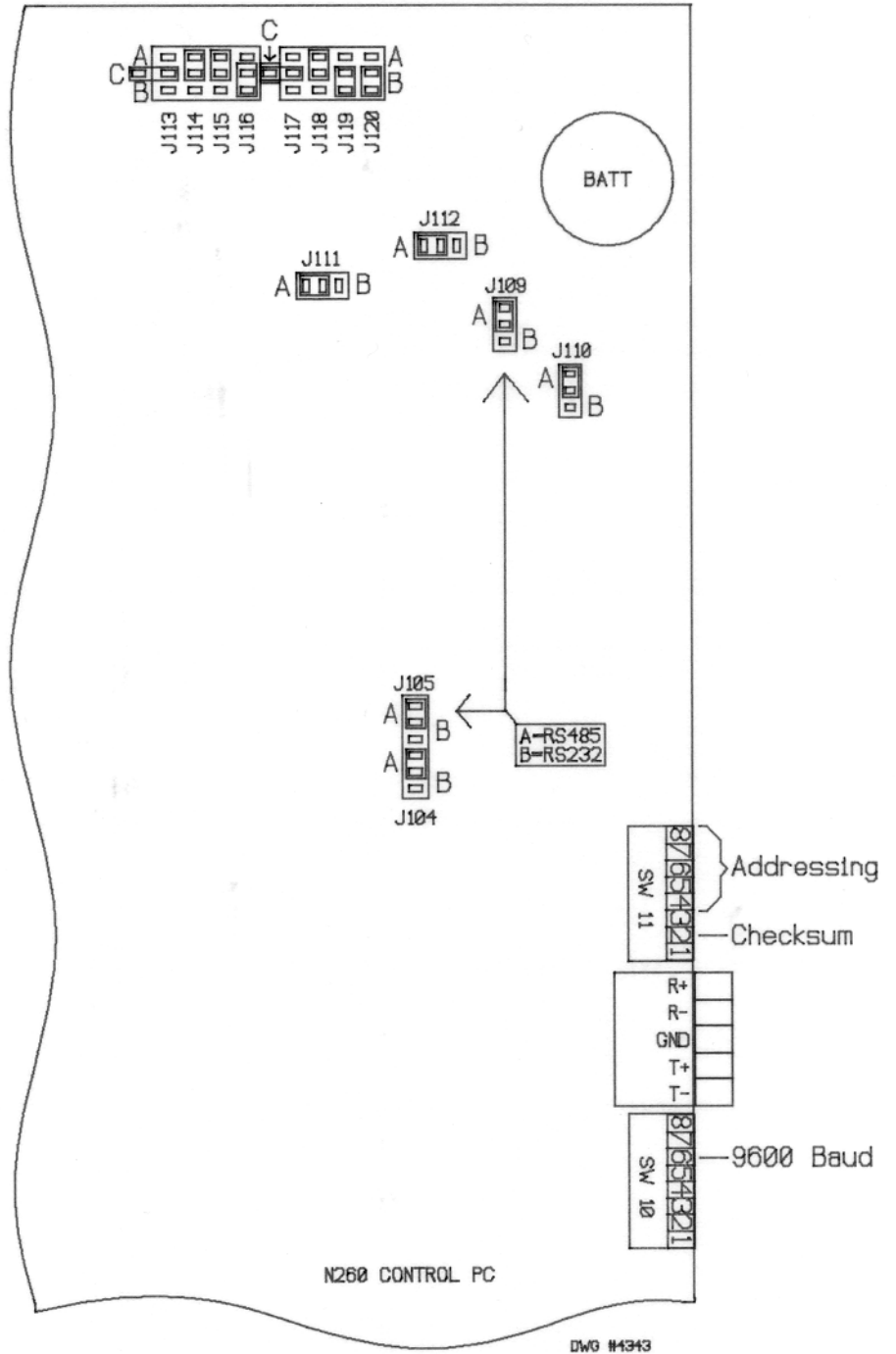
Setting the Baud Rate

The baud rate is the speed at which data is transmitted on a serial line. PressNet communicates with the N260 Monitors using 9600 baud. N260 Monitors with the newer style of control board are automatically configured for this speed. Older boards, however, can be configured to support several baud rates. The set of DIP switches located directly beneath the serial port on older boards controls the baud rate. The topmost four switches should always be in the OFF or up position except for switch 6 which should be ON. (Switch 1 is the switch closest to the bottom of the board, 8 is closest to the top). The bottom four switches control the baud rate for the N260 keyboard and should not be adjusted.

WARNING: Only one switch in each bank of four may be ON (down) at a time. Leaving two or more switches down in a bank may damage the instrument.

Setting the Address

In order for PressNet to discriminate between multiple N260 Monitors connected to a serial port each Monitor must be uniquely defined. Defining the Monitors is done by 'addressing' each Monitor uniquely. The address of a Monitor is determined by the set of DIP switches located directly above the serial port. Only the top 5 switches are used for addressing. Use the chart on the next page as a reference when setting the addresses.

Forcing a Checksum

Both PressNet and the N260 Monitors insure data integrity by passing a checksum along with the data. The checksum is a calculation which corresponds to the individual data values in the information string. If a data string is corrupted while being transmitted along the serial lines the checksum will no longer be valid and the information will be ignored. The N260 can be configured to either ignore or utilize the checksum. **It is strongly urged that the checksum function be enabled at all times when the N260 Monitor is connected to PressNet.** The check sum is enabled with switch #2 on the set of DIP switches directly above the N260 serial port. (This is the same set used for addressing). When switch #2 is down it is in the ON position and check summing is enabled.

N260 Addressing Chart

ADDR	4	5	6	7	8
0	O	O	O	O	O
1	O	O	O	O	X
2	O	O	O	X	O
3	O	O	O	X	X
4	O	O	X	O	O
5	O	O	X	O	X
6	O	O	X	X	O
7	O	O	X	X	X
8	O	X	O	O	O
9	O	X	O	O	X
10	O	X	O	X	O
11	O	X	O	X	X
12	O	X	X	O	O
13	O	X	X	O	X
14	O	X	X	X	O
15	O	X	X	X	X

ADDR	4	5	6	7	8
16	X	O	O	O	O
17	X	O	O	O	X
18	X	O	O	X	O
19	X	O	O	X	X
20	X	O	X	O	O
21	X	O	X	O	X
22	X	O	X	X	O
23	X	O	X	X	X
24	X	X	O	O	O
25	X	X	O	O	X
26	X	X	O	X	O
27	X	X	O	X	X
28	X	X	X	O	O
29	X	X	X	O	X
30	X	X	X	X	O
31	X	X	X	X	X

X = ON (DOWN)   O = OFF (UP)

Wiring the System

The Serial Port

The serial port is typically a card installed inside the computer. Most serial ports receive and send data using RS232, a serial communications standard for hardware. RS232 is limited to a distance of 50' from the computer and supports only one device per port.

