



Application Note #1216

ICM-1460 Interconnect Module (Rev G)

The ICM-1460 (Rev G) Interconnect Module provides easy connections between the Econo series (DMC-1410, 1411, 1412, 1415, 1416, 1417, 1425) or E series (DMC-3415, 3425) controllers and other system elements such as amplifiers, encoders, and external switches. The ICM-1460 accepts the 37-pin cable from the controller and provides labeled screw-type terminals for easy signal connections. The ICM-1460 is packaged as a circuit board mounted to a rugged metal enclosure. The ICM-1460 is also available with an option for opto-isolated inputs and outputs (order with –OPTO suffix).

Features:

- Breaks out 37-pin ribbon cable into individual screw-type terminals
- Clearly identifies all signal connections
- Additional 10-pin IDC connectors for quick encoder connections
- Configurable amp-enable signal (either active high or low) using an easily replaceable open-collector buffer.
- Also provides open-collector buffered outputs for OUT1 thru OUT3 and OUTPUT COMPARE signals
- Available with opto-isolation option for general inputs and outputs as well as dedicated inputs (home, limits, etc.). See application note #1218.

Stepper Configuration:

The ICM-1460, when used with a DMC-1425 or DMC-3425 in stepper mode, must be properly configured to provide the necessary Pulse and Direction signals to the stepper amplifiers. Since the signal outputs ACMD and ACMD2 are used for the Pulse and Direction outputs for the X-axis and the AEN signal is used for the Direction bit for the Y-axis, jumpers at JP6 must be in place in order to bypass the servo motor command and amp-enable circuitry.

JP6

Jumper MCMD to AMP_CMD for X-axis stepper pulse configuration

Jumper MCMD2 to AMP_CMD2 for X-axis stepper direction configuration

Jumper L1_AEN to AEN for Y-axis stepper direction configuration

Output Compare Signal

When using the ICM-1460 with the DMC-1415/1416/1425/3425 controller, the output compare signal (OC) can be brought out to terminal pin 13 (CMP/ICOM) by placing a jumper from CMP to CMP/ICOM at JP5. *Note: when using the -Opto version of the ICM-1460, the output compare is not available and placing this jumper may cause damage to the controller.*

ICM-1460 Circuit Board Layout:

