

iWorX



iWorX Demonstration Unit Instructions

Version 1.03

Demonstration Unit Documentation



Confidentiality Notice: This document contains confidential information owned by Innovex Technologies. The information contained herein is legally privileged. Therefore, you are hereby notified that any disclosure, copying, distribution, or the taking of any action in reliance on the contents of this material without the written consent of Innovex Controls, Inc. is strictly prohibited.

Table of Contents

1. ABOUT THIS DOCUMENT	3
1.1 DESCRIPTION	3
2. POWER REQUIREMENTS	3
3. DEMONSTRATION UNIT COMPONENTS	3
4. DEMONSTRATING THE IQ-SBS SYSTEM	4
4.1 ADDING CONTROLLERS	5
4.2 CONFIGURATION OF CONTROLLERS	6
4.3 ADDING HOLIDAYS	6
4.4 CREATING SCHEDULES	6
4.5 CREATING GROUPS	6
4.6 ACCESS CONTROL	7
4.7 ADDING ACCESS CARDS TO THE LCI	7
4.8 USING THE ACCESS CONTROL UNIT TO DRIVE GROUP OCCUPANCY	8
4.9 LIGHTING CONTROL	8
4.10 CONFIGURING THE LCU SWITCHES AND CONTACTORS	8
4.11 CREATING AND CONFIGURING THE LIGHTING ZONE	9
4.12 DEMONSTRATING THE LIGHTING ZONE	10

1. About this document

This document gives an overview of how the system should be demonstrated to customers and does not replace factory training on the products. Since this document only covers a subset of system features, it should not be used as a replacement for the user, installation or application guides.

1.1 Description

The Demonstration Unit is a portable suitcase that can be taken to customer sites to give live IQ-SBS product demonstrations.

The IQ-SBS products are designed to meet the needs of small buildings. IQ-SBS integrates HVAC, lighting and access control into one intelligent and cohesive system.

With IQ-SBS, the benefits of integration are now available to the small building controls market. IQ-SBS uses open architecture, self-configuring controls and an approach that integrates the functions of heating and cooling, lighting control, and people and property protection that historically has only been available in single function products or systems.

2. Power Requirements

The Demonstration Unit comes pre-wired from the factory for 110vac. Should power requirements differ from the factory settings, the transformer within the Demonstration Unit can be rewired for 208 and 240vac.

To modify the box for 208vac you need to remove the utility box cover underneath the panel and remove the wire nut on the white (110vac) and line cord wire and connect the line cord wire to the Red wire (208vac).

To modify the box for 240vac you need to remove the utility box cover underneath the panel and remove the wire nut on the white (110vac) and line cord wire and connect the line cord wire to the Orange wire (240vac).

The 24vac transformer that is located inside the Demonstration Unit powers the IQ-SBS controllers.

3. Demonstration Unit components

- Local Control Interface (LCI) – The LCI is the operator interface for the IQ-SBS system. It has a color LCD display and uses a touch screen with soft keys (buttons) for user input. The entire IQ-SBS system can be easily commissioned using the LCI. The LCI performs the following functions for the IQ-SBS system:
 - HVAC Controller setup
 - Network configuration
 - Setup and operation of scheduling for HVAC controller occupancy

- Setup and operation of access control
 - HVAC controller occupancy determination by schedule and/or access control
 - System event and alarm reporting
 - Real-time display of all controller parameters including temperature, occupancy status and operational mode
- Direct Expansion Unit type 2 (DXU2) – The IQ-SBS DXU2 package unit controller is a stand –alone microprocessor-based controller for Single Zone DX Package Units. The application would include packaged rooftop DX units with up to two stages of heating, 4 stages of cooling and a 2-state or modulated economizer.
 - Lighting Control Unit (LCU1) – The IQ-SBS LCU1 lighting control unit controller is a self-contained device for controlling facility lighting.
 - Auxiliary Sensor Module (ASM) – The IQ-SBS ASM is a stand –alone microprocessor-based controller that provides outdoor temperature, outdoor humidity, global indoor humidity, central plant mode indication and supply water temperature measurements to other IQ-SBS devices on the network.
 - Access Control Unit (ACU) – The IQ-SBS ACU is a stand –alone microprocessor-based controller that provides card access to a single portal.
 - System Configuration Software (SCS)– This tool is a PC-based Microsoft Windows application that interfaces to the LCI via its serial port. The tool allows the operator to create, back up and restore the LCI database as well as all controller setpoints. The tool also allows the operator to field-upgrade controller and LCI firmware without removing and replacing firmware chips. The SCS tool is an optional component and is not required for normal setup and operation of the system.
 - 9-pin to 9-pin serial cable – Used for communication between the SCS and the LCI.
 - Demonstration Unit CD-ROM – This CD-ROM contains the SCS software, LCI database, documentation and controller firmware files.