Serial cards are typically configurable by the software that utilizes them. Baud rate, data bits, stop bits and so forth can be set by the application when the port is opened or initialized for use. PressNet configures the serial port to work at 9600 Baud, an 8 bit datalength, 1 stop bit, and no parity.

Many cards have jumpers on board which configure the card for use as serial port #1 (COM1), serial port #2 (COM2), etc.. Refer to the manual supplied with the card for the proper jumper settings.

The RS232 Cables

Serial ports use either a 25 pin or 9 pin dB connector to interface to the external devices. On a 25 pin connector pin 2 is the transmit line (TX) from the computer to the external device. Pin 3 is the receive line (RX) carrying signals from the device to the computer. Pin 7 is the ground pin. On a 9 pin connector pin 3 is the transmit line from the computer to the device. Pin 2 is the receive line and pin 5 is ground. The figure below demonstrates the connections.
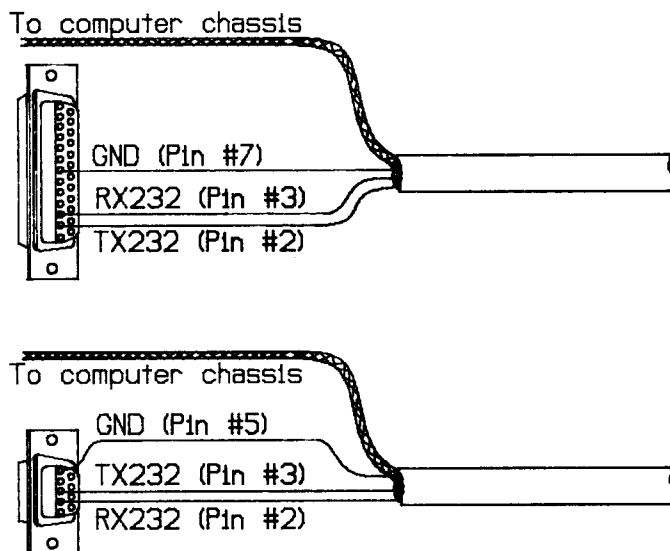
RS232 Cables

Connecting the Cable

The RS232 cables must now be connected to an RS232/RS485 convertor. An example of these connections is shown below. Notice that the transmit line from the port is connected to the receive terminal for RS232 on the convertor. The transmit terminal on the convertor is attached to the receive line on the port.

RS232/RS485 CONVERTOR

Connecting the RS232 Cable

The RS232/RS485 Convertor
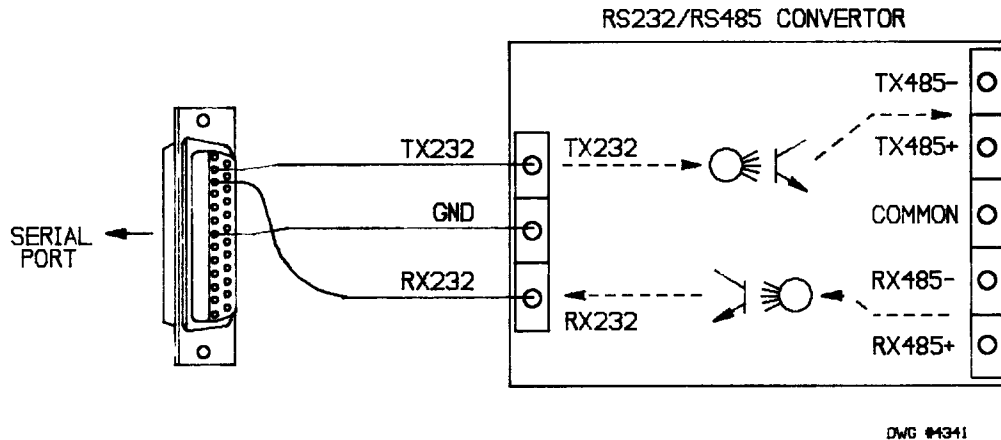
The RS232/RS485 convertor converts RS232 signals to RS485 signals and vice versa. This is necessary since RS232 signals are limited to 50' and a single attached device. RS485 on the other hand can be extended up to 4000' and can support up to 32 attached devices. There are several brands of RS232/RS485 convertors on the market. The convertor you choose must support conversions both to and from RS232. This is necessary since RS232 signals transmitted out to the Monitors must be converted to RS485 and RS485 signals received from the Monitors must be converted back to RS232. Additionally, the convertor should be optically isolated. Optical isolation prevents large voltage spikes on one side of the convertor from damaging devices on the opposite side of the convertor. Status LEDs on the convertor are also very helpful when installing and troubleshooting the system. Status LEDs indicate the flow of data through the convertor allowing you to see what is happening.

Many convertors make provisions for communication control lines. These signals are not used by PressNet or supported by the N260 Monitors.

Different convertors are labeled differently in respect to the names of the signal wires attached to the convertor. In order to simplify these set up instructions a set of terms has been adopted and utilized through out this chapter. Refer to the following list as you connect the system.

TX232   This is the line carrying data from the computer's serial port out to the RS232/RS485 convertor.

RX232 This line carries RS232 signals from the convertor back to the computer's serial port.

TX485+ This is one of the transmit lines which carry RS485 signals from the convertor out to the N260 Monitors. This line is attached to the N260 terminal labeled "R-".

TX485- This is the second transmit line carrying RS485 signals out to the Monitors. It is attached to the N260 terminal labeled "R+".

RX485+ This is one of the RS485 receive lines which carry data from the Monitor to the convertor. This line originates at the N260 terminal labeled "T-".

RX485- This is the second RS485 receive line carrying data from the N260 to the convertor. It is attached to the N260 terminal labeled "T+".

Notes on the Sencon CIM 800 Convertor

The Sencon CIM 800 Series convertors are reliable and durable. We have tested the convertors extensively, and even abusively, and are very satisfied with their performance. We recommend the CIM 800 Series for any similar application.

The CIM 800 convertor can be used for conversion to either RS422 or RS485. These standards are similar in their wiring but differ in the number of devices they can support on a line. RS422 can support up to 10 devices while RS485 can support up to 32. In this manual we refer to RS485 since up to 32 Monitors may be attached to PressNet. The CIM 800 Series is labeled as "RS422" or "422" but works equally well in an RS485 circuit.

The CIM 800 can be configured many different ways as illustrated by its accompanying literature. We recommend that you follow the illustrations in this manual, however, for a better understanding of its explanations.