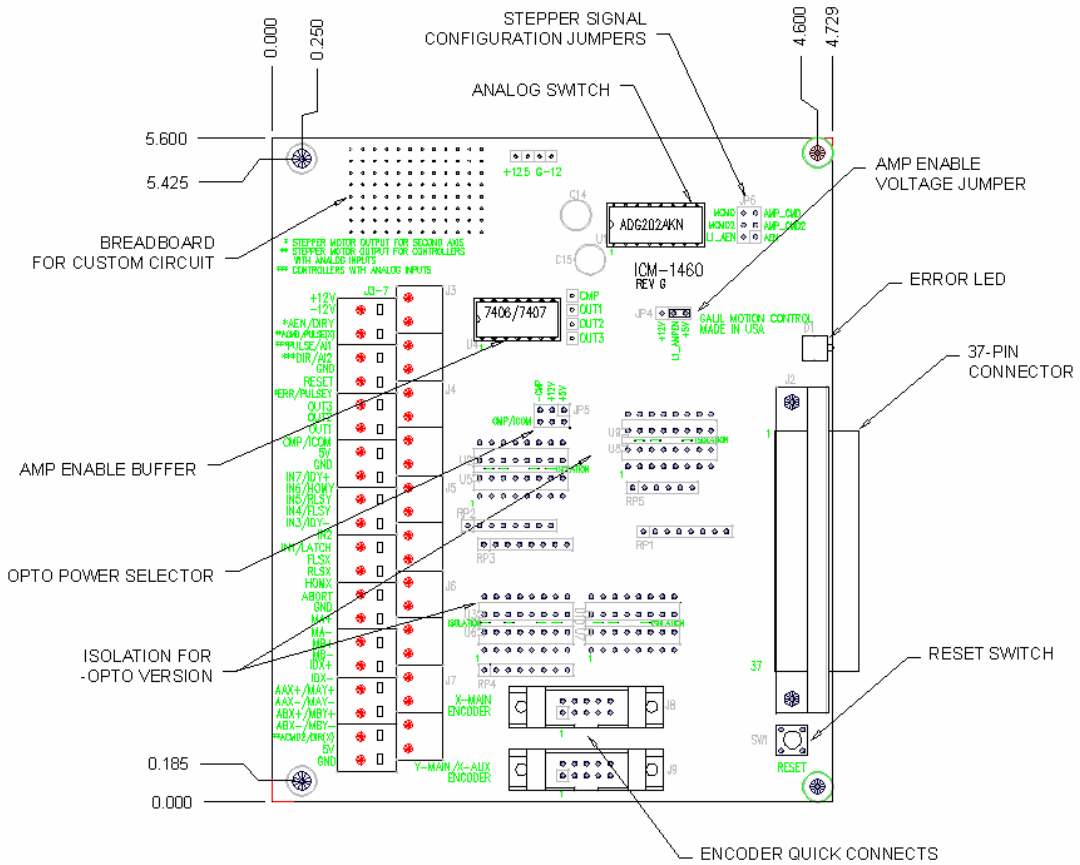


Figure 1 – Circuit Board Layout

Screw Terminal Pinouts (1-40)

<u>Terminal#</u>	<u>Label</u>	<u>I/O</u>	<u>Description</u>
1.	+12V	O	+12 Volts from controller
2	-12V	O	-12 Volts from controller
3	AMPEN	O	Amplifier enable line (for both X and Y axis)
4	ACMD	O	Analog motor command signal +/-10v (X-axis pulse output for stepper mode DMC-1415, 1425, 3415, 3425)
5	PULSE / AI1	O	PULSE - Stepper Pulse output for DMC-1410, 1411, 1412, 1417 controllers. AI1 - analog input 1 for DMC-1415, 1416, 1425, 3415, 3425
6	DIR / AI2	O	DIR - Stepper Direction output for DMC-1410, 1411, 1412, 1417 controllers. AI2 - Analog input 2 for DMC-1415, 1416, 1425, 3415, 3425
7	GND		Signal Ground
8	RESET	I	Reset
9	ERROR	O	Error signal output
10	OUT3	O	General Output 3
11	OUT2	O	General Output 2
12	OUT1	O	General Output 1
13	CMP / ICOM	O	CMP - Output Compare signal ICOM - Input common for ICM-1460-OPTO
14	5V	O	+ 5 Volts from controller
15	GND		Signal Ground
16	IN7 / IDY+	I	IN7 – General Input #7 IDY+ - Y-axis encoder index + input
17	IN6 / HOMOY	I	IN6 – General Input #6 HOMOY - Y-axis home sensor input
18	IN5 / RLSY	I	IN5 – General Input #5 RLSY - Y-axis reverse limit sensor input
19	IN4 / FLSY	I	IN4 – General Input #4 FLSY - Y-axis forward limit sensor input
20	IN3 / IDY-	I	IN3 – General Input #3 IDY- - Y-axis encoder index- input
21	IN2	I	General Input #2

22	IN1 / LATCH	I	IN1 – General Input #1 LATCH - X-axis Latch Function input
23	FLS	I	Forward limit switch input
24	RLS	I	Reverse limit switch input
25	HOME	I	Home input
26	ABORT	I	Abort Input
27	GND		Signal Ground
28	MA+	I	Main encoder A+
29	MA-	I	Main encoder A-
30	MB+	I	Main encoder B+
31	MB-	I	Main encoder B-
32	INDEX+	I	Main encoder index +
33	INDEX-	I	Main encoder index -
34	AA+	I	Auxiliary encoder A+ (Y-axis A+ encoder input)
35	AA-	I	Auxiliary encoder A- (Y-axis A- encoder input)
36	AB+	I	Auxiliary encoder B+ (Y-axis B+ encoder input)
37	AB-	I	Auxiliary encoder B- (Y-axis B- encoder input)
38	ACMD2	I	Analog command signal for Y axis (sign bit for X-axis in stepper mode DMC-1415, 1425, 3415, 3425)
39	5V	O	+ 5 Volts
40	GND		Signal Ground

