ANSI X3.28 LABVIEW DRIVER

DESCRIPTION

ICS's ANSI X3.28 LabVIEW Driver provides the easy way to add ANSI X3.28 communication capability to any LabVIEW™ program. When used with an ICS 4804A-7 GPIB-to-serial interface, the Driver provides direct control of ANSI X3.28 devices like the Lunaire Versatrenn III and the Watlow 942 series Controllers. Typical applications are controlling and monitoring temperature in an environmental chamber.

The ANSI X3.28 LabVIEW Driver is a Library with Virtual Instruments (VIs) that are specifically tailored to work with ICS's 4804A-7 GPIB-to-Serial Interface and any Controller with an ANSI X3.28 Interface. The VIs are written in LabVIEW version 5.1 and can be incorporated in test programs developed by LabVIEW versions 5.1 and 6.i. The VI's in ICS's ANSI X3.28 LabVIEW Driver save many hours of program development time and greatly reduce the cost of communicating with and controlling ANSI X3.28 devices from LabVIEW programs.

Library Contents

The ANSI X3.28 LabVIEW Driver Library contains the following top VIs:

INIT_IDN.vi
Static_SP.vi
Load_Steps.vi
Execute_Steps.vi

The top level Driver VIs demonstrate how the subVIs work together to create the major functions that you will use in your program.

The INIT_IDN.vi is used to establish communication with the 4804A-7 and the ANSI X3.28 Controller. The Static_SP.vi sets an operating setpoint for the Controller. The demo version can be used to control a temperature chamber. Load_Steps.vi loads programming steps into the Watlow 942 Controller. The demo version loads up to 24 steps with Step Type Codes. The Execute_Steps.vi triggers and monitors the performance of a Controller as it executes the programmed steps.

Demonstration VIs

The ANSI X3.28 LabVIEW Driver Library includes three demonstration VIs that show how the VIs can be connected together to control a temperature chamber.

The Static_Setpoint_Demo initializes the 4804A-7 Interface and establishes communication with the Controller. It powers up running and is designed around a Type J thermocouple. With the program stopped, the user can set the temperature units as °C or °F and reset the temperature by either moving a pointer, by clicking up/down arrows or by direct entry. When the Run/Stop switch is set to Run, the VI commands the Controller to the set temperature value.

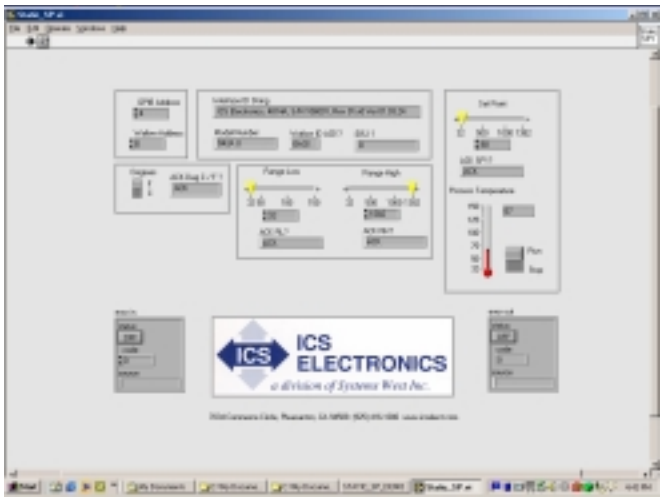

Figure 1 Static_SetPoint_Demo Front Panel

The easy way to control ANSI x3.28 devices from your LabVIEW program

- Library VIs work with the 4804A-7 Interface and ANSI x3.28 Controllers
  Use with Watlow 942 or Lunaire Versteen III
- Five top level function VIs to setup and run the controllers.
  Useful functions that also demonstrate how to use the library
- Twenty-one sub-VIs that handle the most common control functions.
  A complete library package for your program.
- Tested demonstration VIs simplify LabVIEW program development by showing typical VI connections.
  Saves many hours of program development time.
- Driver written in LabVIEW version 5.1.
  Can be used with LabVIEW versions 5.1 and 6.i.
- Download ANSI x3.28 demo VI from ICS's website at http://www.icselect.com
  Quick trial demonstrates the Library's capabilities.

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Demonstration VIs cont'd

The Load_Steps_Demo was created to show that LabVIEW can be efficiently used to load up to 24 programming steps into the Watlow 942 Temperature Controller. This demonstration VI is an easier-to-use alternative to loading the program steps in from the 942's front panel. Refer to the 942's User Manual for a description of the step type codes.

The Run_Steps_Demo is used to run the steps previously loaded by the above Load_Steps_Demo. Run this program only after loading the 942 with some program steps. Double clicking on the Run_Steps_Demo.exe icon or file causes the program to execute immediately. It sends a Start command to the previously loaded steps and begins monitoring the run status. The GUI shows the screen displayed in Figure 2. Current Step? shows the status of the current running step. As the program runs, the time bit positions count down. The current setpoint and mode are also displayed. A '1' indicates the program steps are running, a '2' indicates the 942 is in a hold mode and a '3 4' indicates the 942 is off. Front panel lights also visually display the current mode.

Creating the Application Program

The following are general guidelines for developing your own custom application. The ANSI X3.28 LabVIEW Driver includes all of the subVIs that made up the demo applications described above and the top level VIs listed below. Use them as examples or as desired in your program. The instructions with the ANSI X3.28 LabVIEW Driver describe each sub-VI and outlines how they are to be used to put together your custom application.

Note that there are some programming differences between the Tenny Versatrenn and the Watlow 942. The ANSI X3.28 LabVIEW Driver was developed and tested with the Watlow 942 as it has more controllable functions. Read the instruction manual with your controller to familiarize your self with your controller's capabilities before designing your program.

Figure 2 Run_Steps_Demo Front Panel

48X9 LABVIEW DRIVER: SPECIFICATIONS

Required Computer and Software

Intel Pentium or equivalent processor with Windows 95/98/2000 or NT operating system. User should have LabView version 5.1 or version 6.i.

LabView VIs:

Top Level VIs
- Simple_Setpoint_OnOff.vi
- Single_Ramp_Demo.vi
- Static_Setpoint.vi

Sub-VIs
- Degrees_C_F.vi
- ICS 4861 Wait.vi
- Init.vi
- Ramp_Segment.vi
- Read_Current_Temp.vi
- Read_Current_Temp_mod.vi
- SP1_CMD.vi
- SP1_Off.vi
- SP1_On.vi
- Static_SP1.vi
- Wait.vi

Deliverable Items

3.5 inch disk with:
ANSI X3.28 Driver Library files
Instruction Sheet file

ORDERING INFORMATION	Part Number
ANSI X3.28 LabVIEW Driver Library	123167