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# **Operator Control Station Demonstration Case Manual**

**Second Edition  
29 June 1999**

**GFK-1642A**

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**Warning notices are used in this publication to emphasize that hazardous voltages, currents, temperatures or other conditions that could cause personal injury exist in this equipment or may be associated with its use.**

**In situations where inattention could cause either personal injury or damage to equipment, a Warning notice is used.**

### Caution

**Caution notices are used where equipment might be damaged if care is not taken.**

### Note

Notes merely call attention to information that is especially significant to understanding and operating the equipment.

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## Revisions to This Manual

This version (GFK-1642A) of the Operator Control Station Demonstration Case User Manual contains the following revisions and additions:

- Added a new demonstration case model (IC300OCS995) in Chapter One, Section 1.2.
- Revised product description in Section 1.2.2 (a) to include IC300OCS995.
- Revised demonstration procedures in Chapter Two to include the IC300OCS995.
- Added a new wiring diagram for IC300OCS995 in Chapter Three, Figure 3.3.



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## CHAPTER 1: INTRODUCTION AND SETUP

### 1.1 General

The GE Fanuc Operator Control Station (OCS) Demonstration Case serves as a visual tool to demonstrate various functions that an OCS can be programmed to perform. The OCS Demonstration Case comes fully equipped with the necessary equipment, cables, connectors, and software to perform demonstrations. No assembly or installation is required.

### 1.2 Models Available

Three models of the OCS Demonstration Cases are available – the IC300OCS999, IC300OCS997, and IC300OCS995. Although they are useful for training and demonstrating the capabilities of the OCS, each model has unique features designed to meet the needs of different customers.

Note: The OCS997 and the OCS995 are similar, but they use a different I/O module and have different wiring.

#### 1.2.1 OCS999 OCS Demonstration Case

##### a. Product Description

The larger model, the OCS999, is equipped with *two* Operator Control Station units (OCS100 and OCS200) and provides a wide variety of functional OCS demonstrations. Network functions are easily demonstrated using the OCS999. The unit is especially helpful to companies wanting to conduct more in-depth OCS training and to individuals in the Sales and Marketing fields.

The OCS999 Demonstration Case contains:

- |   |                               |
|---|-------------------------------|
| a. 1 IC300OCS100  | j. 1 type K temperature probe |
| b. 1 IC300OCS200  | k. 1 power cord               |
| c. 2 IC300DIQ611 SmartStack I/O Modules   | l. 16 discrete input switches |
| d. 1 IC300THM100 SmartStack I/O Module  | m. 16 discrete output lights  |
| e. 1 IC300DAC101 SmartStack I/O Module  | n. 1 thermocouple plug        |
| f. 1 power supply   | o. 1 analog meter             |
| g. 1 power switch   | p. 2 OCS configuration ports  |
| h. 2 network terminating resistors (connector with 120 $\Omega$ resistor between CN_H and CN_L) | q. 2 CsCAN network ports      |
| i. 1 straight through 9-pin programming cable (IC300CBL222)                                     |                               |

Two SmartStack I/O Modules are provided with the *OCS100* in the OCS999 - a Discrete 8 In/8 Out Module (DIQ611) and a Four-Channel Thermocouple Module (THM100). Eight panel lights serve as discrete outputs from the DIQ611, and eight panel switches serve as discrete inputs to the DIQ611. Connected to Channel 1 of the THM100 is a Type K Thermocouple input into which the provided temperature probe can be plugged. There is also an OCS100 Configuration port that can be connected to the COM port of the user's PC by using the provided 9-pin cable.

The OCS200 also has two SmartStack I/O Modules provided with it in the OCS999 - a Discrete 8 In/8 Out Module (DIQ611) and a Four-Channel Analog Output Module (DAC101). Eight panel lights serve as discrete outputs from the DIQ611, and eight panel switches serve as discrete inputs to the DIQ611. Connected to Channel 1 of the DAC101 is an analog meter that reads the voltage output. There is also an OCS200 Configuration port that can be connected to the COM port of the user's PC by using the provided 9-pin cable.

b. Setup

Both the OCS100 and OCS200 units contained in the OCS999 come with a demonstration ladder program loaded into memory. To setup the case for operation:

1. Connect the temperature probe into the front panel thermocouple input.
2. Connect the power cord to the front socket and plug into 100 – 250VAC @ 50 - 60 Hz.
3. Turn on the power switch to run each OCS unit through a self-test and bring up an introduction screen with instructions.

