ADDJOG User Guide

7/30/10

Overview

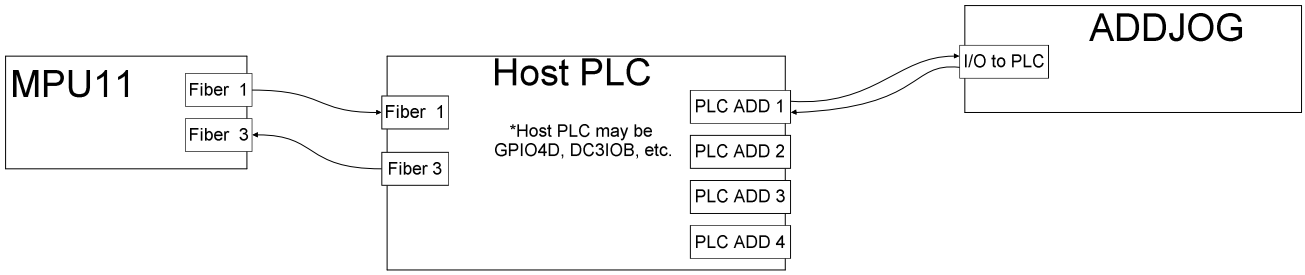
The ADDJOG is a PLC expansion board used to add digital inputs and outputs to a compatible host PLC. The ADDJOG has 64 open collector outputs and 64 non-isolated inputs. The ADDJOG may be used to connect buttons and LEDs for a custom jog panel arrangement, or used as general purpose I/O where input noise and voltage levels are compatible.

Features

Application:	PLC Expansion Board
Digital Inputs:	64
Digital Outputs:	64
Control Interface:	Shielded, twisted pair cable to host PLC
Update Rate:	2000 Hz
Dimensions (W*D*H):	12 * 5 * 0.5 inches

Connection Overview

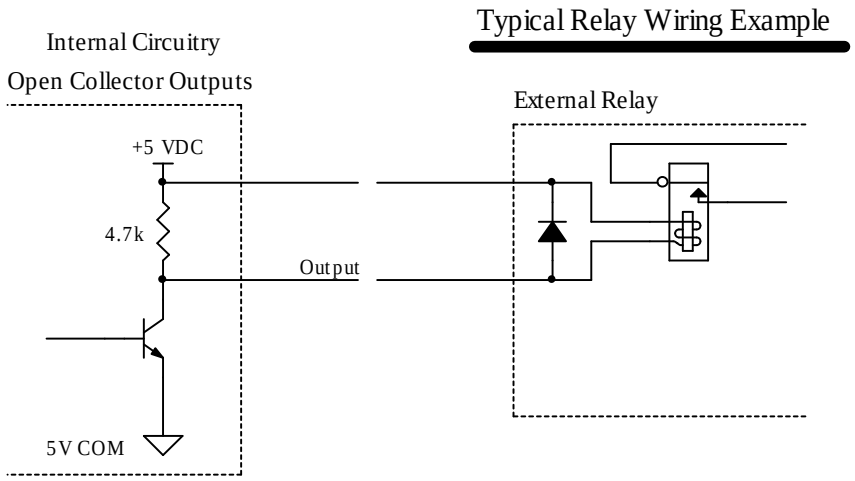
The ADDJOG communicates with a host PLC through a cable connection to an expansion port. The host PLC may have up to 16 PLC expansion ports, labeled “PLC ADD 1” through “PLC ADD 16”. The ADDJOG may connect to any available expansion port.