Note: For additional information on any IQ-SBS controllers, please refer to the appropriate installation or application guides.

4. Demonstrating the IQ-SBS System

When demonstrating the system you should first let the customer know that no programming knowledge is required to configure an IQ-SBS System. The entire system can be easily commissioned through the LCI. The LCI uses a self-configuring network management method that requires no PC, network management tools, or LonWorks knowledge. For the novice user, the LCI provides easy-to-use setpoint modification screens called wizards. The wizards guide the installer through the initial setup of common setpoints on each controller.

The LCI supports the following:

- Up to 64 IQ-SBS Controllers (any combination with the exception of 1 ASM & 8 LCU1s maximum)
- Up to 16 Groups
- Up to 16 Schedules
- Up to 50 Holidays
- Up to 8 Lighting Zones
- Up to 8 Doorgroups
- 500 access cards

While using the LCI always remember that there are context sensitive on-line help screens available. Touching the question mark icon at the bottom left portion of the screen will display context-sensitive help for the current screen.

After explaining the above you should delete the database in the LCI so you are starting with a fresh system. To remove the database, login to the LCI with the Administrator password '0000', the LCI has two passwords one for an Administrator and the other for an Operator '1111'. The Administrator password allows the user full access to the LCI while the operator password only permits the operator to view controllers, change the temperature setpoint and modify schedules.

To remove the database, starting with the Home screen, select Utilities>Database Utilities>Clear Databases>Yes.

Now that the database has been cleared, the LCI will revert back to the Login screen. Once again, sign on using the Administrator password. You are now ready to start demonstrating the ease of configuring the system.

4.1 Adding Controllers

To add controllers to the LCI database, first select the Devices button on the Home screen. Since no devices are presently in the system the screen will be blank with the exception of the control buttons associated with the Devices screen. Depress the service pins (service pushbutton) for each controller. Each Demonstration Unit is shipped with four (4) controllers. There are two (2) HVAC & one (1) Lighting controllers attached to the metal back plate and one (1) access controller located on the backside of the back plate. The service pins on the HVAC and lighting controllers are located in the lower left hand corner of each controller, you may want to lift the screw terminal cover to view the pin (pushbutton). The Access Controllers' service pin may be accessed by removing the lid from the controller and depressing the pushbutton labeled Service Pin. After each service pin has been depressed the controllers will automatically appear on the Devices screen.

Once all the service pins have been depressed you may scroll through the list using the up and down arrow buttons. Notice the three columns of information displayed to the right of each controller. This information displays the controllers' Current Temperature, Current setpoint and Alarm condition. Since the ASM, LCU and ACU do not control HVAC equipment there is no information displayed.

4.2 Configuration of Controllers

Select the DXU controller by first highlighting the controller with the up/down arrows and depressing the Enter button. The screen that is now displayed provides a means of accessing all information within the DXU controller. We will only explore a few of the buttons during our demo.

Select the Setup button. In the setup screen, select the Heat/Cool Setup button; this displays the Wizard for the heating and cooling parameters in the DXU controller. Using the arrow keys you can move between each configuration parameter. When on a parameter that's desired to be modified use the plus (+) key to increment the value and the minus (-) key to decrease the value. Once all changes are made select the Enter button. This will write the data to the controller and this revert back to the Setup screen.

From the Setup screen select the List all Settings button. This will display a list of the configuration parameters within the DXU controller. From here it is possible to change the number of stages, define occupied/unoccupied setpoints or as previously done in the Wizard change the heating and cooling configuration.

Select the Back button until the Devices are again displayed on the screen. If desired, select another controller to demonstrate the differences between each controller. When completed demonstrating controller configuration, depress the Home button to get back to the Home screen.

4.3 Adding Holidays

Select Holidays Times; from the Holiday Times screen select Add New at the bottom of the screen. "January 01, 2001" is displayed as a default; select the Enter button to modify this date. Once within the individual holiday depress Year, Month and Day buttons until the desired holiday is created and then depress the Save button. Add any other desired Holidays and select the Home button to get back to the Home screen.

4.4 Creating Schedules

Create a Schedule by depressing the Schedules button. Once on the Schedules screen select the Add New button at the bottom of the screen. Schedule xx ; Unoccupied will appear as a default. Select the Enter button to modify this schedule. Once within the individual schedule depress the Hour and Minutes buttons until the desired schedule is created and then depress the appropriate Save button to save for the desired days of the week. Add any other Schedules that are needed for this demo and select the Home button to get back to the Home screen.