For information specific to the OCS100/200 or the SmartStack modules, refer to the appropriate user manuals.

1.2.2 OCS997 and OCS995 OCS Demonstration Case

a. Product Description

The smaller models, the OCS997 and OCS995, are equipped with *one* Operator Control Station unit (OCS100) and serve as starter kits. The starter kit offers two key benefits: Exceptional value and the opportunity for the user to become familiar with programming the OCS before integrating the unit into a system. Attractively priced, the all-inclusive starter kits cost less than purchasing the necessary equipment and parts separately. The starter kits allow the user to work with the OCS program without having to first wire and formally install the unit. They are easy to disassemble and are readily installed into a system.

Note: The OCS997 and the OCS995 are similar, but they use a different I/O module and have different wiring.

The OCS997 Demonstration Case contains:

- |                   |  |
|-------------------|--|
| a. 1 IC300OCS100  | e. 16 Discrete Input Switches                                  |
| b. 1 IC300DIQ611  | f. 16 Discrete Output Switches                                 |
| c. 1 Power Supply | g. 1 Straight-through 9-pin<br>programming cable (IC300CBL222) |
| d. 1 Power Cord   |  |

One SmartStack I/O Module is provided with the OCS100 in the OCS997 Demonstration Case. The OCS997 contains a Discrete 8 In/8 Out Module (DIQ611). Eight panel lights serve as discrete outputs from the DIQ611, and eight panel switches serve as discrete inputs to the DIQ611.

The OCS995 Demonstration Case contains:

- |                   |  |
|-------------------|--|
| a. 1 IC300OCS100  | e. 16 Discrete Input Switches                                  |
| b. 1 IC300DIQ616  | f. 16 Discrete Output Switches                                 |
| c. 1 Power Supply | g. 1 Straight-through 9-pin<br>programming cable (IC300CBL222) |
| d. 1 Power Cord   |  |

One SmartStack I/O Module is provided with the OCS100 in the OCS995 Demonstration Case. The OCS995 contains a Discrete 8 In/8 Out Module (DIQ616). Eight panel lights serve as discrete outputs from the DIQ616, and eight panel switches serve as discrete inputs to the DIQ616.

b. Setup

The OCS100 unit contained in the OCS997 and OCS995 comes with a demonstration ladder program loaded into memory. To setup the case for operation:

1. Connect the power cord to the power supply and plug into 100 – 250VAC @ 50 - 60 Hz.
2. Connect power supply to power plug in panel.

**Note:** During the startup procedure, there is notification that there is no network power and that the network is disabled. This is a normal indication, because there is no network to connect to.

For information specific to the OCS100/200 or the SmartStack modules, refer to the appropriate user manuals.

NOTES

## CHAPTER 2: OPERATION

### 2.1 General

Chapter Two provides procedures for using the demonstration programs in the OCS999, OCS997, and OCS995.

### 2.2 OCS999 Demonstration Procedures

Note: The eight panel lights in the demonstration case represent discrete outputs, and the eight panel switches represent discrete inputs.

#### 2.2.1 OCS100 Demonstration Program

When the demonstration case is first powered up, the OCS100 runs through a series of self-tests. If everything passes, both the 'OK' light and the 'RUN' light turns on, and the ladder program that is loaded into the OCS100 executes.

#### 1. Sequenced Light Display

The program in the OCS100 starts with a title screen. Pressing the ↑ key advances to the next screen and prompts the pressing of F7 for a sequenced light demonstration. Pressing F8 stops the light demonstration. The F7 key corresponds to %K7 (K for Key) in the ladder logic and pressing F7 closes the normally open %K7 contact. This sets a latch and starts a sequential light demonstration on the OCS100 Discrete Output lights. The F8 key corresponds to %K8 in the ladder logic and pressing F8 closes the normally open %K8 contact. This releases the latch that was set by the F7 key and stops the lights. The lights are controlled by the DIQ611 outputs on the OCS100.

#### 2. Pulling Up a Series of Information Screens

Pressing the ↑ key advances to the next screen, which prompts the user to flip Switch 1 for OCS programming features. The OCS100 Discrete Input Switch 1 is connected to I1 of the DIQ611 and corresponds to %I1 in the OCS100 ladder logic. Turning Switch 1 on closes the normally open %I1 contact and executes a loop of code that scrolls through a group of information screens. Turning Switch 1 off opens the %I1 contact.