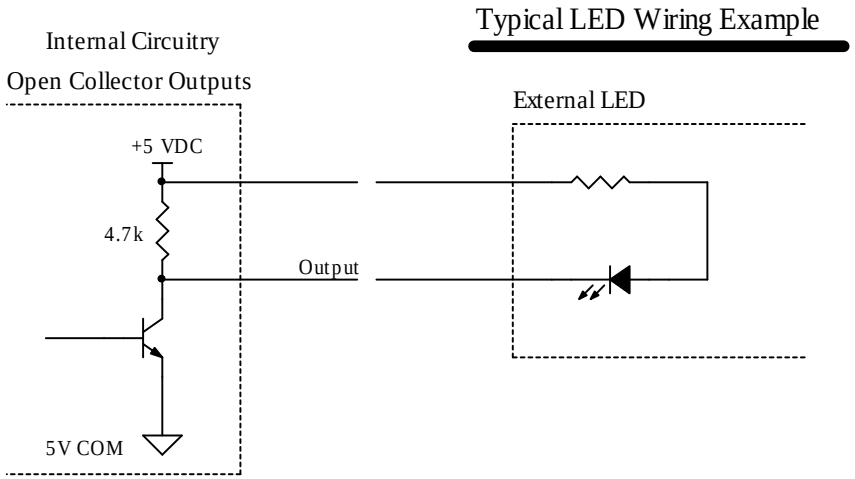


ADDJOG Outputs

64 open collector outputs are available on ADDJOG. Each output has a pull up resistor to simplify connection to logic level inputs. The outputs will pull down to 5V COM when set (1) in the PLC program. All outputs will release (go high) if the ADDJOG detects a communication error.

Appropriate suppression must be used if connecting inductive loads, such as relay coils, to an output. Note the diode across the relay coil in the wiring example. This type of connection is usually sufficient to keep noise from a switching relay coil from interfering with nearby circuits.

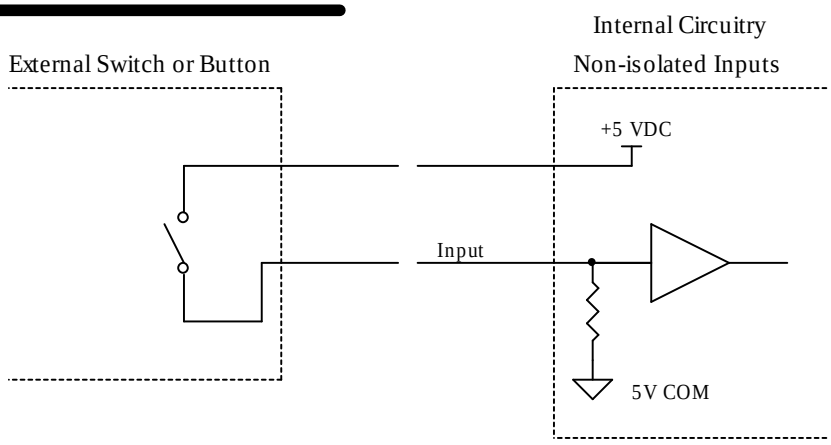




ADDJOG Inputs

The ADDJOG has 64 non-isolated inputs. The inputs accept five volt logic signals and have a pull down resistor to maintain an “off” state if they are not connected. Each input will be reported as set (1) when it is connected to +5 VDC and reported as reset (0) when connected to 5V COM or left open. In situations where electrical noise could trigger an input, it is advisable to supplement the internal weak pull down resistor with an external resistor to give a higher current pull down.

Typical Input Wiring Example



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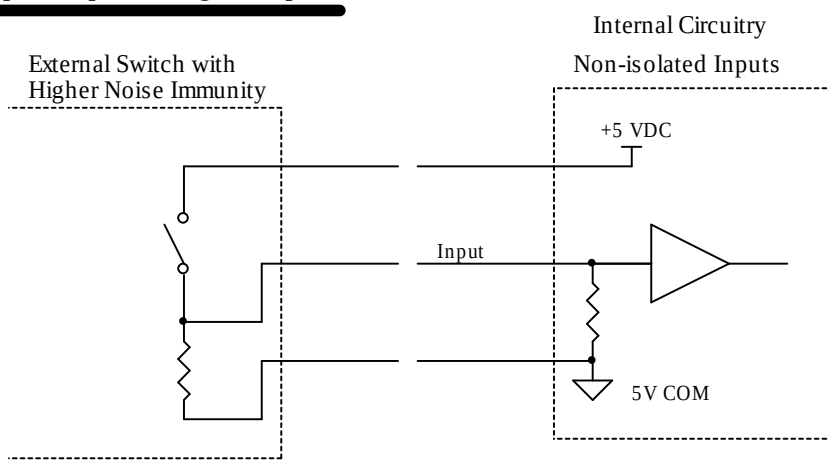
Typical Input Wiring Example

