

Specifications

Dimensions

6 7/8" x 3 1/2"
15 cm x 8.9 cm

Operating Voltage

12V DC

Current Draw

100 mA with no outputs connected
400 mA with inputs and outputs connected

Environmental

Operating Temperatures: 41° F to 120° F (5° C to 49° C)
Relative Humidity: 0% to 90% non-condensing

RS-485 Communication Topology

Linear – does not support star topology

Maximum RS-485 distance from control board to last IOCB1616B is 2000 ft. (609.6 m)

ACU Compatibility

Compatible with CA4500B or CA8500B - PC109x control boards when operating with Aurora software.

IOCB1616B Installation Guide - Aurora

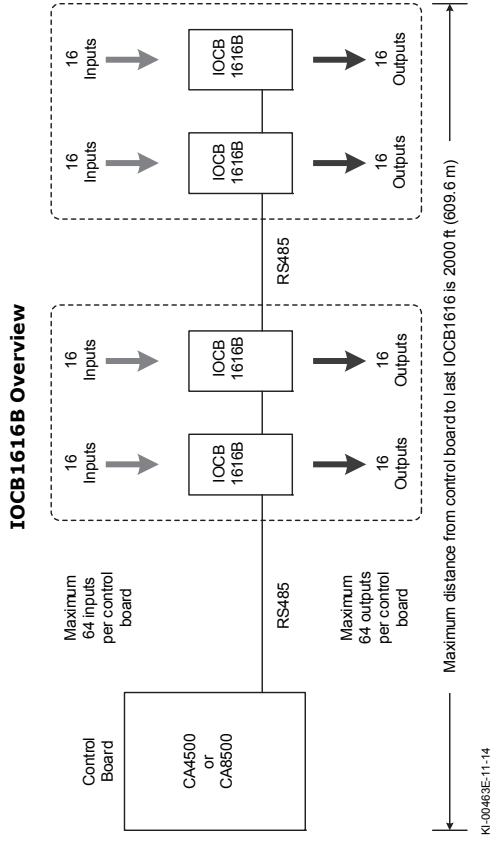
The IOCB1616B is an auxiliary I/O control board with 16 inputs and 16 outputs. Designed for custom applications, the IOCB1616B connects to either a Keyscan CA4500 - 4 door control unit or CA8500 - 8 door control unit.

If configuring IOCB1616Bs with Aurora software, please remember that Aurora is only compatible with PC109x or later control boards.

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Overview and Applications

The board's inputs and outputs connected on the same IOCB network can be used with timers, schedules, or be custom assignable to fit most needs without a reader. The CA4500 and the CA8500 each supports up to four IOCB1616B boards for a total of 64 inputs and 64 outputs.



Keyscan Inc. A Member of the Kaba Group

901 Burns St., E. Whitby, Ontario, Canada L1N 0E6

1.888.539.7226 (toll free Canada/USA)

905.430.7226 (elsewhere)

www.keyscan.ca

Technical Support

Hours – 9:00 A.M. to 6:30 P.M. Eastern Time, Monday to Friday

IOCB1616B Installation Guide - Aurora - 11.15 – Document # KD50018-E



- The following lists some real-world examples of how the IOCB1616B may be employed:
- Monitor door inputs and use request to exit devices without a reader assignment; trigger a sounder such as a siren or a sound alert.
 - Trigger an auxiliary, third-party product such as an alarm panel or a CCTV product that starts a camera recording on a digital input trigger by using an optional output OCB-8 board.
 - Monitor parking lot exit gates without readers in which timing is required.
 - Use inputs to trigger a third party product by using an optional OCB-8 output control board.
 - In sensitive areas where a single PIR motion detector may be triggered by air coolness or heat drafts, the IOCB1616B would allow the installation of two separate PIRs in the same area with conditional "AND" input programming so that both PIRs must be in alarm before firing an output to prevent false alarms.
 - Customize input triggering output with timing for special applications such as switching lights, HVAC, etc.

These are just some of the possible uses. Please note that the IOCB1616B cannot be connected to a CA250.