Connecting the N260 Monitors with RS485

Up to 32 N260 Monitors can be attached to a single serial port. The wire used to connect the Monitors consists of three twisted pairs with one pair being used as a ground. It must be shielded cable and the shield must be continuous through out the circuit. The shield must be kept isolated from the ground wires. If the shield is not isolated from the ground wire it can induce noise into the communications circuits and corrupt the information being passed along these lines. The shield

should be terminated at the RS232/RS485 convertor only. It should not be connected to any Monitor or other device.

Note: The newer N260 control boards are equipped with connectors that provide a sixth terminal specifically for the shield. This terminal is for convenience and is not considered as a ground common with the communications ground wire.

The Monitors are connected as a daisy chain with each Monitor being a node in the chain. Tapping into the circuit, thus creating a branch circuit, is not an acceptable method as it can introduce noise and failures into the system. The serial port connectors supplied with the Monitors act as terminal blocks for connecting the next N260 in the line into the circuit. These connectors should be the only place where the wires are connected together or spliced.

To Monitor   To Monitor

TX485-   Blue-Wh

TX485+   Blue

To RS485 convertor   Green   To other Monitors

RX485-   Orange-Wh

120 Ohms   RX485+   Orange

BELDEN #8103

Shield must be continuous to end
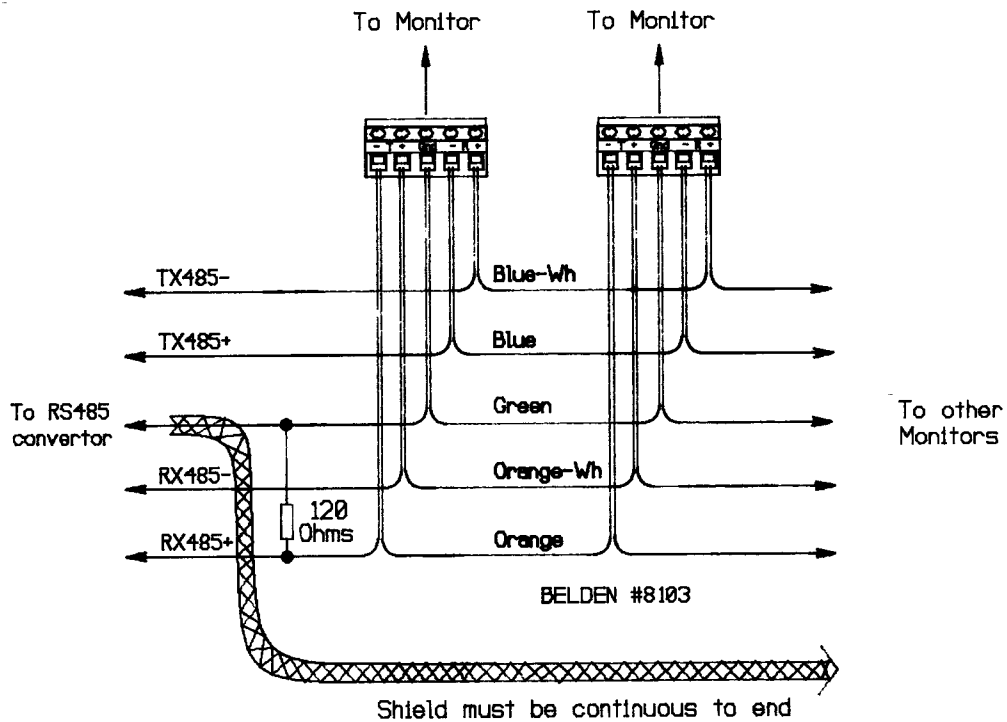
DWG #1342

Connecting N260 Monitors with RS485

Putting the System Together

For easier installation it is recommended that the final connections be made in two stages. The first stage is to connect the RS232/RS485 convertor to the computer. Once the convertor is working properly, the lines leading out to the Monitors can be attached to the convertor.

The diagram on the following page shows a generic convertor and the proper connections for a computer. Notice that pin 2 of the serial port connector is attached to a receiving terminal on the convertor. The signal is then converted and passed out through the transmitting terminals to the N260 Monitor. This signal is received through the terminals labeled "R+" and "R-" on the Monitor. When the N260 responds it sends RS485 signals out its "T+" and "T-" terminals. The signal is received by the convertor, converted, and then transmitted to the computer via the RX line in the RS232 cable.

Once you have the convertor attached you can run PressNet, or any application that uses the serial port, and observe the TX line to assure that data being sent from the computer serial port is being transmitted to the convertor. If PressNet is used for this test you should see a burst of data being sent to the convertor about once every .8 seconds. If you are using the Sencon CIM 801 you should see the LED pointed to by the TX232 line flashing. Since the N260 Monitors are not attached the LED on the RX232 line should remain dark. If it is constantly on or flashing recheck the wiring and the slide switches mounted on the side of the box. The slide switch closest to the wires coming from the computer should be in the "232" position. The other switch should be in the "422" position.

Once the convertor is working properly the lines leading out to the N260 Monitors may be attached. It is recommended that all Monitors be unplugged from the wires except one. This will simplify any troubleshooting later. Again, start PressNet and observe that the convertor is receiving signals from the serial port. When the remaining Monitor is polled it should respond causing the LED pointed to by the RX422+/- to flash once. This should occur every time that the particular Monitor is polled. For a detailed description of the communication sequence refer to the section titles "The Serial Communication Sequence" in this chapter.