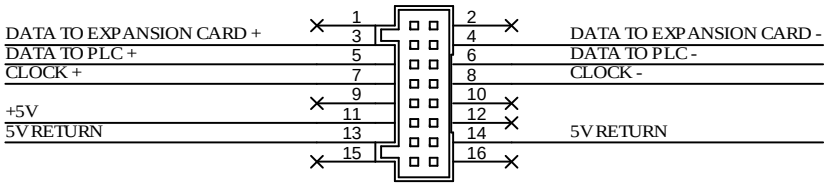


PLC Communication

Communication with the host PLC is performed through H7 “I/O TO PLC” connector. See the host PLC’s documentation to determine the where I/O from the ADDJOG will be located. ADDJOG requires four slots of input and output space in the individual I/O section (slots 0-14). I/O update rate is 2000 times per second or once every 500us, which will have to be considered when setting up the input debounce time.

I/O TO PLC Connector Pinout

I/O TO PLC

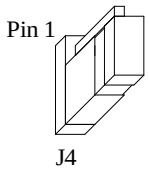


ADDJOG Power

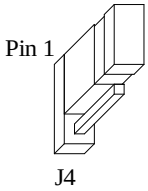
The ADDJOG may operate from the host PLC’s +5 VDC through the “I/O TO PLC” connector H7. However, care must be taken not to overload the power supply when adding expansion boards to a PLC. Refer to the specifications for each device and the power supply to make sure the supply can handle the addition of the ADDJOG.

If the host PLC’s supply can not support powering the ADDJOG, jumper J4 may be changed to use power from header H14. This setting allows another power supply to be used to provide +5 VDC to the ADDJOG.

J4 Setting to Use Host PLC +5V from H7



J4 Setting to Use External +5V from H14



ADDJOG Specifications

Characteristic	Min.	Typ.	Max.	Unit
5 Volt Supply Current	0.5	-	-	A
5 Volt Supply Voltage	4.5	5	5.5	V
Input On Voltage	2	-	-	V
Input Off Voltage	-	-	1	V
Input Operating current	-	-	3	mA
Output Current (low)	-	-	90	mA
Output Current (high)	-	1	-	mA
PLC Expansion Cable Length	-	1.5	30	ft
Size: 12 * 5 * 0.5 (W*D*H)				Inches

ADDJOG Troubleshooting

Symptom	Possible Cause	Corrective Action
+5V LED out	Power source set incorrectly	Set J4 to get power from H7 or H14 as appropriate
	Power supply overloaded	If several expansion boards are powered from one supply, the current demands could be too much. Add or change power supplies to provide at least as much current as the expansion board ratings call out.
PLC OK LED out, +5V LED lit	Host PLC Offline	Troubleshoot host PLC
	Faulty cable to main PLC	Check or replace cable connected to H7 "I/O to PLC" header

