

## **Remote Instrument Control of the BlackBelt/I-28**

*Purpose: This Service Bulletin is to give a broad overview of the steps to remotely control the Blackbelt and I-28 Leak Test Instruments.*

The I-28 and Blackbelt instruments can be configured to be controlled remotely. This will enable the user to access any of the functions that are available on the instrument screen such as adjusting test timers or starting a test. Naturally, caution must be exercised any time that a test is running or being started in an unsupervised environment.

The following steps give an outline of how to control an instrument remotely.

### **Step 1 – Mode of Communication**

The first step is to determine the mode by which you will communicate with the instrument. There are two primary methods to remotely control an instrument - RS232 or Ethernet. Both methods allow for the same functionality in terms of interface with the instrument. Choose whichever connection is the best fit for your application. It may be helpful to discuss the advantages with the IT department when considering placing an instrument on a network.

### **Step 2 – Get Wired**

Once you have determined how you will communicate, attach the appropriate cables.

### **Step 3 – Configuration**

When using a PC to control the instrument, you will utilize a program to access the instrument. There are various free programs that can be used such as Hyperterminal, Tera Term or PuTTY

#### **Ethernet Set-Up**

Ensure that instrument IP address (found in the Global Config/TCP/IP Menu) has been entered correctly and that the Telnet Port is set to 23. Up to 4 computers can communicate with the instrument but only the computer designated as #1 is visible on the instrument display.

### **Step 4 – Start Talking**

Now that the instrument is connected and configured it is time to begin communicating. Typing HELP will bring up the root menu. From there you may ultimately access all functions that are available on the instrument screen. EXIT will bring you back to the root menu. When a valid command is utilized, the instrument will respond with an acknowledgement that confirms the command.

Sample Communication:

Type: HELP [ENTER]

Receive:

```

*****
*      TREE  ROOT  CONTROLLER  *
*****
*      <I\>:  Global config *
*      <C\>:  Channel config *
*      <P#\>: Part config menu (please select a part number) *
*      <T#\>: Result data (please select a part number) *
*      <A#\>: Autosetup *
*      <M\>:  Module menu *
*      <U\>:  Update Firmware *
*      VAR>:  '>' see conditional options for this variable *
*      VAR?:  '?' see help for this variable *
*      VER:   Display Version Number *
*      Dir:   Display Current Branch *
*      Help:  Help *
*****

```

Type: C\ [ENTER]

Receive:

```

*****
*      Channel config *
*****
*      <H\>:  Hardware, Instrument hardware settings. *
*      <S\>:  Self test *
*      <P\>:  Set/Span *
*      <U\>:  Units *
*      <L\>:  Leak Standard *
*      <M\>:  Misc *
*      VAR>:  '>' see conditional options for this variable *
*      VAR?:  '?' see help for this variable *
*      VER:   Display Version Number *
*      Dir:   Display Current Branch *
*      Help:  Help *
*****

```

Type: **L\ [ENTER]**

Receive:

```

*****
* Leak Standard *
*****
* <Open Leak Std>      :c: No *
* <Leak Std/Cal Define> :c: Program *
* <Leak Std Cal Flow>  :f: 24.83scm *
* <Leak Std Cal Press> :f: 2.30psig *
* <Cal Method>        :c: One Part - Ext LS*
* VAR>: '>' see conditional options for this variable *
* VAR?: '?' see help for this variable *
* VER: Display Version Number *
* Dir: Display Current Branch *
* Help: Help *
*****

```

*Sample Commands:*

To open the leak standard - Type: **OPEN LEAK STD=YES [ENTER]**

Receive:

740001B V C\L\OPEN LEAK STD=Yes

To set the leak standard calibration pressure to 4.0 psig -Type: **Leak Std Cal Press=4.0psig [ENTER]**

Receive:

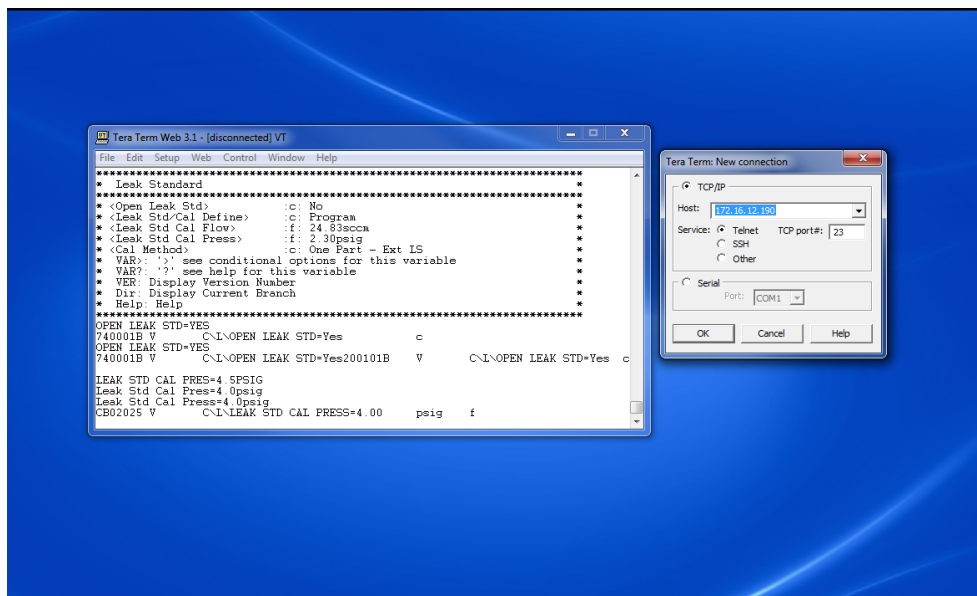
CB02025 V C\L\LEAK STD CAL PRESS=4.00 psig f

To see the conditional options for the report variable –Type: **RS232 1 REPORT> [ENTER]**

Receive:

- 4C1401D L Start, Conditional Options
- 8415014 L 1, Program Config
- D416015 L 2, Cur Prog Config
- 4B17014 L 3, Channel Config
- 3818013 L 4, Global Config
- 0519013 L 5, Chan Last Res
- E11A012 L 6, Chan Last 20
- 221B013 L 7, Chan Last 100
- 691C014 L 8, Chan Last 1000
- FE1D011 L 9, All Results
- 1E1E016 L 10, Cur Program Res
- B71F014 L 11, Channel Cntrs
- 4E20015 L 12, Transducer Cal
- E721015 L 13, Transducer Ver
- 9A22014 L 14, Regulator Cal
- E92301C L Stop, Conditional Options

Sample Screen Shot:



Appendix 1. Instrument Communication Functionality:

	Generate Data Reports	Streaming Data	Remote Instrument Control	Email Alerts
RS232	YES	YES*	YES	NO
Ethernet	YES	YES*	YES	NO
Email	YES	NO	NO	YES
USB	YES	NO	NO	NO

\*Only one interface may stream data at a time.