Once you have one Monitor responding properly to PressNet the other Monitors on the line may be reconnected.
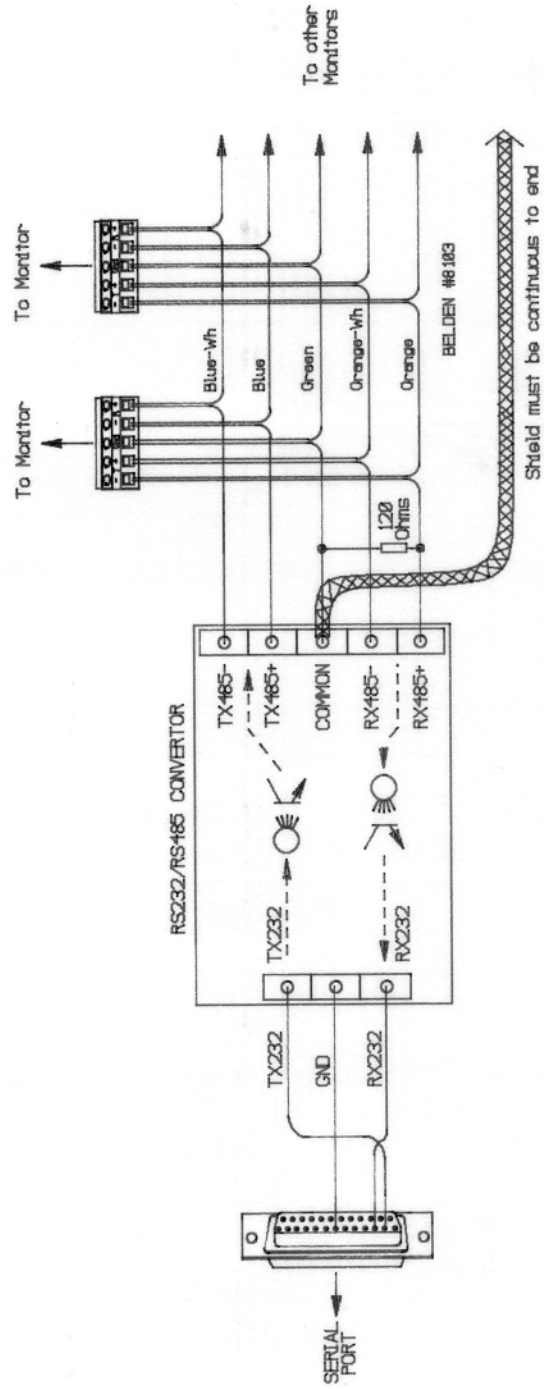
RS232/RS485 Communications System

Troubleshooting

This section discusses common problems that occur during initial installations. By following a logical sequence of tests most problems can be resolved by the persons involved in the installation.

No Data is Transmitted by PressNet

Check PressNet's port configuration to be sure that it is communicating through the correct port. Choosing the **Port Config** option under the **Config** menu on PressNets main screen displays the port PressNet is using for communications. If you have more than one serial port in the computer, try switching the port PressNet is using.

If PressNet is setup to use the correct port and the port is installed, check the jumper settings on the card to insure that it is enabled and configured with the proper port number. Some serial cards can be configured as COM1 or COM2 and even COM3 and COM4.

The wires from the serial port connector to the convertor may also be reversed. Check that the TX line (the line carrying data from the computer to the convertor) is connected to the computer transmit line (pin 2 on 25 pin connectors and pin 3 on 9 pin connectors). The RX line (from the convertor back to the computer) should be connected to the computer recieve line (pin 3 on 25 pin connectors, pin 2 on 9 pin connectors).

Finally, make sure that the TX line is connected to the convertors input terminal. On Sencon's CIM 801s the terminal is labeled "Tx422+/232". Also check that any switches on the convertor are positioned properly.

If none of the tests works there is probably a problem with the serial port, convertor or computer which must be serviced.

Convertor is Not Processing the Data

If the convertor is recieving data from the serial port but is not passing it through to the RS485 side of the convertor, make sure that the TX line is connected to the proper terminal ("TX422+/232" on CIM 801s) and that it is not shorted or broken. Double check that any switches on the convertor are set properly as well. On CIM 801s the switch closest to the wires coming from the computer should be set to "232" and the other switch should be set to "422".

A second problem might be the lines on the RS485 side of the convertor. If these lines are shorted or grounded you may not be able to measure the converted signals. The CIM 801 is optically isolated so a short on the output will not prevent the LED from flashing when data is transmitted to the convertor.

If these test do not solve the problem the most likely explanation is a faulty convertor.

None of the N260s Respond

There are several reasons why the N260 Monitors may not respond. The most common problem is the misconfiguration of one or more N260s. Refer to "Configuring the N260" earlier in this chapter and make sure that the baud rate, addressing and wiring are all correct. The baud rate must be set to 9600. Each Monitor must have a unique address and, of course, the wiring must be correct. It is possible that a single misconfigured Monitor is preventing all other Monitors on the line from communicating.

If configuration is not the problem try disconnecting all except one Monitor. If the system begins to work try a different Monitor in the same manner. Continue connecting the Monitors, one at a time, until the system fails again. The connected Monitor at this point is the cause of the problem. If none of the Monitors respond when connected separately the problem is probably in the wiring or wires of the circuit connecting the Monitors to the convertor.

Only One N260 Does Not Respond

If the Monitor in question is configured and wired properly the lack of communication is probably due to either a failed communications driver IC in the Monitor or an obsolete ROM. Call Toledo Transducers for service or information on upgrading the ROMs in the N260 Series Monitor.

Chapter 3 : The Detail Screen

Overview

The PressNet Detail screen is a comprehensive look at an N260 Monitor's settings and data. It is also the vehicle through which the individual Monitors are reprogrammed and configured.

There are three basic types of fields on the Detail screen: static fields, edit fields, and clear buttons. Static fields simply display information while edit fields may be moved to and edited. Clear buttons are marked with a "C" and are used to clear the information in some of the static fields.

The values displayed in any field reflect the current data received from the N260 Monitor. As values change out on the plant floor, the Detail screen is updated to reflect the new data.

Static fields contain line titles and historic information. Historic information refers to any information which is generated automatically by the N260 Monitor. Historic information is not programmed by the user but may be reset or cleared to an initial state. Counts, loads, and alarm tonnages are examples of historic information.

Edit fields contain N260 operational settings. Operational settings are those values which directly affect the operation of an N260 Monitor. High and low setpoints, time values, modes, and thresholds are all examples of operational settings. Operational settings may be altered by entering the appropriate edit field and typing in the new value.

Clear buttons are used to reset historic information to its initial state. Clear buttons are located to the right of the line containing the historic information that the button controls.

The edit fields and clear buttons are your link to the N260 Monitor. Altering an edit field or pushing a clear button reprograms the N260 directly. You can reconfigure any Monitor from your computer just as you would at the press.

Displaying the Detail Screen

The Details screen is displayed when you choose **Detail** from the **View** menu on the main window. The Detail screen consists of a tile bar, a menu bar, several fields for data, and a scroll bar. The name of the press from which data is being displayed is located in the upper left corner below the menu bar.

Viewing a Specific Press

When the Detail screen is first displayed it shows the press data from the first Press Block (address 0) on the main window. When you reenter the Detail screen at a later time, the last press viewed on the Detail screen will be displayed.

Moving from one press view to another can be done with either the keyboard or the mouse. The mouse uses the vertical scroll bar located along the right edge of the screen. The scroll bar's up and down arrow buttons will move you to the previous (lower) press address and next (higher) press address respectively. You may also grab the scroll bar's thumb and drag it to an approximate address on the bar. Remember that address 0 is at the top of the bar and address 31 is at the bottom.

Under the **Scroll** menu on the Detail screen are the options used to move from press to press with the keyboard. The **Next** option moves the focus to the next press (reading from left to right on the main window). Selecting **Prev** from the menu moves you to the previous press. The **First** and **Last** options move you to the first and last Press Blocks, respectively. The **Goto** command prompts you for a press name and then jumps to that press.