#### 3. Bit Shift Demonstration

Pressing the ↑ key advances to the next screen, which prompts the pressing of F1 for a bit shift demonstration. Press F2 to stop the demonstration. The F1 key corresponds to %K1 in the ladder logic, and F2 corresponds to %K2. Pressing F1 closes the normally open %K1 contact which sets a latch. Using bit shifting functions, a message scrolls across the screen. Pressing F2 closes the normally open %K2 contact which then releases the latch.

#### 4. Using OCS100 to Send Global Analog Data over Network to OCS200

Pressing the ↑ key advances to the next screen, which prompts the flipping of Switch 2. This demonstration sends global data to the CsCAN network that can be used by any other device on the network. In this case, the OCS200 is programmed to use it. OCS100 Discrete Input Switch 2 is connected to I2 of the DIQ611 on the OCS100 and corresponds to %I2 in the ladder logic. When Switch 2 is turned on, the normally open %I2 contact is closed which then sets bit 1 of Global Output word 1 (%AQG1). The values 16,000 and -16,000 (49,535 in signed integer form) are alternately placed in the same Global Output word, %AQG1.

With this setup, the value in %AQG1 alternates between 16,001 and -15,999 (49,536 in signed integer form) since bit 1 is constantly updated to 1 as long as Switch 2 is on. The ladder logic in the OCS200 monitors the Global Input word %AIG1 and directs the values to the DAC101 output as long as bit 1 is high (which makes the analog meter jump between +5 and -5 Volts). Turning the OCS100 Discrete Input Switch 2 off halts the process.

#### 5. Using OCS100 to Turn-on Lights (Outputs) on OCS200 over Network

Pressing the ↑ key advances to the next screen, which prompts the flipping of Switch 3 to light up the OCS200 lights. OCS100 Discrete Input Switch 3 is connected to I3 of the DIQ611 on the OCS100 and corresponds to %I3 in the ladder logic. When Switch 3 is turned on, the normally open %I3 contact is closed, which starts a timer loop. The Global Output bit %QG1 is alternately set high and low one second at a time. The OCS200 ladder programming monitors Global Input bit %IG1 and executes the ladder logic to turn on all the OCS200 Discrete Output lights when %IG1 goes high and off when %IG1 goes low.

#### 6. Measuring and Displaying Temperature

Pressing the ↑ key advances to the next screen, which prompts the user to touch the end of the temperature probe and to proceed to the next screen by pressing the ↑ key again. The screen indicates the user's temperature reading as well as a message depending upon what the temperature level is. If the temperature is in the range of 74 to 85 degrees Fahrenheit, the message "You're Just Right" appears under the temperature reading. Below 74 degrees, the message "You're Too Cold!" appears, and above 85 degrees, the message "You're Hot Man!" appears. This is the last screen for the OCS100 demonstration program.

#### 2.2.2 OCS200 Demonstration Program

When the demonstration case is first powered up, the OCS200 runs through a series of self-tests. If everything passes, both the 'OK' light and the 'RUN' light turns on and the ladder program that is loaded into the OCS200 executes.

Note: The eight panel lights in the demonstration cases represent outputs, and the eight panel switches represent inputs.

#### 1. -10V to +10V Analog Meter Demonstration

Note: This process overrides the OCS100 Global Analog Data demonstration as described in 2.2.1 (4), because the OCS200 demonstration ladder program specifies it to do so.

The program in the OCS200 starts with a title screen. Pressing the ↑ key advance to the next screen and prompt the pressing of F7 to begin a -10V to +10V analog meter demonstration. Pressing F8 stops the demonstration. The F7 key corresponds to %K7 (K for Key) in the ladder logic and pressing F7 closes the normally open %K7 contact. This sets a latch and starts a loop in the ladder logic that cycles the first output of the DAC101 module on the OCS200 between 0V, 5V, 10V, 5V, 0V, -5V, -10V, -5V, 0V and so on. This is shown on the OCS200 Analog Output Meter. . The F8 key corresponds to %K8 in the ladder logic, and pressing F8 closes the normally open %K8 contact. This releases the latch that was set by the F7 key and stops the analog meter demonstration.

