DSX Soft I/O

SIO Integration Software

DSX now can integrate with various external devices through serial data streams. This integration allows other systems such as elevators, intercom, HVAC, fire alarm, etc., to interact with the DSX network of controllers through a serial data or TCP/IP link between the systems.

- Supports Virtual Inputs and Outputs

- User Defined Command Strings – In and Out

- Supports open and proprietary protocols

- RS-232/485 / TCP/IP Communications

Overview

The DSX Soft I/O product will allow you to integrate DSX Access Control with different systems. Now you can use one software package to monitor and control multiple building systems. You can even program action/reaction linking events between diverse systems.

The DSX Soft I/O can be thought of as a universal translator. It can speak to multiple systems simultaneously and control interaction between those systems based on logic that you define.

The applications are only limited to your imagination. You could integrate an intercom system with the security and CCTV so that when an intercom station is pressed the DSX system annunciates it and instructs the CCTV system to pan the camera to the proper position and display it on screen.

You could also program a high temperature alarm from the HVAC system to automatically display the appropriate camera at the security desk. The applications are limitless. Soft I/O can be the communications translator between systems that could not otherwise communicate with each other.

How does it work

The DSX Soft I/O program adopts a range of Device (controller) addresses and conducts itself as a Virtual Controller(s). The Virtual devices are complete with virtual inputs and outputs that receive and send data rather than contact closures.

The DSX Soft I/O program is typically run on a dedicated PC that is connected to the controller communication network through a serial port connection. Typically, a DSX-1035 quadraplexor is placed after the Master Controller which provides an RS-232 output that can be connected to a Serial Port on the Soft I/O computer. The DSX-Soft I/O program responds to the Polls of the Master controller just like a Sub control panel would. The Soft I/O program can represent multiple controllers simultaneously. Each virtual controller or address is capable of 8 Soft Outputs and 16 Soft Inputs.

Within the Soft I/O program you define Soft Inputs and Soft Outputs. Soft Inputs are defined to accept data from other systems and then reflect that data as faulted or normal Inputs in the DSX controller network. Soft Outputs are defined to transmit data to other systems in response to commands from the DSX controller network.

Soft Inputs

Define inputs in the Soft I/O program to represent the state of something that you want to monitor. These Soft Inputs defined in the Soft I/O program will function the same within the DSX software as a physical input on a DSX controller. They can cause alarms, troubles, and status change events to occur by time zone. They can also serve as the stimulus for linking events to occur. Basically, anything that you could do with an input that exists on a controller you can do with a Soft Input.

When you define a Soft Input, you will assign it to a comm port. This tells the Soft I/O program which comm port it will listen to for the command strings that will affect the status of the input. You will also define the command strings that the program will listen for on the comm port. There are up to three command strings defined for each input. They are:

Input Abnormal: The command string that will cause the Soft Input to change to the abnormal state. If the input is armed when this command string is received it will cause an alarm event within the DSX software. (The equivalent of opening a door while the input is armed)

Input Normal: The command string that will cause the Soft Input to change to the normal state. If the input is armed when this command string is received it will cause an alarm restoral event within the DSX software. (The equivalent of closing a door while the input is armed)

Input Trouble: The command string that will cause the Soft Input to change to the trouble state. (The equivalent of tampering with an input on a 4-state supervised input)

Soft Outputs

Define outputs in the Soft I/O program to represent the state of something that you want to control. These Soft Outputs defined in the Soft I/O program will function the same within the DSX software as physical outputs on a DSX controller. They can be programmed to open/secure by time zone. They can serve as the stimulus for linking events to occur or respond to linking events from another stimulus. Basically, anything that you could do with an output that exists on a controller you can do with a Soft Output.
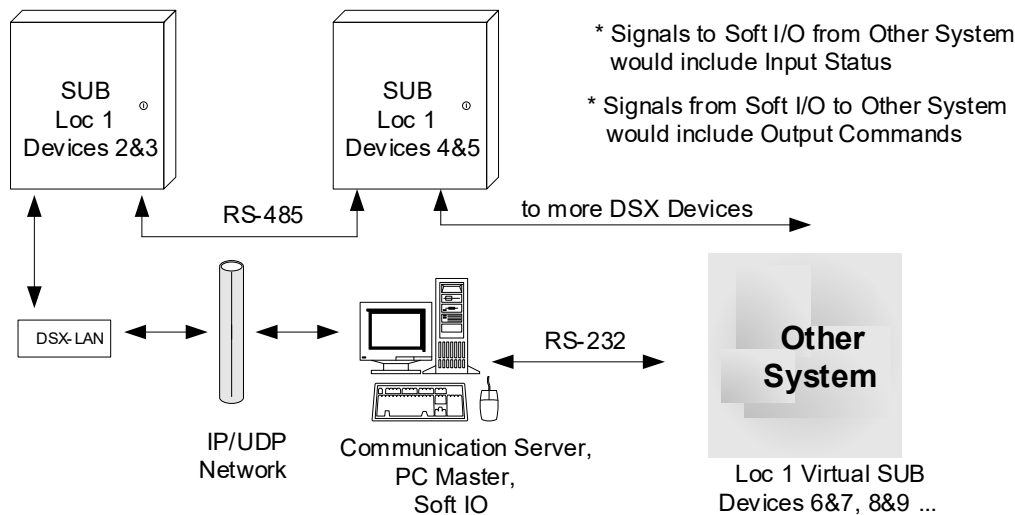
When you define a Soft Output, you will assign it to a comm port. This tells the Soft I/O program which comm port it transmits the command strings on that are assigned to the output. You will also define the command strings that the program will transmit out the comm port. There are two command strings defined for each output. They are:

Output Open: The command string that will be transmitted when this output is changed to the open state. The output may change states in response to a manual override, time zone change, or linking event.

Output Secure: The command string that will be transmitted when this output is changed to the secure state. The output may change states in response to a manual override, time zone change, or linking event.

Soft IO Connections

Below is a diagram of how Soft IO can be integrated into a Location. The Comm Server communicates with PC Master which communicates to the DSX Controllers via a LAN connection and with the virtual devices located on the Soft IO computer.

* Signals to Soft I/O from Other System would include Input Status

* Signals from Soft I/O to Other System would include Output Commands

SUB
Loc 1
Devices 2&3

SUB
Loc 1
Devices 4&5

RS-485

to more DSX Devices

DSX-LAN

IP/UDP Network

RS-232

Other System

Communication Server,
PC Master,
Soft IO

Loc 1 Virtual SUB
Devices 6&7, 8&9 …

Questions and Answers about Soft IO

1. If the Soft IO PC is turned off, is there an indication? Yes, if the Master Controller cannot communicate with Soft IO the DSX system will receive Device Communication Loss alarms and will show the Devices that Soft IO represents as offline.

2. Can more than one copy of Soft IO be used on the same PC? Yes, though each would have to be purchased and registered separately they could be used to communicate with different DSX Controller Networks.

3. Can Soft I/O be used without controllers? Yes, Soft I/O could be used with PC Master and it could simulate 126 virtual devices.

4. Can Soft I/O communicate with the controller network via TCP/IP instead of using a serial port? Yes, using PC Master which could reside on the same or different PC. PC Master would communicate with the Comm Server over the network and in turn communicate with Soft I/O over the network.

Applications for Soft IO

There are many applications possible once you understand the mechanics of Soft IO. Below are some possible applications to help stretch your imagination.

Intercom, CCTV, and Access Control

Interface between Intercom and CCTV switcher. Let us say for example that we have an Intercom system that has an RS-232 output. It can send a separate ASCII string for calls placed at each intercom station. We also have an Access Control System to control all entry points and a CCTV system with cameras at each door.

The goal is to have all three systems integrated to improve the overall performance of the entire system. If done correctly when a call is placed at the Intercom Station the CCTV system will start real time recording at that door and place the appropriate camera on the main monitor for the security officer to see. The security officer can then momentarily unlock the door for that one visitor.

The Intercom system has a unique RS-232 ASCII command structure and so does the CCTV system. However, the command protocols do not align. The solution is DSX and Soft IO. The RS-232 output of the Intercom System is connected to Soft IO that represents four devices on the DSX Controller Network. This allows for 64 distinct input points and 32 distinct output points. When a call is placed a unique ASCII string comes into Soft IO. The virtual input that string is mapped to is linked to a virtual output also on Soft IO which then sends the appropriate ASCII commands to the CCTV system. This instructs the switcher to pull up a specific camera and view it on a certain monitor. (The CCTV could even be integrated to DSX so that the video is displayed on the DSX PC.)

The security officer can now see and speak to the visitor and decide to grant them access through DSX. The call being placed as well as the door being unlocked is all recorded into History on the DSX system for future retrieval.

Alarm Annunciation for other systems

A great integration application for Soft I/O is Alarm and Event Annunciation from other systems. Fire Alarm Systems, Security Systems, Building Automation and any system that has an RS-232 output, that sends its alarm and event messages in an ASCII format, can be connected to SIO to translate and transfer those events to DSX for On Screen annunciation. Each different alarm or event message that can be sent from the Fire Alarm system can be individually defined in Soft I/O and in DSX.

Once defined in DSX these events are treated like any DSX monitored input and can be programmed to generate an On-Screen Alarm that has to be acknowledged and optionally must restore before it can be resolved and cleared from the DSX Workstation Screen. The events and/or alarms can also cause an Audio Wave file to be played, a map to be displayed and even force the operator to enter a comment regarding the alarm. Live Icon Status and I/O Linking are also inherent features of the event and alarm monitoring that DSX provides to the other systems.

This annunciation is in addition to and must be above and beyond what is required by Law. It is in addition to what is required by State and Local fire, safety, and building codes and is not meant to replace any required notification devices.