Note: The prompt for the **Goto** command provides two ways to enter the press name, an edit field and a list box. You may type the exact press name in the edit box or just enough of the name to discriminate it from the other names. As you type, the list box moves its cursor to the first name that matches what you have typed so far. This is very convenient when the first characters in the press names are unique such as "5-1","6-1", etc.. The second way of entering a press name is to move directly to the list box (using the <TAB> key) and then scroll through the list of names using a mouse or the direction keys. When the desired press name is highlighted press <Enter>.

Controlling Detail Screen Updating

When a change is detected in the N260 Monitor associated with the current Detail screen all of the values on the screen are updated. This can be seen as a flicker moving down the screen as each value is recorded. Depending on how many Monitors PressNet is polling and on the activity of the presses, this update can occur as quickly as every five seconds or as long as every sixty seconds. The **Update NOW** option in the **File** menu will refresh the screen immediately. If on the other hand, you need to freeze the screen, choose the **Auto Update** option in the same menu. This will prevent any updates to the screen but still allows the data stream between PressNet and the Monitors to

continue. If the <u>A</u>uto **Update** option shows a check mark to its left, updates are performed normally. If the check mark is not present, the screen is frozen. Selecting <u>A</u>uto **Update** more than once toggles the check mark on and off.

Moving Around the Detail Screen

You may move to any edit field directly with the mouse. If you do not have a mouse you must use the <TAB> key to move from one field to another. Pressing <TAB> moves the highlight to the next field while <Shift><TAB> will move the highlight to the previous field.

Editting the N260 Operational Settings

Once you are in an edit field, you may modify the selected value by simply typing the new value and then pressing <Enter>. A valid 'Change' or 'System' level password must be entered before the new value is accepted and transmitted to the N260 Monitor. After the value is entered and transmitted there may be a short delay before the Detail screen is updated with the new values. Remember that the data must be transmitted, processed, polled and recieved before it can be displayed.

Some of the fields displayed on the Detail screen have special purposes or means of editting. Descriptions of these fields follows.

Changing the Press Name

The Press Id field on the Detail screen should match the name of the press to which the N260 Monitor is attached. This name is reflected in the Press Block on PressNets main window. It should be noted that the Press Id is used in the formation of files specific to the press such as SPC files. Reports generated from the PressNet data files can also reference this name.

Although the Press Id field is not truly an N260 operational setting, it is changed in the same manner as any edit field.

Changing the Die Number

The Die # field on the Detail screen reflects the part number thumbwheels on the N260 Monitor. If the thumbwheels are not present or if they are set to all zeros this field can contain any alphanumeric string up to 10 characters in length.

The value in the Die # field is used as a reference in most of the files generated by PressNet. This field is considered as the part number when these files are used in reports. It is important to maintain this field diligently for all presses if the reports are to reflect accurate and timely information.

Changing the Part Name

The Part Name field is provided for reference only. This field is not generally stored in PressNet files or used in reports. Any alphanumeric string up to 20 characters in length may be used.

Changing the N260 Mode Information

The Mode field on the Detail screen is not modified by typing the new value in directly. Typing this value would be cumbersome and prone to errors. Instead, a dialog box is used to select the desired mode configuration. This dialog box is accessed by entering the Mode field and then pressing <Enter>.

The various settings for the mode are setup in this dialog box as buttons which may be toggled on or off. To change any setting, move to the setting with the <TAB> key and then press the space bar. The mouse may be used to click the buttons as well. When the desired mode configuration is displayed, pressing enter will transmit the new mode to the N260 Monitor. A password with either 'Change' or 'System' access is required.

Clearing the N260 Historic Values

Resetting the historic information is a easy as pushing a button. Clear buttons are located directly to the right of the information that they reset. Each button clears the entire line (all channels) since there is no way to clear individual elements.

To clear a value using the keyboard, move to the desired clear button with the <TAB> key and press the space bar. If you have a mouse, click the appropriate button. In either case, you will be prompted for a 'Clear' password. A 'System' password will work as well. If the password is valid, PressNet transmits the clear command to the N260 Monitor. A short delay can be expected while the data is transmitted and processed.

If the N260 is to be completely initialized there is a command, **Clear all** in the **Reprog** menu that is equivalent to pressing <CLEAR> <RESET> <RESET> <RESET> on the N260's keyboard. All historic information, including alarm condition and down time, is reset to its initial state.

WARNING: When the alarm condition is reset, the N260 closes the press shut down relay thus allowing the press to cycle as normal. Never reset the alarm condition from the computer terminal unless the exact cause for the alarm is known AND the safety of those maintaining the press is assured.

Clearing the N260 Count

The Count field on the Detail screen does not have a clear button associated with it. Clearing the count is done by entering the field and then pressing <Enter>. A password with 'Clear' or 'System' access is

required to clear the count. When the password is properly entered, PressNet transmits the clear command to the N260 Monitor.

Engaging a Password

If several values on the Detail screen are to be changed, it is recommended that you use the **Engage Password** option in the **File** menu. This function allows you to enter your password once instead of being prompted after each edit. Any function to which your password has access to will be allowed with out prompting. Your password will remain engaged until you select the **Engage Password** option a second time or until you exit the Detail screen.

Storing a Die or Press Configuration

The N260 operational settings can be stored on the computer's disk for later reference or reprogramming. The stored configuration can be retrieved, displayed on the Detail screen, and ultimately transmitted to the N260 Monitor(s). This ability can be useful when a die is moved from press to press or in the re-set up of the die when it is put back into production. Using this function allows you to maintain the same quality standards each time and place the die is used.

The **Save, Open,** and **Delete** options under the Detail screen's **File** menu are used to create and maintain the stored configuration files. **Save** is used to create files with the configuration information displayed on the Detail screen. **Open** retrieves files and displays them on the screen. **Delete** erases files permanently.

When one of these options is chosen, PressNet prompts you for a file name. It also lists the existing files it recognizes as configuration files in a list box which may be used to select a file name. By default, all configuration files have the extension ".DTL". Other extensions may be used but will not be automatically recognized as configuration files. If you do not enter a path or extension, the default values are used. File names without paths or extensions may be up to eight characters in length.

The **Save** and **Delete** options require a password with the appropriate level of access. You may, however, load a file with the **Open** option and review it on screen without a password.

Configuration files are stored in ASCII format and may be loaded into other software packages for review or printing. Although the files contain the entire Detail screen, only the operational settings are transmitted to an N260 when the file is loaded and transmitted.

Once a configuration file has been loaded and reviewed, the information may be transmitted to the Monitor with the **Send** option under the **Reprog** menu. This function requires a password with a 'Change' or 'System' level of access.