To display information pertaining to the analog meter demonstration, perform the following procedures:

##### a. Timer Values in Registers

Press the ↑ key to advance to the next screen, which shows a group of registers containing the values of the timers used for the analog meter demonstration.

### b. Text Tables

Press the ↑ key to advance to the next screen, which shows the usage of text tables. When the analog meter demonstration is running, the “voltage” is displayed as a text table as well as a corresponding “level” of zero, medium, high or low.

## 2. Displaying OCS Data Types

Pressing the ↑ key advances to the next screen, which lists the seventeen data types available in the OCS. The data types are shown in Table 2.1.

<b>Table 2.1 – Data Types</b>	
%I	Discrete Input
%Q	Discrete Output
%IG	Global Discrete Input
%QG	Global Discrete Output
%AI	Analog Input
%AQ	Analog Output
%AIG	Global Analog Input
%AQG	Global Analog Output
%R	Register Data
%M	Internal Bits
%D	Display Bits
%K	Keypad Bits
%T	Temporary Bits
%S	System Bits
%SR	System Register
%TCA	Timer/Counter Accumulated
%TCS	Timer/Counter Setpoint

## 3. Displaying Data Formats

Pressing the ↑ key advances to the next screen, which prompts the flipping of Switch 1 for examples of different data formats. The OCS200 Discrete Input Switch 1 is connected to I1 of the DIQ611 on the OCS200 and corresponds to %I1 in the OCS200 ladder logic. Turning Switch 1 on closes the normally open %I1 contact and triggers a display coil that shows a screen with four different formats: Decimal data, Binary Data, Hexadecimal Data, and Signed Data. Turning Switch 1 off opens the %I1 contact.

## 4. Displaying Special Characters

Pressing the ↑ key advances to the next screen, which prompts the flipping of Switch 2 for examples of LCD characters that are available using the OCS. The OCS200 Discrete Input Switch 2 is connected to I2 of the DIQ611 on the OCS200 and corresponds to %I2 in the OCS200 ladder logic. Turning Switch 2 on closes the normally open %I2 contact and triggers a display coil that shows a screen with all the special characters that are available on the OCS. Turning Switch 2 off opens the %I2 contact.

## 5. Using OCS200 to Send Message to OCS100 and Receiving a Response via Network

Pressing the ↑ key will advance to the next screen, which prompts the pressing of the F4 key to send the message “Hello” to the OCS100. Pressing the ↑ key advances to the next screen, which prompts flipping Switch 2. The F4 key corresponds to %K4 in the ladder logic. Pressing the F4 key closes the normally open %K4 contact, which energizes the Global Output (%QG1).

The OCS100 ladder logic monitors this Global bit as %IG1. A screen is displayed showing the message “The OCS200 says Hello” which was triggered from the OCS200. It also indicates that the user needs to press F4 to send a response. The F4 key on the OCS100 corresponds to %K4 in the OCS100 ladder logic. Pressing the F4 key on the OCS100 closes the normally open %K4 contact in the OCS100 ladder logic and energizes the Global Output (%QG1).

The OCS200 ladder logic monitors this Global bit as the Global Input (%IG2). When the normally open %IG2 contact is closed, a display coil is energized, and a screen is displayed on the OCS200 showing the response message “The OCS100 says ‘Hello’ back.”

**Note: The Global Outputs from one OCS do not necessarily correspond directly to the same numbered Global Inputs of another node. In this case, %QG1 from the OCS100 corresponds to %IG2 in the OCS200. This relationship can be determined in Cscape by pulling down the ‘Program’ menu and clicking on “Network Config.” It is then defined which Global Inputs and which Global outputs correspond in a particular node.**

## 6. Using Math Functions and Compare Functions

### a. Math Functions Demonstration (Add, Subtract, Multiply and Divide Register Values)

Pressing the  $\uparrow$  key advances to the next screen, which shows the math functions available in the OCS. The math functions include addition, subtraction, multiplication, division, and a formula function. With the formula function, entering any equation (using the four math operators) into a block in the ladder continually updates and outputs the final result into a register.

Pressing the  $\uparrow$  key advances to the next screen, which shows the math functions in action. Registers %R60 and %R70 are added, subtracted, multiplied and divided as %R60 is cycled through a set of values.