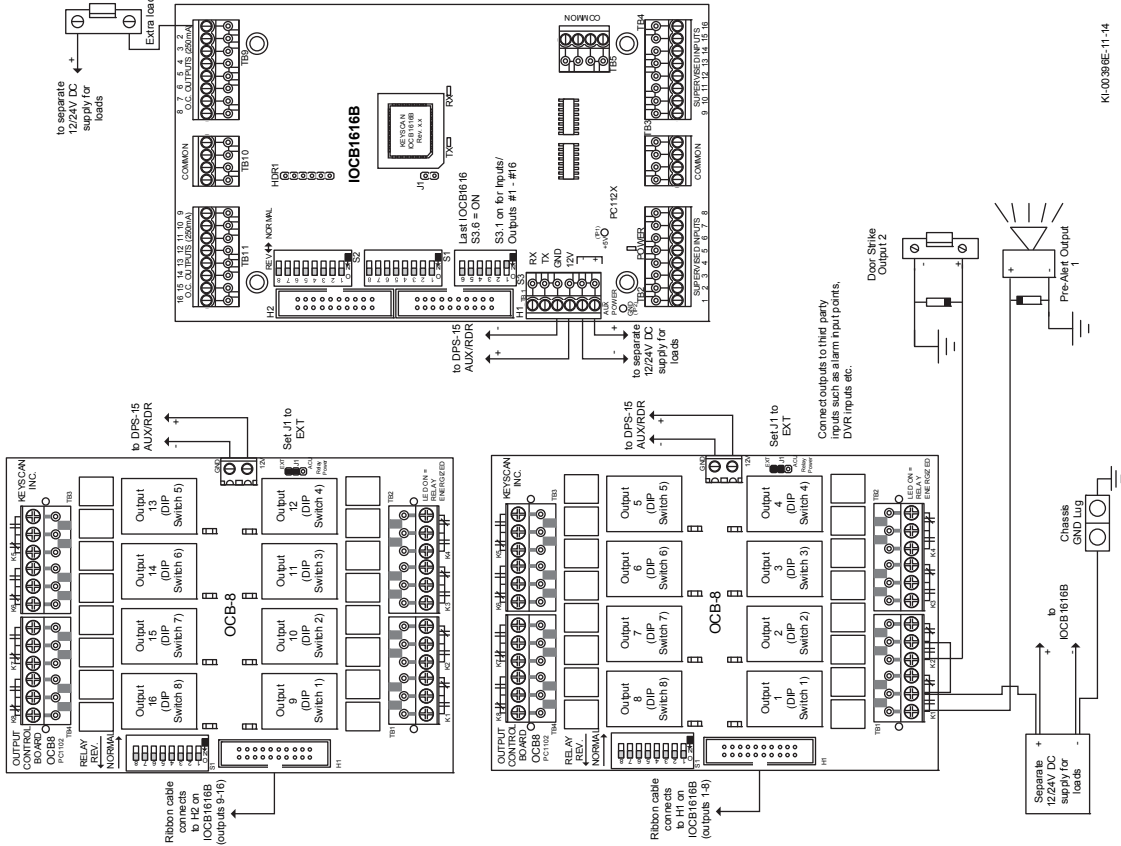
Operating Modes

The IOCB1616B has the following modes that are set from the Client software.

Mode	Output	Input
01--Delayed Output	If the input remains in alarm past the specified output time, the output is triggered. The output remains triggered until the input is secured or closed.	Alarm immediately
02--Timed Output	If the input goes into alarm, the output is triggered. The output remains on for the duration of the specified output time.	Alarm immediately
03--Pulsed Output	If the input goes into alarm, the output is triggered. The output pulses off and on for the specified output time. The output remains triggered until the input is secured or closed.	Alarm immediately
04-Input\RTE Mode	When an RTE device triggers, the associated input is shunted. The shunt time is the associated input time. The assigned output is triggered for the duration of the specified output time. When the associated input is closed or secured, all timers are reset.	Alarm immediately sent if the RTE input is not used as a shunt for the associated input. Alarm if input for the door contact is left open after the associated input time has expired.

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IOCB1616B Outputs with OCB8s



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Mode	Output	Input
05-Delayed Input & Delayed Output	If the input is triggered, the alarm is delayed. The input is delayed by the specified input time. The output is triggered at the end of the cumulative input and output times. The output remains triggered until the input is secured or closed.	The input's alarm is delayed until the input timer expires. Then it is sent to software.
06-Delayed Input & Timed Output	If the input is triggered, the alarm is delayed. The input is delayed by the specified input time. The output remains on for the duration of the specified output time. The output remains triggered until the input is secured or closed.	The input's alarm is delayed until the input timer expires. Then it is sent to software.
07-Delayed Input & Pulsed Output	If the input is triggered, the alarm is delayed. The input is delayed by the specified input time. The output pulses off and on for the specified output time. The output remains triggered until the input is secured or closed.	The input's alarm is delayed until the input timer expires. Then it is sent to software.
11-Manual Pulse Control	Client enabled pulse option for an output. (Primarily for use with the active mapping module)	The output is pulsed for the specified output time.

Notes

When an "Input Schedule Assignment" is used, the input remains shunted and does not notify the software regardless of the change of input state when a schedule is turned on. When an "Output Schedule Assignment" is used, the output remains in a normal state when the schedule is on regardless of the input trigger. Restoring associated inputs to normal resets the output state to normal.

Global Inputs & Outputs

The following modes – Optional I/O Delayed Output, Optional I/O Timed Output and Optional I/O Pulsed Output – are reserved for global inputs/outputs when used with the IOCB1616B. Refer to the Aurora Global Inputs and Outputs / Schedules on the Keyscan Product Documentation Library CD.

Examples of IOCB1616B Modes

01 – Delayed Output

Example: Freezer Door – Need to know immediately that the freezer door is open and if the door remains open after a specified time an alarm sounds.

Input 1 is defined as the freezer door; Output 1 is defined as the freezer siren. Opening the freezer door trips Input 1 sending an alarm notification to the guard's computer. If the door remains open passed Output 1's specified delay time, the freezer siren is triggered notifying the client that the freezer door has been left open. The siren remains active until the freezer door is closed.

02 – Timed Output

Example: Lights – Turn the lights on in a computer room as soon as motion is detected.

Input 2 is defined as the computer room motion detector; Output 2 is defined as the computer room lights. As soon as motion is detected in the room, Output 2 is triggered and remains active for the duration of Output 2's specified time. If motion is still detected the output remains active until the device does not sense movement.

03 – Pulsed Output

Example: Notification – Warehouse notification when a truck arrives at the shipping dock.

Input 3 is defined as the shipping dock; Output 3 is defined as shipping dock strobe/siren. When a truck arrives at the shipping dock you can manually trigger Input 3 via a push button which will then pulse the strobe/siren for the duration of the specified output time.

04 – Input/RTE

Example: Automated Unlock at Exit Door – Control the exit point of a door without the use of an access control reader.

Input 4 is defined as the side door RTE (Request to Exit); Input 5 is defined as the Door Contact; Output 4 is defined as the door lock hardware. As the person walks towards the door, the RTE device will detect the individual; Output 4 will unlock the door hardware; Input 5 will shunt the door contact for the duration of the specified output time and allow the individual to exit without creating an alarm. (Input 4 must be triggered before Input 5; otherwise Input 5 reports an alarm in the Client software.)

05 – Delayed Input & Delayed Output

Example: Monitoring – Monitor a low security stairwell door.

Input 5 is defined as the stairwell door; Output 5 is defined as the stairwell door strobe. If the stairwell door is opened, the alarm notification to the guard's computer is delayed by the specified input delay time. Output 5 will not activate the strobe until the end of the cumulative input and output times have expired. The strobe stops when the input is secured.

06 – Delayed Input & Timed Output

Example: Monitoring – Monitor a stairwell door.

Input 6 is defined as the stairwell door; Output 6 is defined as the stairwell door siren. If the stairwell door is opened, the alarm notification to the guard's computer is delayed by the specified input delay time. Output 6 will not activate until the input time has expired; the siren remains on for the duration of the specified output time. It does not reset until the input is secured.

07 – Delayed Input & Pulsed Output

Example: Monitoring – Monitor a stairwell door.

Input 7 is defined as the stairwell door; Output 7 is defined as the stairwell door siren. If the stairwell door is opened, the alarm notification to the guard's computer is delayed for the specified input delay time. Output 7 will pulse on and off for the duration of the specified output time. It does not reset until the input is secured.