10-pin IDC headers for Encoder connections

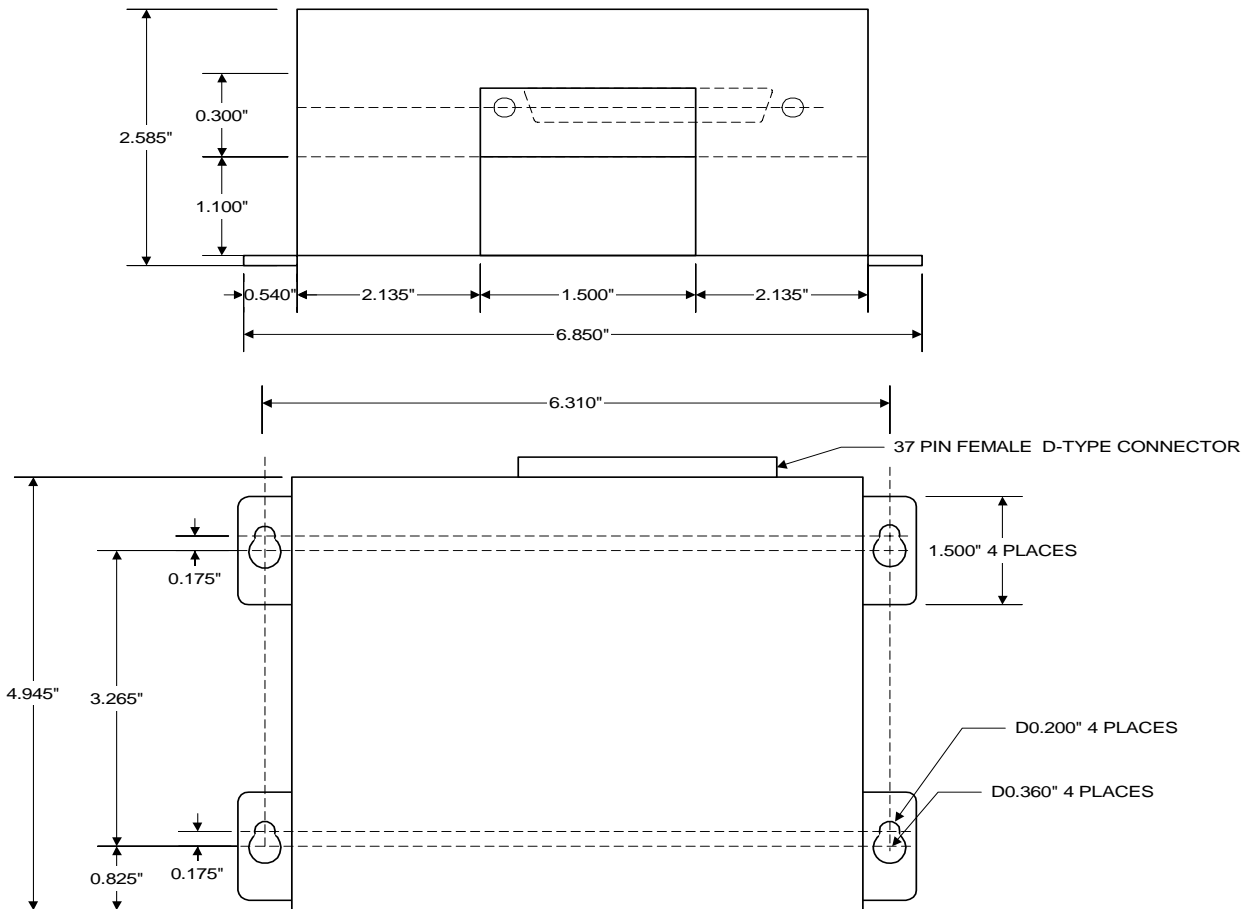
X-MAIN ENCODER (J8)

Y-MAIN / X-AUX ENCODER (J9)