### b. Formula Function Demonstration (Impact of Editing a Register Value)

Pressing the  $\uparrow$  key advances to the next screen, which shows the formula function in action. Pressing the ‘Enter’ key allows the editing of the value in %R95. The user is prompted to edit this value, and then to see the next page. Pressing the  $\uparrow$  key advances to the next screen, which again shows %R95. The value in the register “%R105” is the result of the formula at the bottom of the screen which is:  $((\%R95 + \%R95) * 2) - 10$ . As the value of %R95 is edited, the result shown changes.

### c. Compare Functions Available

Pressing the  $\uparrow$  key advances to the next screen, which shows the compare functions available using the OCS. The available compare functions include:

1. Equal
2. Not equal
3. Less than
4. More than
5. Less than or equal to
6. More than or equal to



d. Compare Function Demonstration and Text Table Use

Pressing the ↑ key advances to the next screen, which shows the compare functions in action. Registers %R1 and %R3 are compared in four different ways, and the result is shown as a text table reading either "True" or "False" as %R1 is cycled through a set of values.

Pressing the ↑ key advances to the next screen, which shows the remaining compare functions that were not shown on the previous screen using the same registers.

7. Move Operations Demonstration

Pressing the ↑ key advances to the next screen, which shows the move operations available on the OCS.

a. Moving a Word

The user is prompted to flip Switch 3 on to move the word in %A11 to %A14. OCS200 Discrete Input Switch 3 is connected to I3 of the DIQ611 on the OCS200 and corresponds to %I3 in the ladder logic. When Switch 3 is turned on, the normally open %I3 contact is closed, which activates a Move Word function that moves whatever value is in %A11 to %A14. %A11 cycles through a set of numbers automatically. Turning switch 3 off stops the Move Word function and leaves the last value in %A14.

b. Moving a Block

Pressing the ↑ key advances to the next screen, which prompts flipping Switch 4 to move a block. OCS200 Discrete Input Switch 4 is connected to I4 of the DIQ611 on the OCS200 and corresponds to %I4 in the ladder logic. When Switch 4 is turned on, the normally open %I4 contact is closed, which activates a Move Block function that moves whatever values are in registers %R150, %R151 and %R152 to registers %R200, %R201 and %R202. Registers %R150 through %R152 cycle through a set of numbers automatically. Turning Switch 4 off stops the Move Block function and leaves the last values in registers %R200 through %R202.

8. Bit-wise Functions

Pressing the ↑ key advances to the next screen, which shows the operation of a few of the Bit-wise functions available for the OCS. Available Bit-wise functions include:

1. AND
2. OR
3. XOR
4. NOT
5. Shift Left
6. Shift Right
7. Rotate Left
8. Rotate Right

Shown on this screen are the AND, OR and XOR functions. Registers %R250 and %R260 have preset values that are shown in binary form. The three functions show the result of the Bit-wise functions that have been performed on the two registers.

## 9. Displaying SmartStack I/O Modules Installed on the OCS200

Pressing the ↑ key advances to the next screen that indicates which SmartStack Modules come with the OCS200 in this demonstration case. The SmartStack I/O modules are the Discrete 8 In/8 Out Module (DIQ611) and the Four-Channel Analog Output Module (ADC101). This is the last screen for the OCS200 demonstration program.

## 2.3 OCS997 and OCS995 Demonstration Procedures

### 2.3.1 OCS100 Demonstration Program

Because the OCS997 and OCS995 serve as starter kits and are ultimately intended to be installed into a system, the demonstration programs for the OCS997 and the OCS995 are considerably streamlined. The programs perform two basic demonstrations.

Note: The eight panel switches in the case are connected to inputs on the SmartStack I/O Module (DIQ611 for the OCS997 or DIQ616 for the OCS995) and the eight lights in the case are connected to outputs on the SmartStack I/O Module.

#### a. Turning Lights On for a Set Time Period Using OCS100 Function Keys

The function keys on the OCS100 (F1 through F8) correspond to a %K (K for Key) contact in the ladder program (%K1 through %K8). When one of the function keys is pressed, the corresponding, normally open %K contact is closed, which energizes one of the eight output coils (%Q1 through %Q8). The output coils power the lights. A %Q normally open contact is closed, which creates a holding circuit that keeps the coil energized (even after the button is released) and also starts a timer. After 6 seconds, the timer energizes an internal %M coil. This opens a normally closed %M contact and breaks the holding circuit. The light then turns off.

