



DSX Soft I/O Integration Software

DSX now has the ability to integrate with various different external devices through serial data streams. This integration allows other systems such as intercom, HVAC, fire alarm, etc.. to interact with the DSX network of controllers through a serial data link between the systems.

What Can It Do?

The DSX Soft I/O product will allow you to integrate different systems together within the WinDSX software. 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 WinDSX 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.

How Does It Work?

The DSX Soft I/O program provides a virtual list of inputs and outputs that can be used to accept information IN to the DSX panel network from other systems or send information OUT of the DSX network to other systems.

The DSX Soft I/O program is typically run on a dedicated PC that takes the place of control panels on the DSX RS-485 network. Basically the Soft I/O program talks to the Master controller just like a Slave control panel would. The Soft I/O program can represent multiple control panels simultaneously. Each control panel that the Soft I/O program represents 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 into the DSX control panel network. Soft Outputs are defined to transmit data to other systems in response to commands from the DSX control panel network.

Soft Inputs

You 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 exactly the same within the WinDSX software as a hard input that is on a DSX control panel. They can cause alarms, troubles, and status change events to occur by timezone. 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 control panel 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 WinDSX 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 WinDSX 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 opening/closing or tampering with an input on a 4 state supervised input)

Soft Outputs

You 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 exactly the same within the WinDSX software as a hard outputs that are on a DSX control panel. They can be programmed to open/secure by timezone. They can serve as the stimulus for linking events to occur or respond to linking events from other stimulus. Basically anything that you could do with an output that exists on a control panel you can do with a Soft Output.

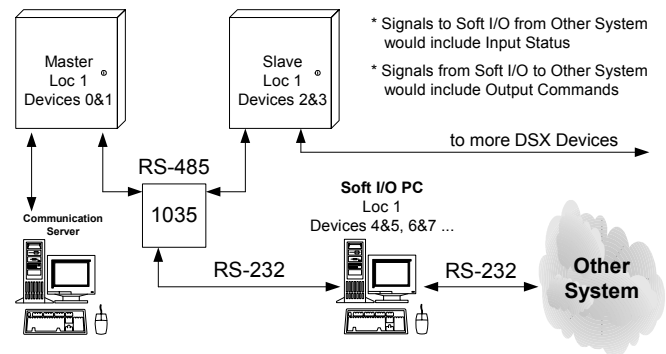
When you define a Soft Output you will assign it to a comm port. This tells the Soft I/O program to which comm port it transmits the command strings assigned to the output. You will also define the command strings that the program will transmit out the comm port. There are two command strings defined 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 that shows a typical system. There is a Comm Server PC that communicates to a Master Controller. The Master Controller communicates to all Slave Controllers and to a PC running the Soft I/O software. The DSX-1035 Quadraplexor is used as a means of getting the Soft I/O PC onto the RS-485 Controller Network via a serial port connection. The Soft I/O PC uses a separate serial port to communicate with the other system.



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 WinDSX 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. For unidirectional Linking between two DSX Locations a single copy of Soft IO would be used. For bi-directional Linking between two DSX Locations two copies of Soft IO would have to be used.
3. Can Soft IO communicate with more than one other system? Yes, a single copy of Soft IO will communicate with multiple other systems to receive input, and to multiple other systems to transmit output and with a single DSX Controller Network all at the same time.

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. Lets 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 so as 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 WinDSX 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 particular camera and view it on a certain monitor. (The CCTV could even be integrated to WinDSX so that the video is displayed on the WinDSX PC.)

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

Linking between DSX Locations

Another possible application is Linking between DSX Locations. For example we have a large facility that is split into multiple locations. We have the need to have an input(s) on one location link to outputs on another location.

This could be done with a single copy of Soft IO. We would utilize the ASCII output at the Comm Server to output commands on a particular serial port when inputs at one location go to an abnormal state or into alarm. That ASCII output serial port on the Comm Server would be connected to a serial port on the Soft IO PC. Those ASCII strings would be mapped to virtual inputs that would then link to any output(s) on any controller in that location. This provides for a unidirectional linking scheme from one location to another.

To achieve a bi-directional linking scheme between two DSX locations would require two copies of Soft IO running on the same or different PC. Each would be connected to their respective DSX Controller Networks. The two would also have a serial port connection between them. Inputs on one DSX system link to outputs on Soft IO. Soft IO in turn sends an ASCII string to the other Soft IO that maps it to a virtual input. That input can then link to any other input or output in that Location. With two copies of Soft IO and two serial ports the two Locations can link back and forth between the inputs and outputs in both systems.

Elevator Control

A great application for Soft IO is Elevator Control. To perform floor select elevator control currently requires a single relay output for each call button and floor select button to be secured. When a card is read (depending on the linking level assigned to it) a code to output link occurs. This link turns on the appropriate output thus enabling the proper floor select button in the cab the card was read. This usually requires a great number of relay outputs and physical wiring between the Access Control System and the Elevator Control System.

Soft IO allows the linking that is normally done with relay outputs to be performed with virtual outputs. Each one sending a unique RS-232 ASCII output to the elevator control system. This eliminates all of the relay outputs and hard wiring between the two systems.

Of course the Elevator Control System must be able to communicate and be controlled this way. It is also necessary for the Elevator Company to provide the communications port (RS-232, RS-495, or TCP/IP). They must also provide the ASCII Command structure necessary to communicate with their elevators.