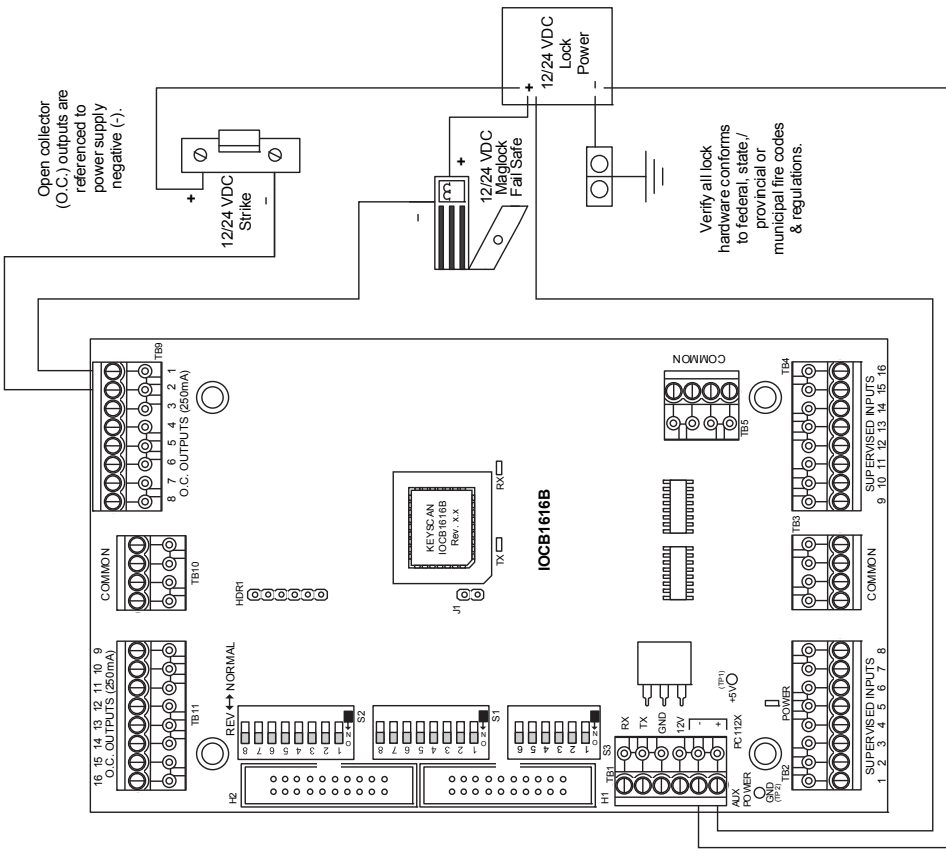
And / Or Conditions

When assigning two or more inputs to an output, one of the following logic conditions must be specified:

“Or” Condition

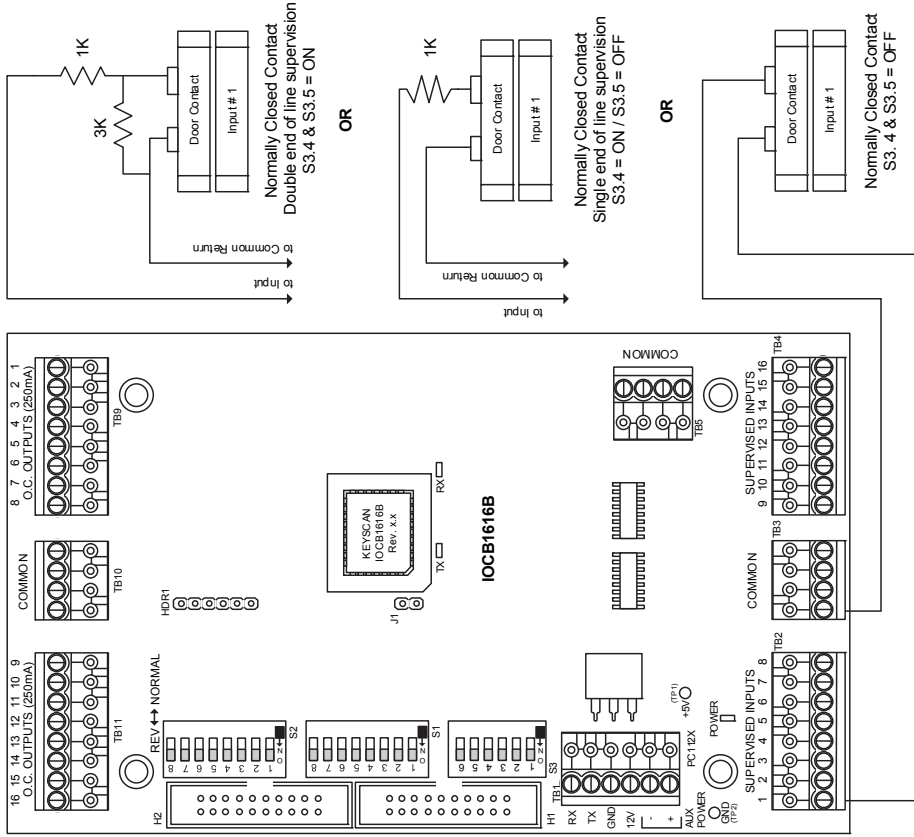
With the “OR” condition, when multiple inputs are assigned to a common output, any one input fires the output.

IOCB1616B Outputs (without OCB-8s)



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IOCB1616B Inputs



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"And" Condition

With the "AND" condition, when two points are assigned to any common output, both points must be in an alarm state before the output fires.

You cannot have more than 2 inputs assigned to an output with an "AND" condition. You may have multiple sets of 2 inputs that use an "AND" condition assigned to the same output. An example would be Input 1 "AND" Input 2 assigned to Output 1 as well as Input 3 "AND" Input 4 assigned to Output 1.

Input and Output Timers

Input Timer – sets the delay time from the point the input is tripped. The range of time is from 00 seconds to 240 seconds. (00 seconds is no delay.) The Input Timer applies only on Modes 4 to 7.

Output Timer – sets the delay time from the point the output is tripped. The range of time is from 00 seconds to 240 seconds. (00 seconds is no delay.)