#### b. Simulation of Proximity Switches on a Conveyor Line

The switches on the OCS997 or OCS995's panel are connected to the eight input terminals on the SmartStack I/O Module. The switches simulate proximity switches on a conveyor line or a similar setup. To simulate a part moving down a conveyor line, flip one switch on at a time starting with Switch 1. When the Switch 1 is turned on, a screen displaying the text "PART HAS REACHED HOME POSITION" appears. Then, turn off Switch 1 and flip on Switch 2. Continue this process for the remaining switches. Notice the changes to the display screen as "the part moves down the conveyor line." Also, note that the higher switches have priority over the lower switches. If all the switches are turned off, the main screen is displayed and contains the message "OCS Test Station."

When a switch is turned on, a normally open %I contact is closed and a Display Coil, %D, is energized. The %D coils correspond to the display screens in the following manner: %D1 corresponds to screen 1, %D2 corresponds to screen 2, %D85 to screen 85, and so forth.

## CHAPTER 3: DEMONSTRATION CASE WIRING AND HARDWARE

### 3.1 General

Chapter Three illustrates the hook-up of the OCS in the OCS Demonstration Cases (OCS999, OCS997, and the OCS995). Pertinent information is provided such as wiring and the hardware used for configuration, networking, and obtaining power. The following explanations and diagrams can be used as examples for actual applications.

### 3.2 Wiring Diagrams

#### 3.2.1 OCS999

The following diagram shows the wiring for the OCS999. On both the OCS100 and OCS200, the DIQ611 terminal number is connected to the light or switch terminal with the corresponding label.

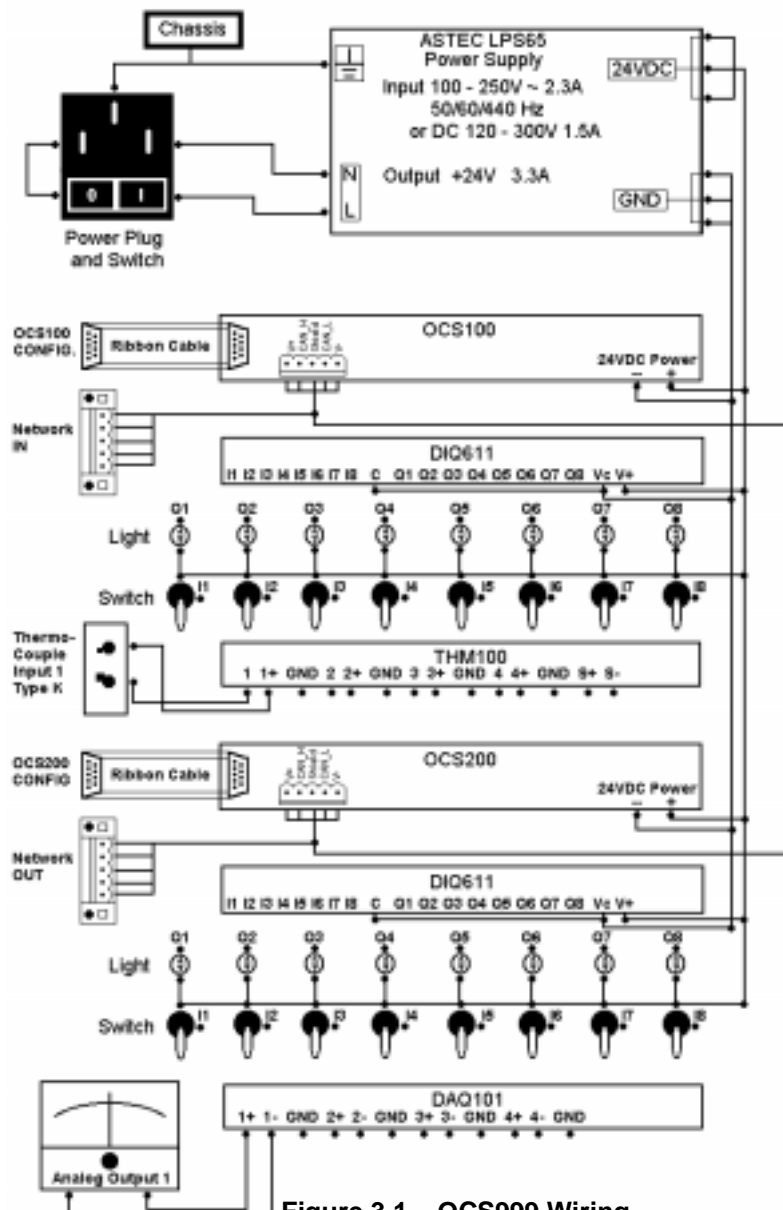


Figure 3.1 – OCS999 Wiring

3.2.2 OCS997 and OCS995

The following diagrams show the wiring for the OCS997 and OCS995. On the OCS100, the SmartStack I/O Module (DIQ611 or DIQ616) terminal number is connected to the light or switch terminal with the corresponding label.