ADDJOG I/O Map

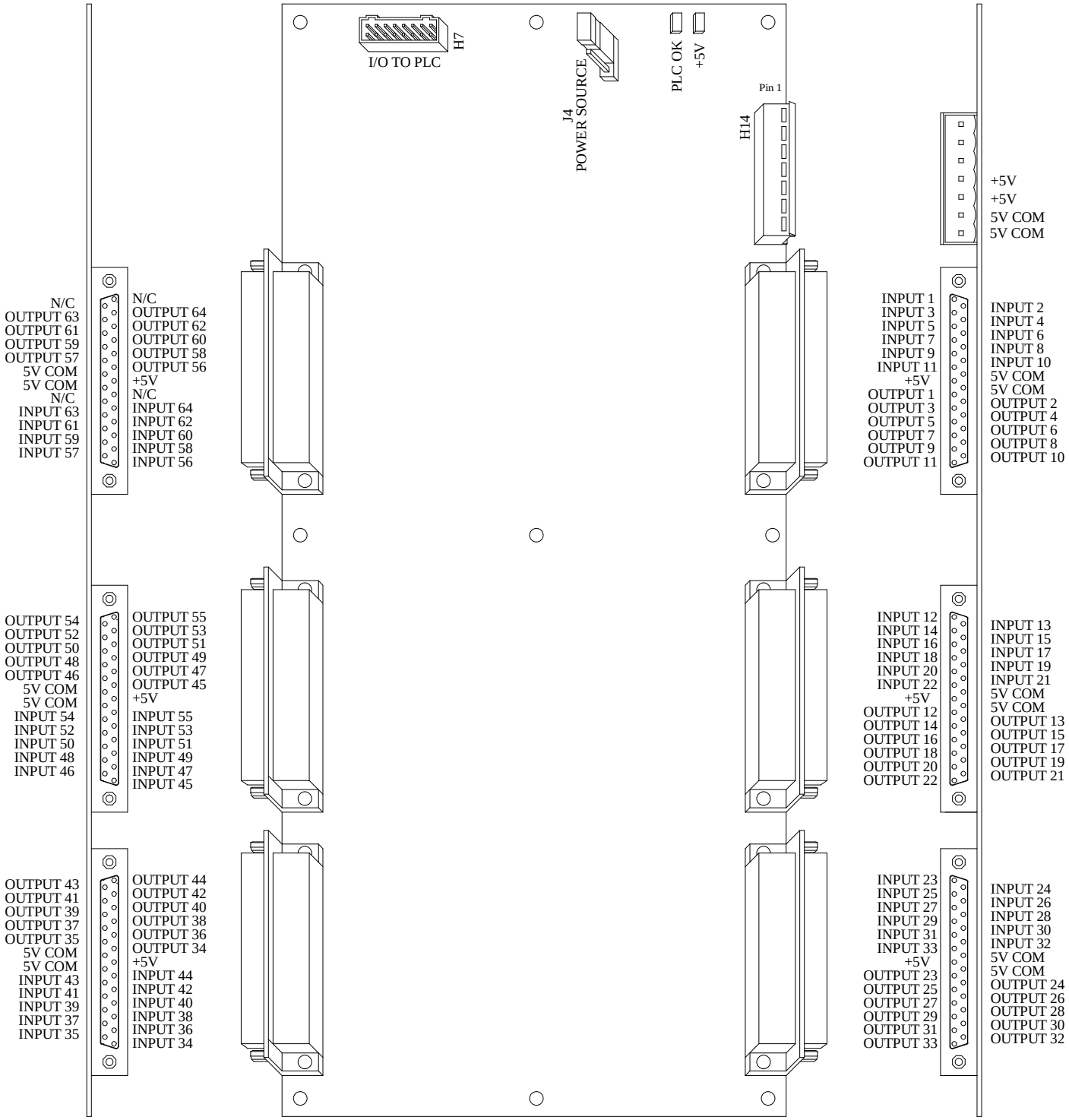
Input Map

Input Specification			Input Location		Input Location	
Number	Function	Type	Connector	Pin	Connector	Pin
1	General Purpose	Non-isolated	H13	1	H10	1
2	General Purpose	Non-isolated	H13	14	H10	2
3	General Purpose	Non-isolated	H13	2	H10	3
4	General Purpose	Non-isolated	H13	15	H10	4
5	General Purpose	Non-isolated	H13	3	H10	5
6	General Purpose	Non-isolated	H13	16	H10	6
7	General Purpose	Non-isolated	H13	4	H10	7
8	General Purpose	Non-isolated	H13	17	H10	8
9	General Purpose	Non-isolated	H13	5	H10	9
10	General Purpose	Non-isolated	H13	18	H10	10
11	General Purpose	Non-isolated	H13	6	H10	11
12	General Purpose	Non-isolated	H12	1	H9	1
13	General Purpose	Non-isolated	H12	14	H9	2
14	General Purpose	Non-isolated	H12	2	H9	3
15	General Purpose	Non-isolated	H12	15	H9	4
16	General Purpose	Non-isolated	H12	3	H9	5
17	General Purpose	Non-isolated	H12	16	H9	6
18	General Purpose	Non-isolated	H12	4	H9	7
19	General Purpose	Non-isolated	H12	17	H9	8
20	General Purpose	Non-isolated	H12	5	H9	9
21	General Purpose	Non-isolated	H12	18	H9	10
22	General Purpose	Non-isolated	H12	6	H9	11
23	General Purpose	Non-isolated	H11	1	H8	1
24	General Purpose	Non-isolated	H11	14	H8	2
25	General Purpose	Non-isolated	H11	2	H8	3
26	General Purpose	Non-isolated	H11	15	H8	4
27	General Purpose	Non-isolated	H11	3	H8	5
28	General Purpose	Non-isolated	H11	16	H8	6
29	General Purpose	Non-isolated	H11	4	H8	7
30	General Purpose	Non-isolated	H11	17	H8	8