Schedule Inputs and Outputs

In the Aurora software you can assign a schedule to an input or output.

- Input – assigning a schedule enables/disables or arms/disarms the input based on the schedule
- Output – assigning a schedule to an output turns it off or on based on the schedule

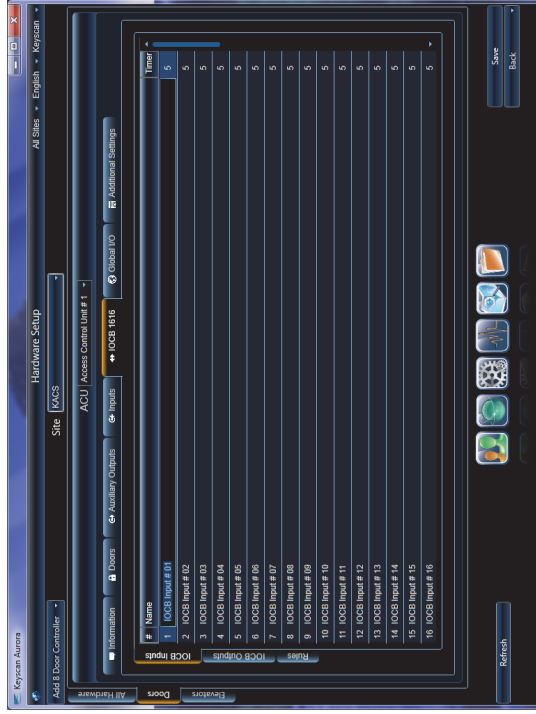
Software Setup

The following sections outline procedures to setup the IOCB1616B in the Client module. Keyscan suggests you review the S3 - IOCB1616B I/O Assignments in the Hardware section to ensure that the input/output assignments defined in the software match the S3 DIP switch settings on the IOCB1616B circuit boards.

Steps to Create Input Names and Specify Input Timers

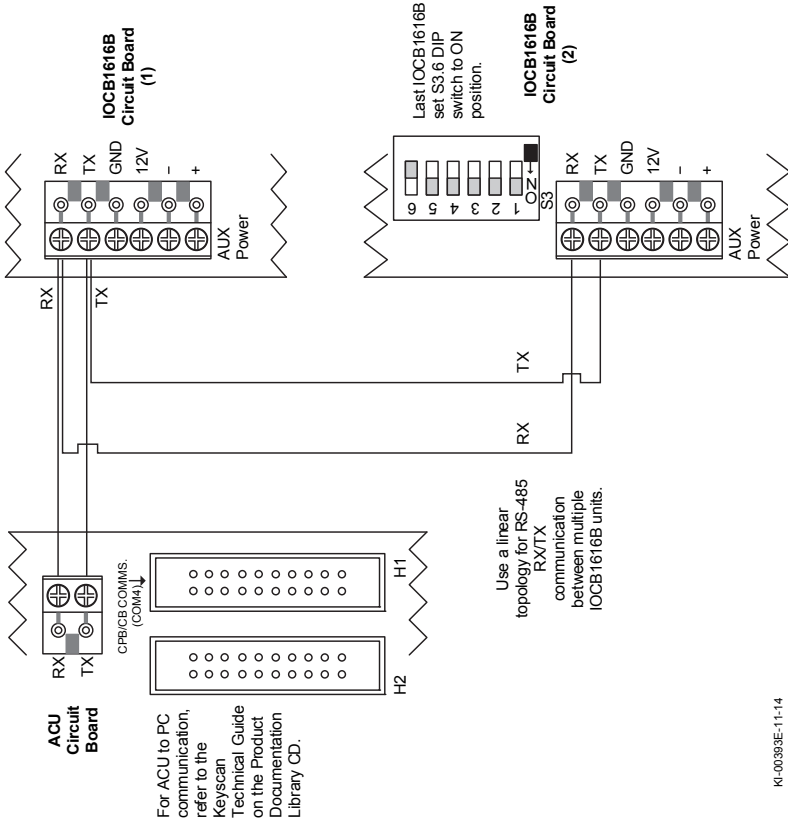
These instructions assume you have previously enrolled the access control unit connected to the IOCB1616B circuit board.

- From the Client main screen, select the Site Management button > Hardware Setup.
 - If you have multiple sites, double click on the site in the Hardware Setup directory screen.
- From the Hardware Setup screen, double click on the control unit that is connected to the IOCB1616 in the All Hardware screen.
- Select the IOCB1616 tab.
- Double click on the IOCB Input # 1 or the first input point to be named.



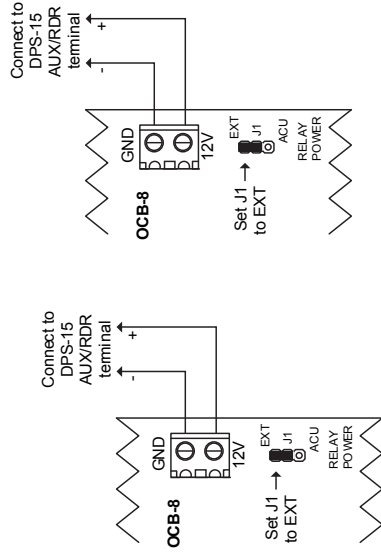
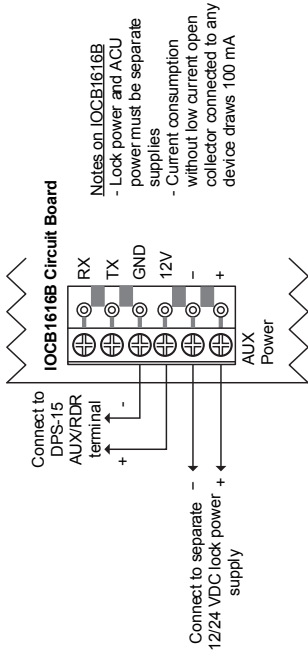
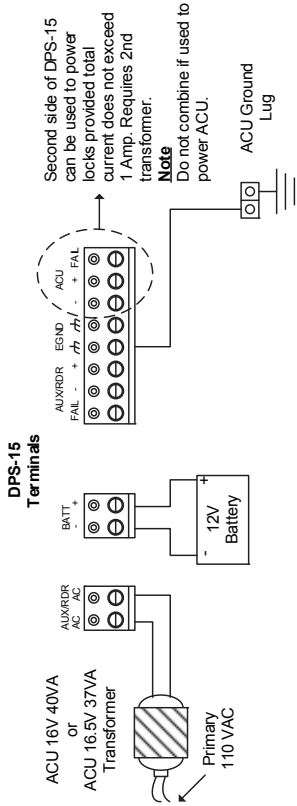
- In the text box, enter a name or description appropriate for the input point.
- If applying Delayed Output, Timed Output or Pulsed Output operating mode for this input leave the Input Timer setting as is and go to the next step, otherwise double click on the input row under the Timer column, and select a delay time from the drop down list.
- Repeat the preceding steps to add additional input points or continue to the next step if you have completed naming inputs.
- Click on the Save button.
- To add outputs follow the steps listed under Steps to Create Output Names and Specify Output Timers.