The wiring differs for the OCS997 and OCS995. The OCS997 uses the DIQ611 I/O module, which has a negative logic output. (See Figure 3.2.)

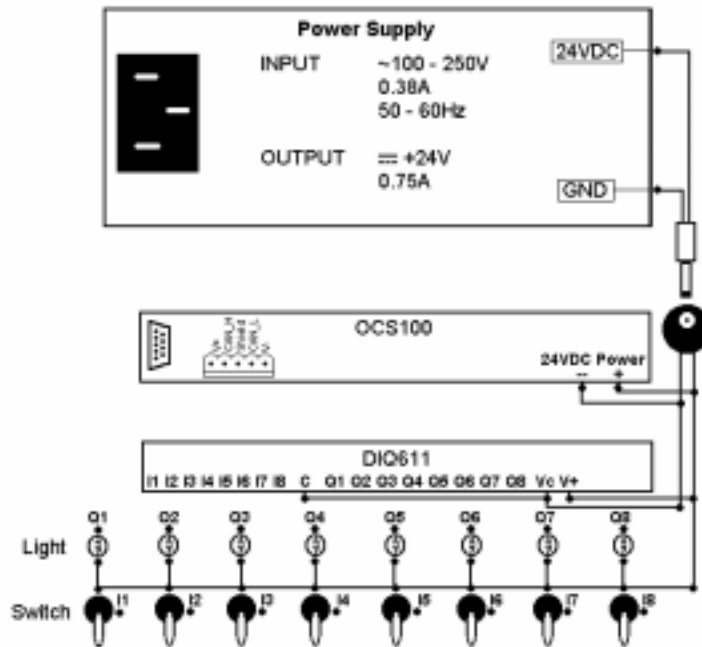


Figure 3.2 – OCS997 Wiring

The OCS995 uses DIQ616 I/O module, which has a positive logic output. (See Figure 3.3.)

