SPP Response Mode

The 87 Series Display can be set to respond to serial requests for information. This ability is disabled at the factory. Applications requiring this function can be accommodated by using VDP4 to enable the function. *VDP4* is a Windows™ based utility that is available from Vorne. With SPP Response Mode enabled, the 87 Series Display will return a status string for each serial command received. In response to a valid command the 87 Series unit will respond with the ASCII character **<ACK>** (06 hex/6 decimal). If the checksum feature is enabled, an SERIAL transmission received by the 87 Series Display with an incorrect checksum will produce a response of **<NAK>** (15 hex/21 decimal).

Return Contents from the Display

The **Return Contents** command string begins with the ASCII character **X** (58 hex/88 decimal). Note that the **X** must be upper case. The rest of the data consists of a ASCII character which represent the type of data to return. The available data types are:

Data Type	ASCII Character	Hex/Decimal Representation
Display Value	**No character**	No character
Down Time	**1**	31 hex/49 decimal
Unit Count	**2**	32 hex/50 decimal
Unit Rate	**3**	33 hex/51 decimal
Minimum Rate	**4**	34 hex/52 decimal
Maximum Rate	**5**	35 hex/53 decimal
Production Display	**6**	36 hex/54 decimal
Analog Display	**7**	37 hex/55 decimal
Minimum Analog Value	**8**	38 hex/56 decimal
Maximum Analog Value	**9**	39 hex/57 decimal
Parallel Display Value	**A**	41 hex/65 decimal

The following examples assume that an unit with address of 0 is used, that Terminator has been selected as **<CR>,** and that checksum is disabled. Also note that the group command packet **<SOH>s:** cannot be used with this command. In this example, the down time of the display is 16:76, the count is 9012 and the rate is 120.

To Return...	Transmit	Unit Response..
Down Time	<SOH>S0:X1<CR>	<SOH>Z:016:76<CR>
Unit Count	<SOH>S0:X2<CR>	<SOH>Z:09012<CR>
Unit Rate	<SOH>S0:X3<CR>	<SOH>Z:00120<CR>

The 87 Series Display will return data in the following format:

<SOH>   Code   :   Status   Data   Terminator   Checksum

<SOH>   The symbol **<SOH>** represents the ASCII "Start Of Header" character
                (01 hex/1 decimal), and must be the first character of every
                transmission. Since the purpose of the **<SOH>** character is to mark the
                beginning of a new packet, it cannot appear anywhere else within the
                transmission.

Code   The **Code** value consists of the ASCII character **Z** (5A hex/90 decimal).

:   The ASCII "Colon" character (3A hex/58 decimal) is used to separate the
                header part of the packet from the data.

Status   The Status character indicates how the 87 Series Display
                responded to the command.

                0   Command accepted.
                1   Bad format.
                2   Out of range.
                3   Function Not supported.
                4   Write not allowed.

Data   If the **Response** command is used, the 87 Series Display will transmit
                any ASCII characters which are displayed or stored in memory of the 87
                Series Display. By default, the number of charcters returned by the unit
                will correspond with the number of display digits. This setting can be
                overridden using VDP4.

Terminator   A special ASCII character which marks the end of the data (and thus
                immediately follows it). Note that the symbol **<CR>** represents the ASCII
                "Carriage Return" character (0D hex/13 decimal), and the symbol **<LF>**
                represents the ASCII "Line Feed" character (0A hex/10 decimal). The
                terminator transmitted is determined by the Terminator selection in
                VDP4.

Checksum   This is an optional part of the packet that can be used to provide an extra
                level of data validation. If enaled, the checksum immediately follows the
                Terminator character.

Remote Setting of User Setup Parameters

User Setup Parameters such as Preset One, Preset Two, Initial Value, Input 1 Factor,
Input 2 Factor and Pacing Time can be set and queried serially.

The format for **User Setup Parameter** communication is:

<SOH> S Address : Command # Data Terminator Checksum

<SOH>   The symbol **<SOH>** represents the ASCII "Start Of Header" character (01 hex/1 decimal), and must be the first character of every transmission. Since the purpose of the **<SOH>** character is to mark the beginning of a new packet, it cannot appear anywhere else within the transmission.

S   The ASCII character **S** (53 hex/83 decimal) is used to initiate the User Setup Parameter command..

Address Can range from **0** to **255**, and is an optional part of the packet that specifies an actual unit or group address. If no address is included in the packet, the default address of **0** will be used.

:   The ASCII "Colon" character (3A hex/58 decimal) is used to separate the header part of the packet from the data.

Command The Command character indicates the operation to perform on the User Setup Parameter.

Data Type	ASCII Character	Hex/Decimal Representation
Query Value	**Q**	51 hex/81 decimal
Set Value	**S**	53 hex/83 decimal
Return Description	**T**	54 hex/84 decimal

The second part of the Command instruction is which User Parameter to select.

User Setup Parameter	ASCII Character	Hex/Decimal Representation
Preset One	**2**	32 hex/50 decimal
Preset Two	**3**	33 hex/51 decimal
Initial Value	**4**	34 hex/52 decimal
Input 1 Factor	**5**	35 hex/53 decimal
Input 2 Factor	**6**	36 hex/54 decimal
Pacing Time	**8**	38 hex/56 decimal

Data   Any ASCII characters you wish to set a User Setup Parameter to (refer to Appendix B for a full character set listing). The control characters **<SOH>**, **<CR>** and **<LF>** cannot be used in the **Data** part of the packet, as they are reserved for marking the beginning and end of packets.

Terminator   A special ASCII character which marks the end of the data (and thus immediately follows it). Note that the symbol **<CR>** represents the ASCII "Carriage Return" character (0D hex/13 decimal), and the symbol **<LF>** represents the ASCII "Line Feed" character (0A hex/10 decimal). The terminator transmitted is determined by the Terminator selection in VDP4.

Checksum   The checksum immediately follows the Terminator character. (optional)

The 87 Series Display will return data in the following format:

<SOH> Code : Status Terminator Checksum

<SOH>   The symbol **<SOH>** represents the ASCII "Start Of Header" character (01 hex/1 decimal), and must be the first character of every transmission. Since the purpose of the **<SOH>** character is to mark the beginning of a new packet, it cannot appear anywhere else within the transmission.

Code   The **Code** value consists of the ASCII character **Z** (5A hex/90 decimal).

:   The ASCII "Colon" character (3A hex/58 decimal) is used to separate the header part of the packet from the data.

Status   The Status string indicates how the 87 Series Display responded to the command.

0	VALUE ACCEPTED!
1	Bad format.
2	OUT OF RANGE!
3	Not supported.
4	Write not allowed.

Terminator   A special ASCII character which marks the end of the data (and thus immediately follows it). Note that the symbol **<CR>** represents the ASCII "Carriage Return" character (0D hex/13 decimal), and the symbol **<LF>** represents the ASCII "Line Feed" character (0A hex/10 decimal). The terminator transmitted is determined by the Terminator selection in VDP4.

Checksum   This is an optional part of the packet that can be used to provide an extra level of data validation. If enaled, the checksum immediately follows the Terminator character.