IOCB1616B Communication with ACU



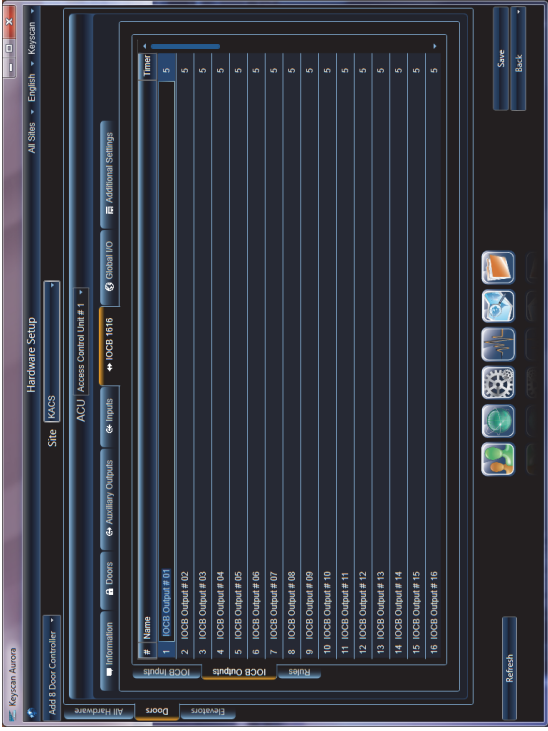
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IOCB1616B Power Supply Connections with OCB-8s



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Steps to Create Output Names and Specify Output Timers

- Select the IOCB Outputs tab.
 - If you are at the Client main screen, select the Site Management button > Hardware Setup > select the site if you have multiple sites > double click on the control unit that is connected to the IOCB1616 in the All Hardware screen > select the IOCB1616 tab > select the IOCB Outputs tab.
- Double click on the IOCB Output # 1 or the first output to be named.
 
- In the text box, enter a name or description appropriate for the output.
- If you are applying a delay for this output, double click on the output under the Timer column and select a delay time from the drop down list. For no delay select 0 seconds.
- Repeat the preceding steps to add additional outputs or continue to the next step if you have completed naming outputs.
- Click on the Save button.
- To assign inputs to outputs and set modes select the link below and complete the instructions or click on the Back button until you are returned to the main screen.

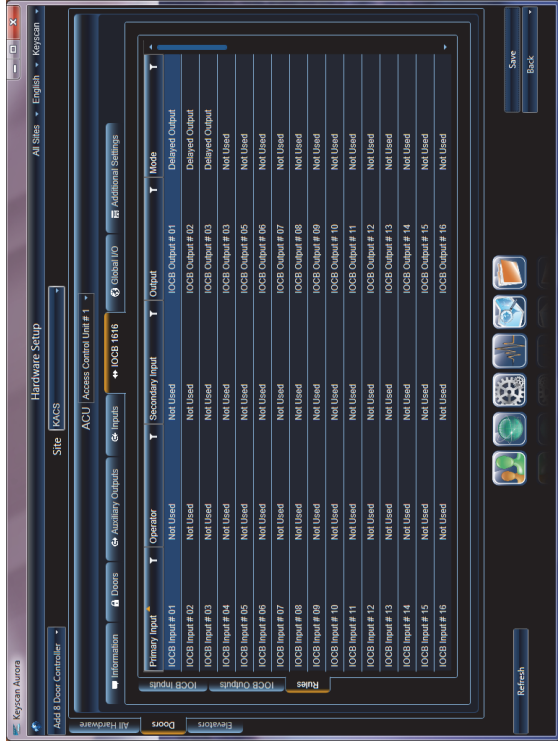
Assigning Inputs to Outputs

The default IOCB1616 Rules screen assigns Input #1 with Output #1, Input #2 with Output #2 etc, in numerical sequence to Input #64 to Output #64 as shown in the example. However when multiple inputs are assigned to an output, the above rule no longer applies and the applicable input or output must be set on not used as outlined.

Not Used Mode

In cases where secondary inputs are used with operators and the row with the default Input #/Output# is not applicable, set the Mode column for that row to Not Used.

Default IOCB1616 Rules Screen with Matching Input# to Output#

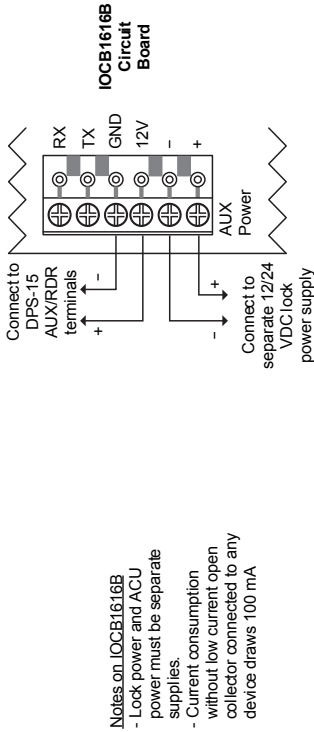
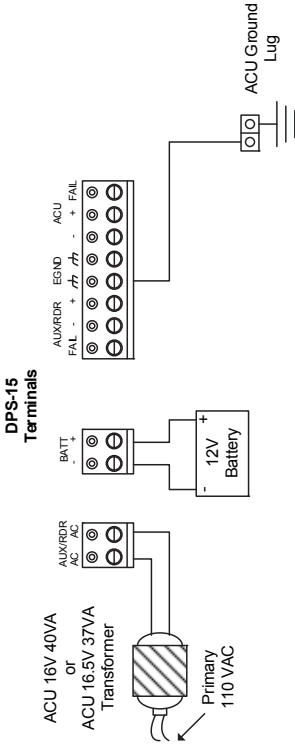


The following table illustrates an example where the default Input#3 is not assigned to Output #3. You will note that the default row has the Mode set on Not Used.