Printing a Detail Screen

There are two ways to print the Detail screen with its values. The easier way is with the **Print** option under the Detail screen **File** menu. This option uses the current printer as selected by the Print Manager supplied with Microsofts Windows software.

The second method is to store the Detail screen with the **Save** option from the **File** menu and then use some software other than PressNet to do the printing. The DOS Type or Print commands may be used.

Reseting an N260 Alarm Condition

N260 alarm conditions may be reset using the **Reset** function in the **Reprog** menu on the Detail screen. This function requires a password with 'Reset' access.

WARNING: When the alarm condition is reset, the N260 closes the press shut down relay thus allowing the press to cycle as normal. Never reset the alarm condition from the computer terminal unless the exact cause for the alarm is known AND the safety of those maintaining the press is assured.

Exiting the Detail Screen

You may close the Detail screen and return to PressNet's main window by selecting the **Exit** option under the **File** menu. If a configuration file has been loaded it will be discarded. Engaged passwords are negated as well.

Appendix 1 : Error Messages

Port does not exist

This error occurs when PressNet can not access the serial port specified in the configuration file. This error does not terminate PressNet unless the Cancel button is pressed when the error is diplayed. You may continue in PressNet and reconfigure the serial port accessed with the **Port Config** option under the **Config** menu.

This error is common on computers which are running PressNet for the first time. This is due to the fact that the first serial port, COM1, is always the default port when the PressNet configuration file is automatically created.

This error can also occur if the configuration file name specified on the command line is misspelled or mistyped thus directing PressNet to create a new file with default parameters.

This error may also occur if another application is using the designated port. If this is the case you must decide which program will use the port and reconfigure PressNet appropriately.

If it is known that PressNet is attempting to access the proper port and that the port is functioning properly, try rebooting the machine. Serial ports are sometimes left "open" thus preventing other applications from recognizing them.

Can not create configuration file

This error occurs when ever PressNet can not open the configuration file specified in the command line. Misspelled file names, bad disks, full disks, or invalid network paths are common reasons for this problem. Refer to Chapter 1 : "Getting Started" for details on the PressNet command line.

Not enough memory

PressNet requires 256K bytes + 800 bytes/N260 Monitor in addition to the memory requirements of Windows. Try aborting any unnecessary applications to circumvent this error.

<u>Appendix 2 : PressNet Data Files</u>

Program Files (.EXE,.DLL)

These are the executable files provided on the PressNet 4.0 disks. These files should remain together in the same directory. They may or may not reside in the same directory as PressNet data. A list of these files follows:

1) PNCOMM.EXE - This is the PressNet program file.

2) PNLIB.DLL -   This is a library of functions used by PNCOMM.EXE.

3) PNSPC.EXE -   This is a conversion utility which translates PressNet SPC files into formats compatible with other software.

Audit Files (.CSV)

An Audit file is a log of the events which occur on the N260 Monitors. Down time events, part count information and alarm values are stored in addition to any reprogramming occurrences on the N260. A new Audit file is started every day that PressNet is active and each file contains all of the events which occurred during that day. These files are the basis for most of the reports available with PressNet.

Each record in an Audit file is an exclusive event. If a part is changed it constitutes one record. If an alarm condition is detected it constitutes a second record and so forth. Each record contains information pertinent to that event. There are two basic types of records in the Audit files. A record with production information is lengthier than a record which simply contains N260 reprogramming information. All records are terminated with a carriage return (ASC 13) and a line feed (ASC 10). The individual fields in a record are separated with commas. Following is a description of these records and the fields within the records.

Production Records

Production records are written when any change to count, part, or down time information is detected. Clearing a count, changing the part name, or cycling the press after a period of down time are all examples of such a change. The optional thumbwheels on the N260 Monitors are also used in recording production information.

Production records are formatted as shown in the following table.

Field #	Description	Length
1	Press address (000-031)	3 bytes
2	Time of the event (military)	8 bytes
3	Data type codes (see table below)	2 bytes
4	Die # (thumbwheels or manual)	10 bytes
5	Down reason code (thumbwheels)	2 bytes
6	Assist code (thumbwheels)	2 bytes
7	Down time at time of event	8 bytes
8	Mode summary	2 bytes

The first character, when set to '1', indicates that the N260 was experiencing an alarm condition at the time of the event. The second character in the mode summary, when set to '1', indicates that the N260 was in setup mode at the time of the event.

Reprogramming Records
Reprogramming records are written to the file when ever a setting in the N260 has changed. Both the new and old data is stored for comparison. Operational settings, mode, and bench mark tonnages are all examples for a reprogramming record.

Reprogramming records are in the following format:

Field #	Description	Length
1	Press address (000-031)	3 bytes
2	Time of the change (military)	8 bytes
3	Data Type code (see table below)	2 bytes
4	The settings old value	variable
5	The settings new value	variable

Data Type Codes
The data type code has two characters. The first character indicates the type of data that has changed. The second character indicates the channel or specific data in the record.

Data Type	Description
:0	The values in this record are the actual N260 Monitor values when it responds for the first time after PressNet is started. These values can be used as baselines in further calculations.
:1	The values in this record are the actual N260 Monitor values when it responds for the first time after a period of failed communications. These values are used as baselines in further calculations.
:2	This code is reserved for future use.

Data Type	Description
:3	This record contains the actual values as seen by the N260 Monitor at the beginning of a shift. These values are used as baselines when doing calculations for the shift.
:4	This record contains the actual values from the N260 Monitor when a new part is started. This type of record is written when the Die # on the Detail screen or the Part # thumbwheels on the N260 Monitor are changed. These values are used as baselines in the calculations for the recorded part.
:5	Indicates that a new Down Reason has been entered. The values in this record are actual N260 values and are used as baselines in calculations involving the new Down Reason.
:6	Indicates that a new Assist code has been entered. The values in this record are actual N260 values and are used as baselines for calculations involving the new Assist code.
:7	This code is reserved for future use.
:8	These records contain baseline information when the down time value in the N260 Monitor goes from zero to one minute. This record is used to indicate the time and count when the press became idle according to the N260 Monitor.
:9	This code is reserved for future use.
;0	This is the last record for an N260 Monitor before PressNet is terminated. The values reflect the amounts accumulated since the last event for the Monitor.
;1	This is the last record for a specific Monitor when a communications failure is detected. The values reflect the amounts accumulated since the last recorded event.
;2	This is the last record for a day for a specific N260 Monitor. The values reflect the amounts accumulated since the last recorded event.
;3	This is the last record for a shift for the specified Monitor. The values reflect the amounts accumulated since the last recorded event.
;4	This marks the end of a part run. The values are the amounts accumulated since the last recorded event.