1	Encoder A+	2	+5 VDC
3	GND	4	GND
5	Encoder A-	6	Encoder A+
7	Encoder B-	8	Encoder B+
9	Encoder Index-	10	Encoder Index+

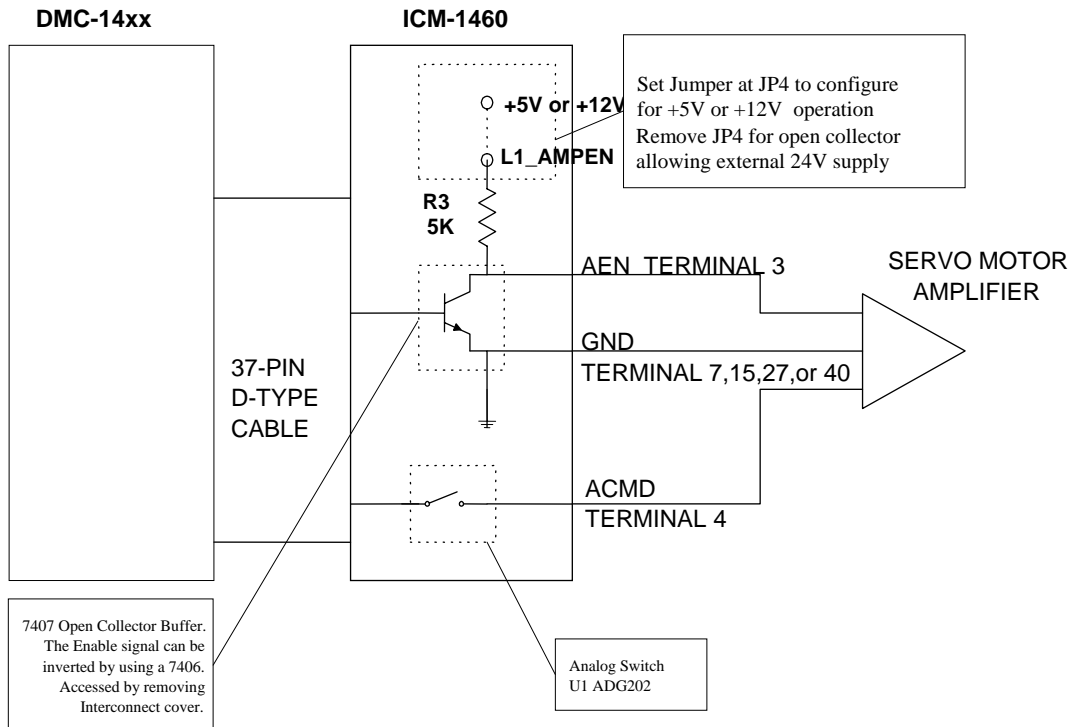
ICM-1460 Metal Enclosure

Overall Dimensions (including metal enclosure): 6.9" x 4.9" x 2.6 (L x W x H)



Buffered Amplifier Enable

The ICM-1460 provides an open-collector buffer for the amplifier enable signal. This buffer can be connected to voltages between 5 and 24 Volts and can supply up to 25mA of current. The jumper at JP4 allows the user to select the on board +5 or +12 supplies to power the amp-enable output. For a true open-collector output, which allows an external supply up to 24 VDC, remove the jumper at JP4 (The user must provide an external pull-up resistor to insure the current draw is limited to 25mA). The logic sense of the amplifier enable signal is determined by the installed chip. A 7407 chip provides active high enable (-HEAN) and a 7406 chip provides active-low enable (-LEAN), which can be specified at time of order (default is -HEAN).



Buffered Output Signals

The ICM-1460 Interconnect Module provides optional buffering for the general outputs (OUT1, OUT2, and OUT3) and the output compare signal (CMP). This is accomplished by using the available open collector outputs of the buffer chip used for the amplifier enable signal (see previous section regarding the amplifier enable signal). These buffered signals are only accessible through test points on the ICM-1460 circuit board located adjacent to the buffer chip at U4. The standard un-buffered 5v TTL outputs are available on the screw terminals. The logic sense of the outputs will be reversed if the 7407 buffer is replaced with a 7406.

Note: This option is not standard. It requires a modification to the ICM-1460 that must be made at the factory.