Primary Input	Operator	Secondary Input	Output	Mode
IOCB Input # 1	Or	IOCB Input # 3	Output # 1	Delayed Output
IOCB Input # 2	Or	IOCB Input # 3	Output # 2	Delayed Output
IOCB Input # 3	Not Used	Not Used	Output # 3	Not Used
IOCB Input # 4	Or	IOCB Input # 5	Output # 3	Delayed Output

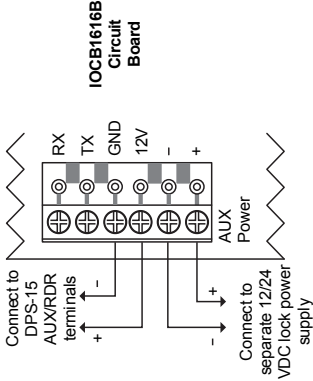
The screen capture on the following page depicts how this appears in the Hardware Setup > IOCB1616 Rules screen.

IOCB1616B Power Supply Connections (no OCB-8s)



Notes on IOCB1616B

- Lock power and ACU power must be separate supplies.
- Current consumption without low current open collector connected to any device draws 100 mA

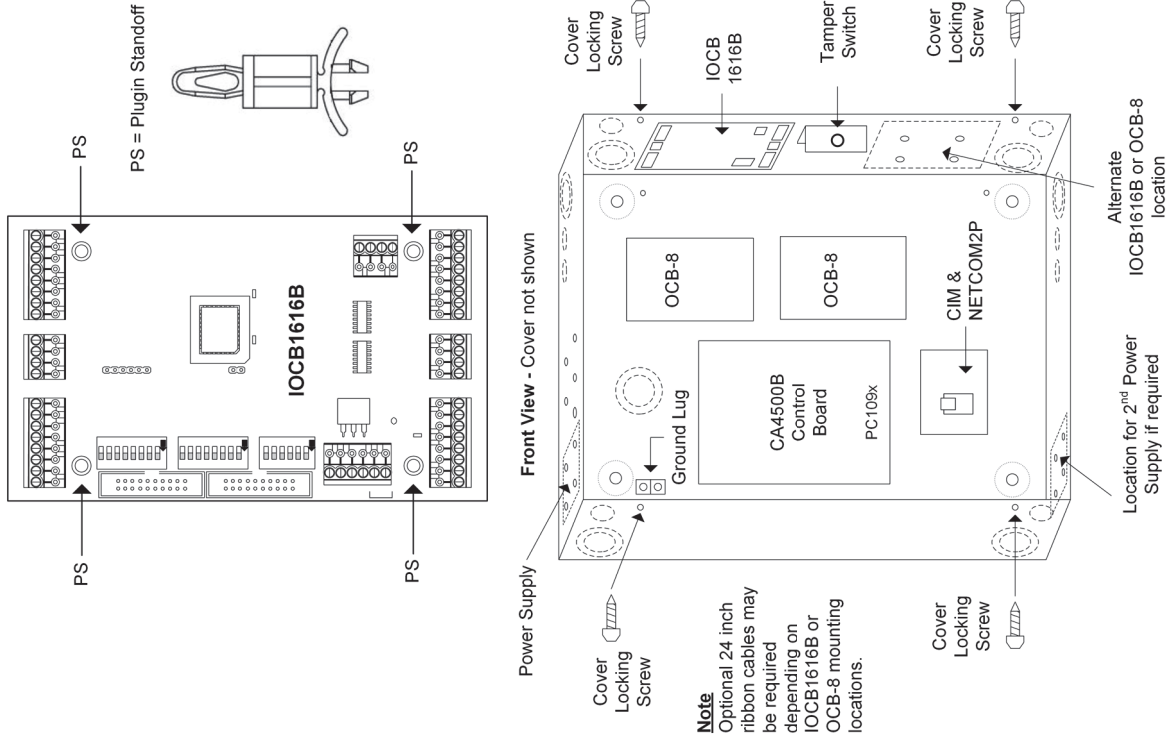


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Note

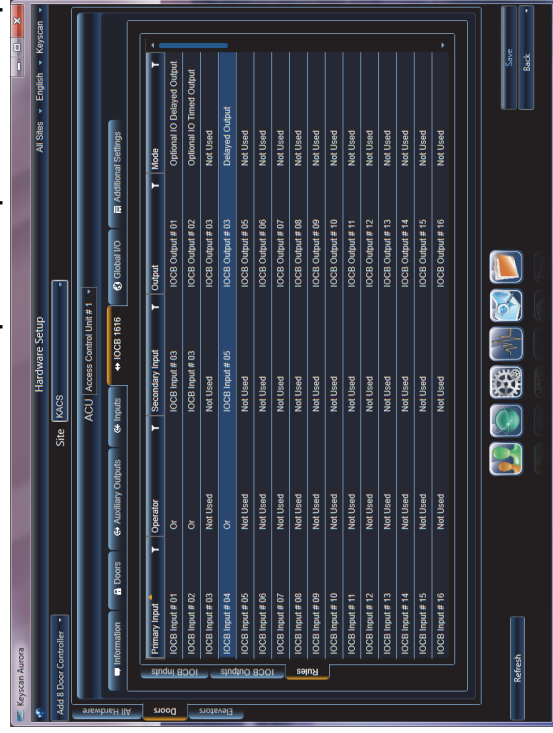
If male/female hex standoffs are positioned where the IOCB1616B is mounted, remove male/female hex standoffs before mounting to prevent possible shorting of the circuit board.

Example of IOCB1616B with Control Board and OCB-8s in Enclosure



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Set Mode to "Not Used" When Default Input # & Output # Row Don't Apply



Steps to Assign Inputs to Outputs and Set Modes

1. Select the Rules tab.

- If you are at the Client main screen, select the Site Management button > Hardware Setup > select the site if you have multiple sites > double click on the control unit that is connected to the IOCB1616 in the All Hardware screen > select the IOCB1616 tab > select the Rules tab.