4.5 Creating Groups

Create a Group by depressing the Groups button. Once on the Groups screen, select the Add New button at the bottom of the screen, Group xx ; Unoccupied will appear as a default. Select the Enter button to modify this group. There are two items that need to be configured for the Group to function. First, select the Add Devices button, use the arrow keys to select the DXU controller and depress the Enter key when selected. Notice that the controller disappears when the Enter key is depressed. This occurs so they cannot be selected more than once. When the controller has been added to the Group, depress the Back button and then

depress the Device List button. Notice that the DXU now appears in this list. If the DXU controller is deleted from the Devices list they will reappear in the Add Devices list again. Select Change Schedule and select the schedule that was previously created using the arrow keys and Enter key. If the schedule is occupied the controllers within the group will now be occupied and controlling using the controller's occupied temperature setpoints. Select the Home button to get back to the Home screen.

Select the Devices screen again and the DXU controller should now be in the occupied mode of operation, providing the schedule is occupied. On the room sensor you will also notice that the unoccupied symbol, empty house, has disappeared. If the unoccupied symbol is not present at the room sensor, then the controller is in the occupied mode of operation.

Demonstrate that the ASM is propagating the values across the network to the associated controllers. Select the DXU controller and then from the DXU unit screen select Inputs. At the bottom of the displayed list are the Inside and Outside Enthalpy readings, which are calculated at the DXU controller. The values used in the enthalpy calculations are being propagated from the ASM over the network. Resistors have been placed on the ASM inputs to simulate values.

4.6 Access Control

Access control is also part of the IQ-SBS system. The ACU (Access Control Unit) can control one doorway using an entry reader and an optional exit reader. The suitcase Demonstration Unit comes equipped with a proximity card reader, several proximity key fobs, an exit pushbutton and a door monitor switch. All of these devices will be used during the demonstration.

4.7 Adding Access Cards to the LCI

The key fob access cards must be added to the LCI database to be recognized by the system. The easiest way to accomplish this is to place the ACU into Automatic Add Card mode. To place the ACU into Automatic Add Card mode, select the ACU from the Devices screen and then select the Door Setup button. Once the Door Setup screen appears use the arrow keys to select Auto Add? Using the plus (+) button change the value to Yes and then depress the Enter button. The ACU is now set up to automatically accept card swipes and then add the cards to the database.

Present each key fob card separately in front of the proximity card reader. If the card is read properly you will hear the door relay click on briefly. Continue adding the cards until all cards included with the Demonstration Unit have been added and then disable the automatically adding of cards to the system by changing Auto Add? to No.

The key fob cards can now be presented in front of the card reader and the door relay will change state indicating the door locking mechanism has been activated. To signify that a person has opened the door, the door monitor switch will need to be toggled. Once toggled, the door has been verified opened and then closed. If it were only opened a Door Propped alarm would appear in the alarm list. Swipe another card and then only move the door monitor switch one direction signifying that the door was opened but not closed, a Door Propped alarm will appear in the alarm list after about 30 seconds have elapsed. Once the alarm symbol in the upper right corner of the LCI screen indicates an alarm, depress the alarm bell and view the alarm. To delete an alarm, highlight it with the arrow keys and then depress the Delete button. Alternately, the Clear All Alarms button on the Utilities screen may be depressed to delete all alarms at once.

4.8 Using the Access Control Unit to drive Group Occupancy

Now that we demonstrated HVAC and Access control separately, demonstrate the two systems working together. In this demonstration we will have the access control unit drive the occupancy of the HVAC equipment.

Edit the group previously created; The original group should have the schedule removed from it since the occupancy will be driven by the ACU. A schedule may be removed from a group by depressing the Change Schedule button on the group screen and selecting Clear Schedule from the list of schedules displayed on the screen.

The group now needs to have a card associated to the group. To associate one of the cards you first need to define a doorgroup Home>Access Settings>Door Group>Add New. When the doorgroup has been defined, select it and then select Access Rights. Change the Access Rights for the ACU to permitted. Then select the Back button and depress Select Group, change the group that contains the DXU-2 to permitted. We are now ready to associate a card to the doorgroup (which references the group to be occupied). Select Home>Access Settings>Cards highlight the card you wish to occupy the group. Select the DoorGroup button and select the door group we just configured. The card is now associated to the Group containing our DXU-2.

Now lets attempt to occupy the group by swiping a card. But first, go to the Home screen and select Groups; notice the group is currently in an unoccupied mode. Swipe a valid card in front of the reader but do not toggle the door monitor switch. This means a person was granted permission but did not open the door, thus they never entered and the group will still indicate unoccupied. Now swipe the card again and toggle the door monitor switch; the group occupancy status now has changed to occupied. The group will stay occupied for two hours.