31	General Purpose	Non-isolated	H11	5	H8	9
32	General Purpose	Non-isolated	H11	18	H8	10
33	General Purpose	Non-isolated	H11	6	H8	11
34	General Purpose	Non-isolated	H1	1	H4	1
35	General Purpose	Non-isolated	H1	14	H4	2
36	General Purpose	Non-isolated	H1	2	H4	3
37	General Purpose	Non-isolated	H1	15	H4	4
38	General Purpose	Non-isolated	H1	3	H4	5
39	General Purpose	Non-isolated	H1	16	H4	6
40	General Purpose	Non-isolated	H1	4	H4	7
41	General Purpose	Non-isolated	H1	17	H4	8
42	General Purpose	Non-isolated	H1	5	H4	9
43	General Purpose	Non-isolated	H1	18	H4	10
44	General Purpose	Non-isolated	H1	6	H4	11
45	General Purpose	Non-isolated	H2	1	H5	1
46	General Purpose	Non-isolated	H2	14	H5	2
47	General Purpose	Non-isolated	H2	2	H5	3
48	General Purpose	Non-isolated	H2	15	H5	4
49	General Purpose	Non-isolated	H2	3	H5	5
50	General Purpose	Non-isolated	H2	16	H5	6
51	General Purpose	Non-isolated	H2	4	H5	7
52	General Purpose	Non-isolated	H2	17	H5	8
53	General Purpose	Non-isolated	H2	5	H5	9
54	General Purpose	Non-isolated	H2	18	H5	10
55	General Purpose	Non-isolated	H2	6	H5	11
56	General Purpose	Non-isolated	H3	1	H6	1
57	General Purpose	Non-isolated	H3	14	H6	2
58	General Purpose	Non-isolated	H3	2	H6	3
59	General Purpose	Non-isolated	H3	15	H6	4
60	General Purpose	Non-isolated	H3	3	H6	5
61	General Purpose	Non-isolated	H3	16	H6	6
62	General Purpose	Non-isolated	H3	4	H6	7
63	General Purpose	Non-isolated	H3	17	H6	8
64	General Purpose	Non-isolated	H3	5	H6	9