Data Type	Description
;5	This record indicates that the current Down Reason code has been changed. The values in the record are the amounts accumulated under this code since the last recorded event.
;6	This record indicates that the current Assist code thumbwheel has been changed to a new value. The values in this record reflect the amounts accumulated under this code since the last recorded event.
;7	This type of record indicates that the count has been cleared (reset to 0). The values in this record represent the amounts accumulated since the last recorded event.
;8	This record indicates that the down time as seen by the N260 Monitor has been reset to 0. This indicates that the press has cycled after being idle for 1 minute or more. The values in this record are the amounts accumulated since the last recorded event.
;9	This type of record is written every fifteen minutes in order to preserve data that might otherwise be lost should the file become corrupt. The values are the amounts accumulated since the last recorded event.
<x	This data type indicates that the press name has been changed. The old name is in the fourth field, the new name is in the fifth field. The 'x' in this data type has no meaning and may be any value.
=x	This data type indicates that the Die # has changed. The old name is in the fourth field and the new name is in the fifth. The 'x' is not used and may be any value.
>0	This data type represents a change in the N260 mode. There are eight bytes in both the old data field and the new data field. These bytes are in the format described in "Mode Construction" in the N260 reference manual. The information represented is as follows:

Byte 1 = Number of N260 channels (0-9)
Byte 2 = Number of decimal places (0-3)
Byte 3 = Not used
Byte 4 = Time mode (0-3)
Byte 5 = Average mode (0-3);
Byte 6 = 0 if relay closed; 1 if alarmed
Byte 7 = Indicates four items:
      Bit 3 = Shunt engaged?
      Bit 2 = Batch alarm?
      Bit 1 = Time mode enabled?
      Bit 0 = Reverse mode?
(If bit is 0 then no otherwise yes)

Data Type	Description
>0	Byte 8 = Indicates four items: Bit 3 = In Peak mode? Bit 2 = In Track mode? Bit 1 = In set up or learn mode? Bit 0 = Any channels bypassed? (If bit is 0 then no otherwise yes)
@x	The preset counter in channel 'x' has changed.
Bx	The benchmark tonnage in channel 'x' has changed.
Cx	The capacity in channel 'x' has changed.
D0	The time delay value has been changed.
Ex	The percentages for calculating the high and low setpoints from the benchmark in channel 'x' have changed.
Hx	The high setpoint in channel 'x' has changed.
Lx	The low setpoint in channel 'x' has changed.
Xx	The high alarm count in channel 'x' has been reset.
Yx	The low alarm count in channel 'x' has been reset.
[0	The threshold has been changed.
[1	The count high setpoint has been changed.
[2	The count low setpoint has been changed.
\0	The ROM chip in the N260 has been changed.
]0	The precount setpoint (or batch set point) has been changed.
\D	The probe on optional N260 input #3 has changed state.
\E	The probe on optional N260 input #4 has changed state.
\F	The probe on optional N260 input #5 has changed state.
\G	The probe on optional N260 input #6 has changed state.
\H	The probe on optional N260 input #7 has changed state.

SPC Data Files (.LOD)

The SPC data files, or load files, contain tonnage information stored in subgroups. The size and frequency of the subgroups is determined by the configuration of PressNet as set by the user. Setting these values is discussed in Chapter 1 : "Getting Started".

Each subgroup consists of one header record and multiple sample records. The header record always begins with a colon (:) and contains information pertinent to the subgroup as a whole. Each sample record begins with a semicolon (;) and contains one tonnage value for each channel on the N260 Monitor. The individual values in both the header and sample records are separated with the TAB character (ASC 9). The records are terminated with both a carriage return (ASC 13) and a line feed (ASC 10). The records are stored in the following format:

The Header Record

Field	Description	Example
1	Date of subgroup preceded with colon	:01-01-90
2	Time of subgroup (military format)	08:12:27
3	Current Die # when recorded	9452523232
4	Number of channels in sample records	4
5	Number of decimal places in values	1
6	Number of samples in subgroup	5
7	Frequency of subgroup in minutes	0060
8	Down Reason code from thumbwheels	17

Each of these values is separated with a TAB character.

The Sample Records

The sample records contain the actual tonnage values (without decimal points) for each of the channels on the N260 Monitors. A sample record might look like this:

;3629   0810   0432   0841   1553

The channel 0 tonnage value is immediately preceded with a semicolon (;). The channel values are stored in order with channel 0 being followed by channel 1, channel 1 being followed by channel 2 and so forth. There may be up to ten values in a record if the N260 Monitor has its full complement of channels.

External Communications File (.IMP)

The external communication file is used by other programs to send codes to the N260 Monitors via PressNet. The name of this file is "PNCOMM1.IMP". It always resides in the same directory as the PressNet data. The records written to this file must follow the N260 Serial Communications Protocol as discussed in the N260 Technical Manual. No check sum string is allowed however. The records must be terminated with a carriage return (ASC 13) and line feed character

terminated with a carriage return (ASC 13) and line feed character (ASC 10). An example of a proper command is as follows:

$$0+C11024<CR><LF>$$

This record will be sent to the N260 who's address is 0. The command will set the capacity in channel 1 to 1024. The N260 Monitor will insert a decimal point if appropriate.

N260 values can not be requested from the N260 Monitor. Only commands that reprogram the Monitors are allowed.

The .IMP file is read on a timely basis by PressNet. If there are no records in the file, it is ignored. If a record exists, it is formatted and sent to the appropriate Monitor and then removed from the file. The file may be any length with new commands being appended to the end of the file.

Other PressNet Files (.DTL, .NET)

Files with the extension ".DTL" are ASC files containing a snapshot of the Detail screen. These files are created with the **S**ave function in the **F**ile menu on the Detail screen. These files are typically for reprogramming the N260 Monitor to suit a specific die or job. These files are discussed in greater detail in Chapter 3 : The Detail Screen.

Files with the ".NET" extension are used by PressNet applications being run on networked computers. There is normally a file for each of the enabled Monitors connected to the serial port.

Appendix 3 : PressNet Dynamic Data Exchange

Overview

PressNet makes provisions for communicating directly with other applications running under Windows 3.0. Using the Dynamic Data Exchange (DDE) protocol defined by Windows, PressNet can supply several types of information to these applications. This section discusses the basics of DDE and each of the topics PressNet supports.

There are several terms which you must be familiar with in order to understand and work with the DDE protocol. Here is a brief definition of each term:

Application -	Any program running under Windows.
Client -	The application which is to recieve data from another application. The client normally initiates the conversation between the two applications.
Server -	This is the application which will supply information to the client application.
Topic -	The topic is the type of information that is to be shared. The topic is a name for a general category of information
Item -	This is a specific piece of information categorized under the topic.
Conversation -	The link between the client and the server applications. The link is formed when the server acknowledges that the topic specified by the client is valid.