4.9 Lighting Control

Another part of the IQ-SBS system is the lighting control unit (LCU). The LCU1 is a self-contained device for controlling facility lighting. The IQ-SBS system can contain up to eight (8) lighting controllers and a total of 8 lighting zones.

4.10 Configuring the LCU switches and contactors

To configure the individual switches and contactors the individual LCU must be selected from the Devices screen. Highlight and select the LCU. Once in the LCUs main screen select the Setup button, from the setup screen select the Lighting Settings button and then from the settings screen select the Switch Setup button. From the list of switches select Switch #7, the top switch on the demo panel is connected to this switch. Highlight the switch type and modify the setting, using the + - keys, to SPST Momentary (this should be the default). After the switch type has been selected depress the Save button.

Now select Switch #8 and configure it the same as switch #7, don't forget to save your work. Switch #8 is connected to the second switch on the demo panel.

The contactors now need to be configured. Select the Back button until the Contactor Setup button appears and then select it. The list of eight contactors now appears on the screen, select Contactor #1 and disable the blink warning. To Disable the Blink Warning change the setting to Yes, the default is NO. Save the configuration as changing the contactor. Contactor #1 is connected to the first (top) light on the demo panel.

Now select Contactor #2 and configure it the same as contactor #1, don't forget to save your work. Contactor #2 is connected to the second (bottom) light on the demo panel.

Notice after a save is performed that the status LED on the LCU briefly flashes red. This LED will flash red when receiving configuration information from the LCI.

The input switches and output contactors have now been configured for the demo panel.

4.11 Creating and Configuring the Lighting Zone

After the LCUs input switches and contactor outputs have been configured they need to be placed into a lighting zone. A lighting zone is a collection of LCU input switches and contactor outputs that are common to a zone.

From the Home screen select Lighting Zones and create a new zone by depressing Add New. The newly created zone now appears as part of the list of lighting zones, highlight (using the arrow keys) and select the newly created zone. Once in the lighting zone configuration we need to add points to the zone by selecting the Add point's button. A list of all lighting points now appears on the screen. For this lighting zone highlight and select input switch #7 and output contactor #1. Notice once the select button is depressed they disappear from the list after you have selected the points depress the Back button. Now we can verify that they have been added by depressing the Points list button, the two points selected should now appear on the screen. Select the back button so that the main lighting zone screen appears.

Select Configure Zone from the main lighting zone screen. Now the Lighting Zone needs to be configured for the desired control method. Using the arrow buttons, arrow down until Control Method is highlighted; notice the default mode is Energy Saving. Using the + and – keys cycle through the available modes and explain each.

Energy Saving; when the Lighting Zone becomes occupied the lights will not turn ON until a request for lighting is issued from a switch.

Photosensor; the lights will turn ON when the photosensor indicates darkness.

Scheduled; when the Lighting Zone becomes occupied the lights will turn ON automatically.

After a mod of operation is selected depress the Save button so that the changes are sent to each lighting controller. Notice again, that the status LED flashed red while the controller is receiving updated information from the LCI.

At the end of occupancy the lights will turn off automatically unless the blink warning is enabled. If the blink warning is enabled, the lights will flash once at the end of occupancy and then 5 minutes later the lights will be turned OFF.

With the way the lighting zone has been configured when the top switch is depressed the top light will turn ON and when depressed again the light will turn OFF.

Configure a second lighting zone repeating the steps above. The only exception will be is the points in this lighting zone will be switch #8 and contactor #2.

Since these lighting zones are not part of an LCI group they will operate as if the lights were overridden during the unoccupied time. Should it be desired for them to operate in the occupied mode then add them to the group containing the DXU2 and ACU. If added the lighting zone can be overridden the same as the DXU2 is when a valid card is presented to the card reader. If this feature is to be demonstrated then the Lighting Zone should be configured as Scheduled On. If configured as Scheduled on then the lights will come on when a valid card is swiped and the door monitor detects an occupant has entered the area.

4.12 Demonstrating the Lighting Zone

After the lighting zones have been configured demonstrating the functionality can be as simple as depressing the switch and watching the associated light come on.

Now that the input switches and output contactors are already configured modification of the lighting zones can be easily demonstrated. From the home screen select Lighting Zones and then select one of the previously configured zones. Reconfigure the zone by selecting Zone Configure and then add the contactor that isn't part of the lighting zone, remember to save the changes.

After the zone configuration has been saved depress the switch that was part of the reconfigured zone and both lights should now come on. Depress the other switch and only one of the lights should turn off.