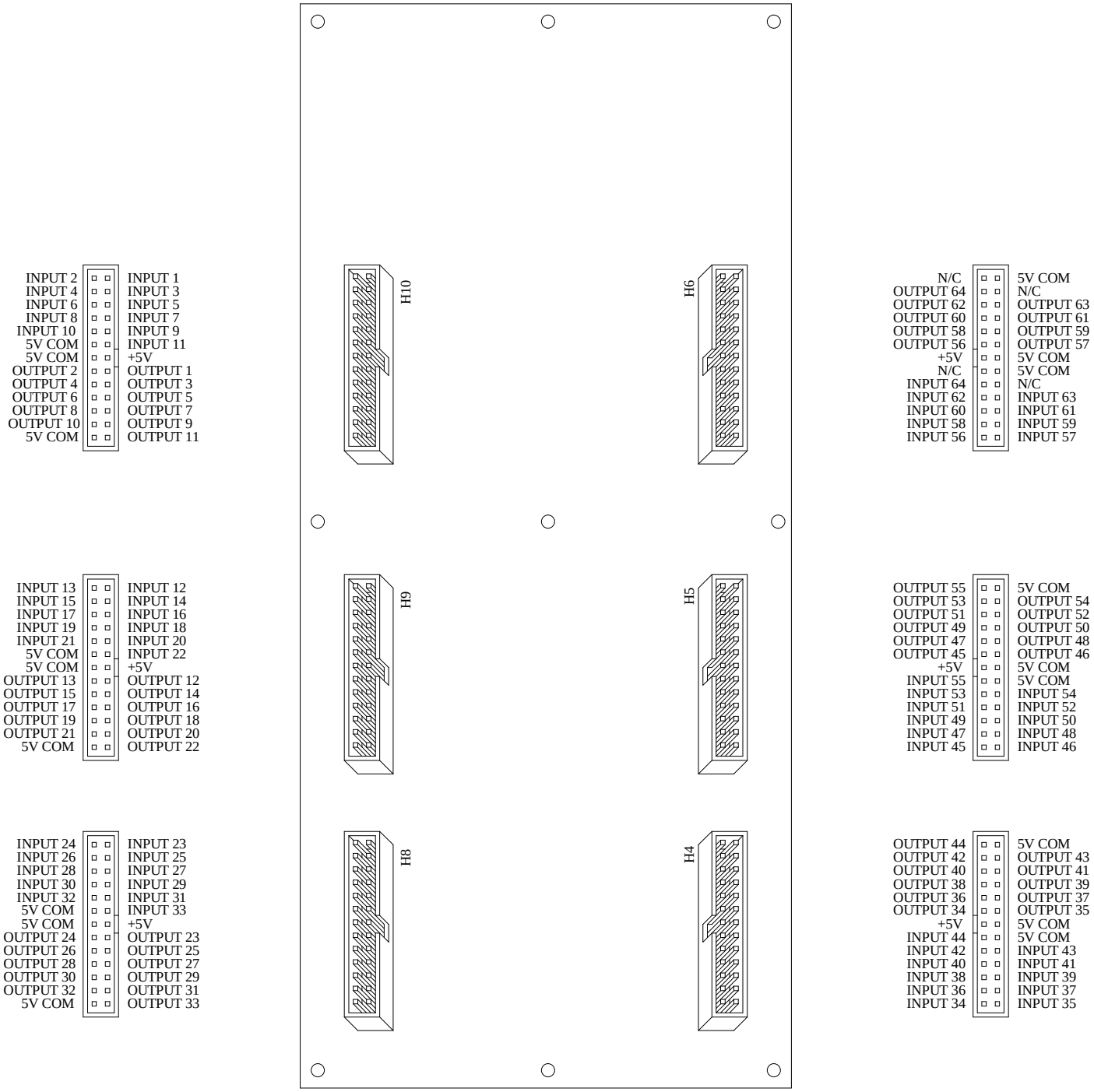
Output Map

Output Specification			Output Location		Output Location	
Number	Function	Type	Connector	Pin	Connector	Pin
1	General Purpose	Open Collector	H13	8	H10	15
2	General Purpose	Open Collector	H13	21	H10	16
3	General Purpose	Open Collector	H13	9	H10	17
4	General Purpose	Open Collector	H13	22	H10	18
5	General Purpose	Open Collector	H13	10	H10	19
6	General Purpose	Open Collector	H13	23	H10	20
7	General Purpose	Open Collector	H13	11	H10	21
8	General Purpose	Open Collector	H13	24	H10	22
9	General Purpose	Open Collector	H13	12	H10	23
10	General Purpose	Open Collector	H13	25	H10	24
11	General Purpose	Open Collector	H13	13	H10	25
12	General Purpose	Open Collector	H12	8	H9	15
13	General Purpose	Open Collector	H12	21	H9	16
14	General Purpose	Open Collector	H12	9	H9	17
15	General Purpose	Open Collector	H12	22	H9	18
16	General Purpose	Open Collector	H12	10	H9	19
17	General Purpose	Open Collector	H12	23	H9	20
18	General Purpose	Open Collector	H12	11	H9	21
19	General Purpose	Open Collector	H12	24	H9	22
20	General Purpose	Open Collector	H12	12	H9	23
21	General Purpose	Open Collector	H12	25	H9	24
22	General Purpose	Open Collector	H12	13	H9	25
23	General Purpose	Open Collector	H11	8	H8	15
24	General Purpose	Open Collector	H11	21	H8	16
25	General Purpose	Open Collector	H11	9	H8	17
26	General Purpose	Open Collector	H11	22	H8	18
27	General Purpose	Open Collector	H11	10	H8	19
28	General Purpose	Open Collector	H11	23	H8	20
29	General Purpose	Open Collector	H11	11	H8	21
30	General Purpose	Open Collector	H11	24	H8	22
31	General Purpose	Open Collector	H11	12	H8	23