2. Click on the row with the first applicable primary input to be assigned to an output. The row is highlighted in blue.

3. On the input row highlighted in blue, double click under the Operator column, and choose the desired operator – AND, OR, or RTE – from the drop down list.

- If assigning just a single input to a single output, leave the setting on Not Used. If you make an error or need to clear the assignment, select Clear Operator and Secondary Input.

4. Under the Secondary Input column, double click on the highlighted row, and choose the desired secondary input from the drop down list.

- If you are not assigning a secondary input, leave the field blank.

5. Under the Output column, double click on the highlighted row, and choose the desired output from the drop down list.

6. Under the Mode column, double click on the highlighted row, and choose the desired mode from the drop down list.

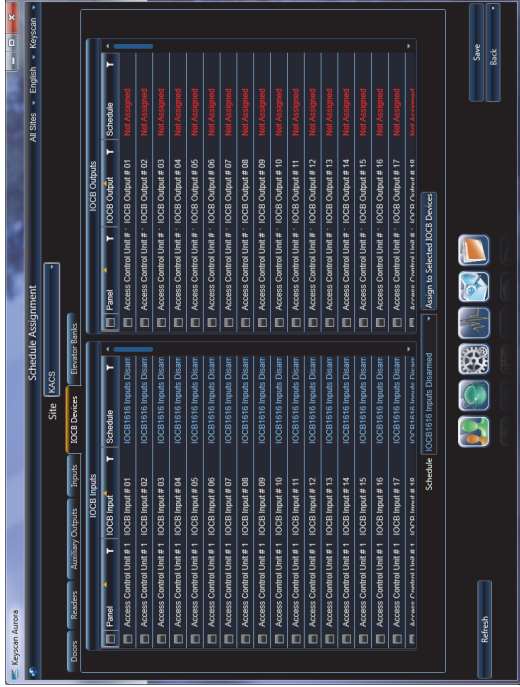
7. Repeat setting inputs, operators, outputs, and modes. When you have completed assigning inputs to outputs, click on the Save button.

8. If you have additional IOCB1616 boards connected to other access control units, repeat all the previous procedures to define and assign the inputs and the outputs; otherwise click on the Back button until you are at the main screen or select the Navigation History button for a previously viewed screen.

Assign Schedules to Inputs & Outputs (Optional)

This function is used to assign schedules to IOCB1616 inputs and outputs. You may wish to create specific schedules for IOCB1616 inputs and outputs. This is an optional procedure. If you are not assigning schedules to IOCB1616 inputs or outputs by-pass these procedures.

IOCB1616 Schedule Assignment Screen



Steps to Assign a Schedule to an IOCB1616 Input

- From the Client main screen, select the Site Management button > Schedule Assignments.
 - If you have multiple sites, double click on the site from the Site Search – Schedule Assignment directory screen.
- Select the IOCB Devices tab.
- Below the IOCB Inputs heading, click in the box to the left of the access control unit/IOCB Input #. The box has an x when selected.
 - If you are assigning multiple IOCB inputs to the same schedule, click in the box of each applicable input.
- Click on the  symbol to the right of Schedule, and select the schedule from the drop down list.
- Click on the Assign to Selected IOCB Devices button.
- Click on the Save button.
- Click on the Back button to until you are at the main screen or select the navigation history symbol for a previously viewed screen.

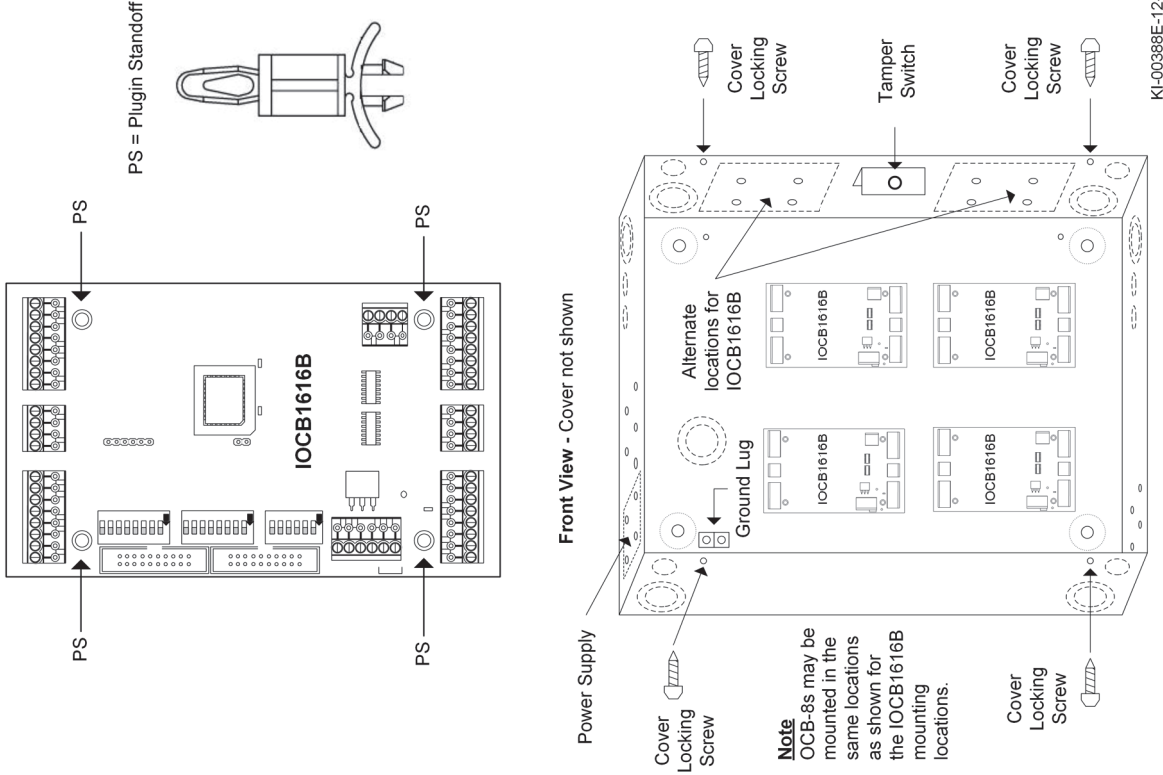
Steps to Assign a Schedule to an IOCB1616 Output

- From the Client main screen, select the Site Management button > Schedule Assignments.
 - If you have multiple sites, double click on the site from the Site Search – Schedule Assignment directory screen.
- Select the IOCB Devices tab.