When a client application initiates a conversation with a server application it must specify both the application name and the topic of the conversation. PressNets application name is "PNCOMM1". PressNet has three informative topics: System, FileInfo, and TTGCurve. Each N260 address is an additional topic as well. The Topic name for address 0 is "000". For address 1 it's "001" and so forth. The items that may be requested from or poked to PressNet are described in detail in the following sections.

The System Topic

The System topic supports information about the DDE capabilities of PressNet. The System topic is also common to some other Windows applications which support DDE. An application that supports the System topic can be polled to find out what other topics and items that it will respond to or supply. PressNet supports the following items under the System topic:

Item	Description
1) SysItems -	This is a list of the other items accessible under the System topic.
2) Topics -	This is a list of other Topics that PressNet supports.
3) Status -	This indicates whether PressNet is able to converse or if it is busy doing other time critical functions.
4) Formats -	This is a list of the clipboard formats available to PressNet.

The FileInfo Topic

The FileInfo topic is used to manipulate the PressNet data files. PressNet can extract specific data from its files and compile it into a new file which may then be loaded directly into other applications such as Microsofts Excel spreadsheet software. The criteria for the data to be extracted is set with the following items:

Item	Description
1) Filename -	This is the name of the file to which the extracted data will be written.
2) FirstPress-	This is the first press in the range of presses for which data will be extracted. The value is the address of the press in the range 000-031. Any data for presses previous to this address are ignored.
3) LastPress-	The last press in the range of presses to be extracted. The range is again 000-031. Any information with a higher address is ignored.
4) StartTime -	This is the start time of the range of time for data to be extracted. It must be in military format and must be in the form "hh:mm:ss". The colons must be included.
5) Endtime -	This is the end time for the time range. See StartTime for the proper format.
6) StartType -	This is the starting type in the range of types to be extracted. Type codes are defined in Appendix 2 : "PressNet Data Files". The StartType item should be set to the lowest ASC value in the desired range. The colon (ASC 58) is the lowest

Item	Description
6) StartType (cont.)	possible data type and the underscore (ASC 95) is the highest.
7) EndType -	This is the highest data type in the range of types to be considered for extraction. The EndType item constrictions are identical to the StartType item.
8) StartPart -	This is the lowest Die # that will be included in the extraction. It may be numeric or alphabetic. Die # refers to the Die # field on the PressNet detail screen or the Part # thumbwheels on the N260 Monitor.
9) EndPart -	This is the highest Die # that will be included in the extraction.
10) StartDownCode -	This is the lowest Down code value to be included in the extraction. The Down code refers to the thumbwheel settings on the N260 Monitor. A Monitor without thumbwheels is considered to have the Down code set to 00.
11) EndDownCode -	This is the highest Down code value included in the extraction.
12) StartAssistCode -	Identical to StartdownCode except that it refers to the Assist code settings on the N260 thumbwheels.
13) EndAssistCode -	Identical to EndDownCode except that it refers to the Assist code thumbwheels.
14) StartDate -	The first date in the range to be included in the extraction. Any inform ation recorded before this date is ignored.
15) EndDate -	The last date in the range to be included in the extraction. Any information record after this date is ignored.
16) DoExtract -	When this item is poked to PressNet the extraction begins. PressNet retains control until the extraction is complete.

under the FileInfo topic except the DoExtract and FileName items. A global character in an item tells PressNet to ignore that character when comparing the data to a range. For example, sending "01-01-??" as the StartDate and "06-01-99" as the EndDate directs PressNet to extract all data in the range from January 1st to June 1 from all years before and including 1999. Specifying a string consisting solely of question marks directs PressNet to ignore the item as a parameter and to extract all data as specified by the other criteria.

The default values for FileInfo items follows:

Item	Default
FileName	"DEFAULT.CSV"
FirstPress	"000"
LastPress	"031"
StartTime	"00:00:00"
EndTime	"23:59:59"
StartType	":0"
EndType	" 9"
StartPart	"0000000000"
EndPart	"9999999999"
StartDownCode	"00"
EndDownCode	"99"
StartAssistCode	"00"
EndAssistCode	"99"
StartDate	"01-01-90"
EndDate	"12-31-99"

The TTGCurve Topic

The TTGCurve topic is used to direct PressNet to obtain a curve from a CCM or STI N260 Monitor. When PressNet receives the curve it is processed and stored in a file specified under this topic. The items under this topic and a brief discussion of each item follows:

Item	Description
"Press"	Address of the CCM or STI Monitor. The range of acceptable values is (000-031).
"FileName"	Name of the file to store the curve data in. The file name may include a disk and path but may not exceed 128 characters in length.
"DO_IT"	This item, when poked, directs PressNet to retrieve the curve and write it to the specified file.

The Press Data Topics

The Press data topics are actually the addresses of the N260 Monitors. Topic "000" is address 0 for example. The N260 Monitor data can be retrieved directly via PressNet with these topics. The items under the topics are identical to the N260 data types as defined in the Serial Protocol section in the N260 Technical Reference. The "C" item is

Protocol section in the N260 Technical Reference. The "C" item is capacity for example. Requesting item "C" will direct PressNet to provide the capacity (in tons) for all channels from the specified address. The individual channel data values are separated with the tab character (ASC 9) and the string is terminated with a null (ASC 0) character. Following is a list of the items under the Press Data topic.

Item	Description
'<'	Press name as set in PressNet
'='	Part name
'>'	N260 mode data
'@'	Preset counters
'A'	Average load in tons
'B'	Benchmark tonnage
'C'	Capacity of the press
'D'	N260 time delay value
'E'	Percentages used for setpoint calc.
'F'	First Level tonnage
'G'	Highest tons recorded
'H'	High setpoint in tons
'I'	Last high alarm
'J'	Last alarm in tons
'K'	Lowest tonnage recorded
'L'	Low setpoint in tons
'M'	Last low alarm
'N'	Normal peak tonnage
'O'	Not defined
'P'	Point in time tonnage
'Q'	B4 mode tonnage
'R'	Reverse mode tonnage
'S'	Second level tonnage
'T'	Track values
'U'	Not defined
'V'	Not defined
'W'	Not defined
'X'	High alarm counts
'Y'	Low alarm counts
'Z'	Not defined
'['	Threshold, count high set, count low set, and strokes/min. respectively
'/'	ROM check sum, battery voltage, analog ground potential, input status(Hi byte is input status; Lo byte is output status)
']'	Batch count set point and current down time
'^'	Batch count, part count
'_'	Current thumbwheel settings