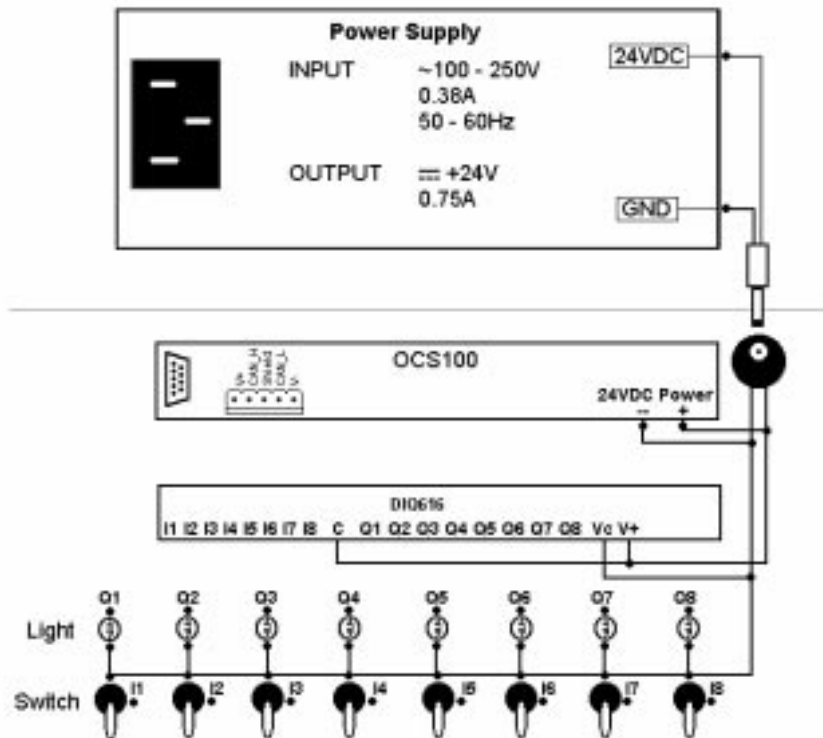


Figure 3.3 – OCS995 Wiring

### 3.3 Configuration Port Connections

#### 3.3.1 OCS999

The OCS999 Demo Case has two 9-pin configuration ports. One port is labeled “OCS100 CONFIG,” and the other port is labeled “OCS200 CONFIG.” The OCS100 configuration port is connected with a ribbon cable directly to the 9-pin config/debug port on the OCS100. The OCS200 configuration port is connected with a ribbon cable directly to the 9-pin config/debug port on the OCS200.

Each OCS can be programmed from either port as long as the Cscape software is setup to communicate with the correct node ID. This is made possible using the CscAN network to connect the two OCS units.

To program or configure one of the OCS units using the Cscape software, use the included 9-pin cable to connect the configuration port to a COM port on the user's PC. Use the Cscape software to program ladder logic and configure the OCS with I/O.

**Note:** The Cscape software must be setup to communicate with the same node ID as what the OCS unit node ID is setup for. The OCS unit node ID can be found by pressing the ‘System’ button and then pressing ‘Enter’ on Set Network ID. Press ‘Esc’ twice to get back to the demonstration program.

### 3.3.2 OCS997 and OCS995

The OCS997 and OCS995 are not equipped with a front panel configuration port, but there is one on the back of the OCS100 that is contained in each case. It is labeled 'CONFIG/DEBUG PORT'. To program or configure the OCS unit using the Cscape software, use the included 9-pin cable to connect the configuration port to a COM port on the user's PC. Use the Cscape software to program ladder logic and configure the OCS with I/O.

**Note:** The Cscape software must be setup to communicate to the same node ID as what the OCS100 node ID is setup for. The OCS unit node ID can be found by pressing the 'System' button, then pressing 'Enter' on Set Network ID. Press 'Esc' twice to get back to the demonstration program.

## 3.4 Network Connections

### 3.4.1 OCS999

The OCS999 Demo Case has two 5-pin Network connections. One pin is labeled 'NETWORK IN', and one pin is labeled 'NETWORK OUT'. These ports come from the factory with terminator plugs installed. They have a 120Ω resistor located between the 'CN\_H' and 'CN\_L' terminals.

The 'NETWORK IN' connection is internally connected to the OCS100 Network connection and is daisy-chained around to the OCS200 Network connection, which is then daisy-chained to the 'NETWORK OUT' connection

CsCAN is like most any other CAN in that it requires a 120Ω terminating resistance at each end of the network. The OCS999 Demo Case comes with the resistors installed in the 'NETWORK IN' and 'NETWORK OUT' connections, because those are the ends of this particular network.

If it is desired to connect nodes to the CsCAN, remove the terminating resistor plug and wire in the network to either the 'NETWORK IN' or 'NETWORK OUT', or both.

**Note** When doing this, make sure a 120Ω terminating resistor is placed between CAN\_H and CAN\_L at the new ends of the network.

### 3.4.2 OCS997 and OCS995

The OCS997 and OCS995 do not have a front panel network connection, but there is one on the OCS100 contained in each case. It is labeled 'NETWORK'. No connection is necessary, and the demonstration program will function as it is supposed to.

If it is desired to connect more nodes to the CsCAN, use the existing plug and wire in the network to the 'NETWORK' port on the OCS100.

**Note:** When doing this, make sure a 120Ω terminating resistor is placed between CAN\_H and CAN\_L at the ends of the network.

### 3.5 Power Connections

#### 3.5.1 OCS999

The OCS999 comes with a power supply mounted in the case that gets its input power from the plug and switch mounted on the front panel. Use the included power cord to connect 100 – 250VAC at 50 – 60Hz. The power supply converts the input to 24VDC, which powers both the OCS100 and OCS200. This 24VDC output is also the source of power for the DIQ611 modules.

#### 3.5.2 OCS997 and OCS995

The OCS997 and the OCS995 come with a power supply that is not attached to the panel. Use the included power cord to connect 100 – 250VAC at 50 – 60Hz to the power supply and connect the power supply cord to the power plug on the front panel. The power supply converts the input to 24VDC, which powers the OCS100. This 24VDC output is also the source of power for the SmartStack I/O Module.