

Continuous Logging of Test Results to a Computer or PDA

APPLICATION BULLETIN #104A

June 6, 2002

OVERVIEW

The Sentinel series of leak test instruments has the ability to send the results of each test to a printer (typically) or other compatible device (such as a computer or PLC) immediately after each test. This bulletin documents the hardware and protocol issues involved. In this configuration, the intelligent receiver is entirely passive. It cannot request data. It can pause the transmission of data (by telling the Sentinel instrument that it is not ready), but not indefinitely. The Sentinel instrument has a very small input buffer.

If you desire two way or highly controlled communications (e.g. data verification etc.), please request Application Bulletin #105, Sentinel I-21/B-21/F-21 Serial Communications (Sentinel C-20 does not offer two communication). AB #105 documents the more complex RS232 and RS485 communications process where a computer requests specific information via a defined “data request” packet and the Sentinel instrument returns the requested information through its “request response” packet. The protocol is somewhat involved. If you select this approach, you may want to consider purchasing technical assistance from CTS.

DISCUSSION

The RS232 port on the Sentinel instrument is designed to transmit a fixed format test result packet at the conclusion of each test to a dumb serial printer. This data can, however, be collected by any device capable of collecting such serial data. For demonstration purposes, the following discussion will be based on using a notebook computer to collect the desired information.



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Hardware:

Notebook Computer with Microsoft Windows 'Hyper-Terminal' communications program. The trial setup for the 'Hyper-Terminal' program includes "Settings/Communications/COM2, 9600 bps, 8 data bits, no parity, 1 stop bit, no flow control", "Settings/Terminal Emulation/TTY (Generic)", and "Transfers/Receive Text File/filename".

(It is also possible to download data to a PDA. You can acquire a demo version of "Online" by accessing the website, www.markspace.com/online.html. This software logs the data into the memo pad of the PDA. From there you can copy it to other spreadsheets after hot synching to your computer.)

A Female to Female null modem cable (available from CTS or most computer stores) connected to COM2 port of the laptop. Or a Female RS232 to hot synch cable for a PDA (available at most computer stores.)

Instrument Settings:

Select "Comm/Printer or RS485 Network/Each Test" from the keypad (MENU/Ser Port/Each Test from the keypad of Sentinel C-20 instrument.)

Communications Settings:

9600 baud
8 data bits
no parity
1 stop bit

Data Format (S, F test for Sentinel I-21/B-21/F-21)

The ASCII data stream transmitted after each test is as follows:

Space
Part Number (1 byte, a number from 1 to 8)
Two Spaces
Pressure Loss (Pressure for F-21) (6 characters. Valid characters include numbers, period, dash, or space)
One Space
Zero Shift (6 characters. Valid characters include numbers, period, dash, or space)

One Space

Leak Rate (4 characters. Valid characters include numbers, period, dash, or space)

Two Spaces

Test result (1 character. Valid characters are “A” and “R”)

Carriage Return (0D₁₆)

Two Line Feeds (0A₁₆)

Additionally, if the data logger is on when the “Comm/Printer or RS485 Network/Each Test” selection is made, a header will be transmitted (An “Each Test” title, the date and time, and the column header “Part Press Zshift Flow Res” followed by a carriage return).

Data Format (D, T test for Sentinel I-21/B-21/F-21)

The ASCII data stream transmitted after each test is as follows:

Space

Part Number (1 byte, a number from 1 to 8)

Two Spaces

Pressure Loss (Pressure for F-21) (6 characters. Valid characters include numbers, period, dash, or space)

One Space

Zero Shift (6 characters. Valid characters include numbers, period, dash, or space)

One Space

Leak Rate (4 characters. Valid characters include numbers, period, dash, or space)

Two Spaces

Test result (1 character. Valid characters are “A” and “R”)

Carriage Return

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One Space

Leak Rate (4 characters. Valid characters include numbers, period, dash, or space)

Two Spaces

Test result (1 character. Valid characters are “A” and “R”)

Carriage Return

One Line Feed

As in the S and F version, if the data logger is on when the “Comm/Printer or RS485 Network/Each Test” selection is made, a header will be transmitted.

Data Format (Sentinel C-20-S/F/C test)

The ASCII data stream transmitted after each test is as follows:

Space

Leak Rate (4 characters. Valid characters include numbers, period, dash, or space)

One Space

Part Number (1 number, a number from 1 to 4)

Two Spaces

Pressure Loss (6 characters. Valid characters include numbers, period, dash, or space)

One Space

Process Drift (6 characters. Valid characters include numbers, period, dash, or space)

One Space

Quik Test (4 characters. Valid characters include numbers, letters, period, dash, or space)

Two Spaces

Test result (1 character. Valid characters are “A” and “R”)

Carriage Return (0D₁₆)

Two Line Feeds (0A₁₆)

If the data logger is on when the “MENU/Ser Port/Each Test” selection is made, a header will be transmitted (An “Each Test” title and the column headers “LeakRate Part PressLoss ProcessDrift QuikTest Res” followed by a carriage return).

Hard Wiring

Because the Sentinel instrument believes it is talking to a printer, only three wires of the serial cable are actually carrying information. They are:

Data (pin 3)

Ground (pin 5)

Not Busy (pin 8)

COMMENTS

If you set up the above trial correctly, test results will be sent to the computer (PDA or printer) following each test.

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