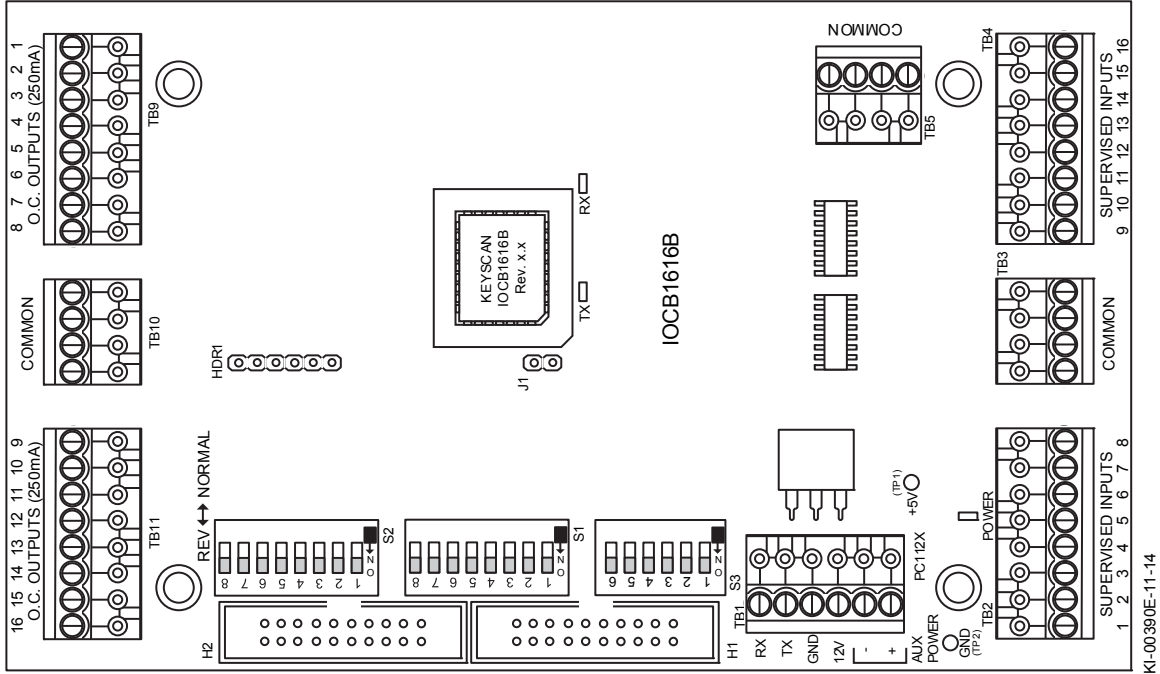
Mounting IOCB1616B Circuit Boards

The following diagrams outline mounting locations for the IOCB1616B circuit board.

IOCB1616B Mounting Locations



IOCB1616B Circuit Board



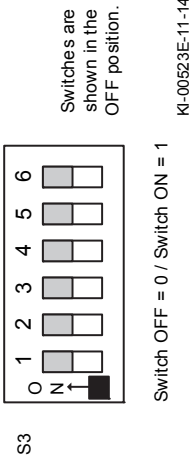
Hardware Setup & Connections

The following reviews the hardware setup for the IOCB1616B. Please be sure to review S3 to set the correct input/output assignments and the class of input. Diagrams for power, communication, inputs and outputs are also included.

S3 – IOCB1616B I/O Assignments & Supervision Mode

S3 on the IOCB1616B determines the circuit board's input/output assignments and input supervision. The table below reviews the Input/Output assignments and the input

supervision.



S3 DIP Switch Settings for Input/Output Assignments

Input/Output Assignment	S3.1/S3.2/S3.3 Off = 0 / On = 1
# 1 - 16	1 0 0
# 17 - 32	0 1 0
# 33 - 48	1 1 0
# 49 - 64	0 0 1

S3 – Supervised Input Modes

Supervised Input Modes	S3.4/S3.5
Non-supervised input or digital input	0 0
Single end of line supervision	1 0
Double end of line supervision	1 1

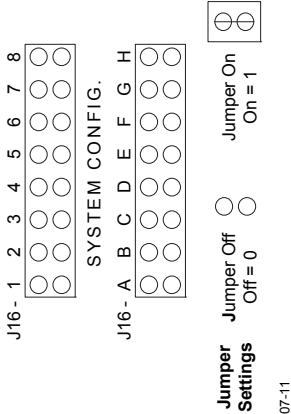
S3 – IOCB1616B Bus

IOCB1616B Bus	S3.6
Single IOCB1616B bus	1
Multiple IOCB1616B bus	1 on the last IOCB1616B board only

System Jumper J16 on ACU (Pre PC1097 Boards)

The following table outlines jumper settings on the ACU circuit board for enabling inputs/outputs by placing a jumper on J16, pin 8. For PC1097 or later control boards, see PC1097 or Later Circuit Boards below.

System Jumpers J16



System Jumper J16 Inputs/Outputs

PC1094 – PC1095 Circuit Boards	Jumper #	Jumper Setting Off=0 / On=1
Disable IOCB1616B	8	1
Enable IOCB1616B	8	0

PC1097 or Later Circuit Boards

The Enable/Disable IOCB1616 function for PC1097 or later control boards is set in the Aurora software from the Hardware Setup > Additional Settings screen under the Hardware Settings heading. By default the IOCB1616 setting is enabled indicated by an X in the box.

Current Supply and Current Load

The following table lists circuit board and power supply data.

Board	Description	Current
DPS-15	ACU - 12 Volts DC output	1.2 A
	AUX/RDR – 12 Volts DC output	1.2 A
ACU	Control board	130 mA
OCB-8	Optional output relay board	230 mA
IOCB1616B	No outputs connected	100 mA
IOCB1616B	With inputs and outputs connected	400 mA
Does not include communication board current draw.		