32	General Purpose	Open Collector	H11	25	H8	24
33	General Purpose	Open Collector	H11	13	H8	25
34	General Purpose	Open Collector	H1	8	H4	15
35	General Purpose	Open Collector	H1	21	H4	16
36	General Purpose	Open Collector	H1	9	H4	17
37	General Purpose	Open Collector	H1	22	H4	18
38	General Purpose	Open Collector	H1	10	H4	19
39	General Purpose	Open Collector	H1	23	H4	20
40	General Purpose	Open Collector	H1	11	H4	21
41	General Purpose	Open Collector	H1	24	H4	22
42	General Purpose	Open Collector	H1	12	H4	23
43	General Purpose	Open Collector	H1	25	H4	24
44	General Purpose	Open Collector	H1	13	H4	25
45	General Purpose	Open Collector	H2	8	H5	15
46	General Purpose	Open Collector	H2	21	H5	16
47	General Purpose	Open Collector	H2	9	H5	17
48	General Purpose	Open Collector	H2	22	H5	18
49	General Purpose	Open Collector	H2	10	H5	19
50	General Purpose	Open Collector	H2	23	H5	20
51	General Purpose	Open Collector	H2	11	H5	21
52	General Purpose	Open Collector	H2	24	H5	22
53	General Purpose	Open Collector	H2	12	H5	23
54	General Purpose	Open Collector	H2	25	H5	24
55	General Purpose	Open Collector	H2	13	H5	25
56	General Purpose	Open Collector	H3	8	H6	15
57	General Purpose	Open Collector	H3	21	H6	16
58	General Purpose	Open Collector	H3	9	H6	17
59	General Purpose	Open Collector	H3	22	H6	18
60	General Purpose	Open Collector	H3	10	H6	19
61	General Purpose	Open Collector	H3	23	H6	20
62	General Purpose	Open Collector	H3	11	H6	21
63	General Purpose	Open Collector	H3	24	H6	22
64	General Purpose	Open Collector	H3	12	H6	23

ADDJOG Top and Side Connections



ADDJOG Bottom Connections



ADDJOG Mounting Dimensions