

This document explains how to properly modify the ICM-1460 REVf to achieve different optical isolation configurations as well as how to enable the ICM-1460 REVf for use with a two axes stepper controller. Please consult the cut diagram at the end of this document for clarity of all required cuts and jumpers.

DEFAULT CONFIGURATION:

With no modifications, the ICM-1460 REVf has the following configuration:

- No optical isolation
- CMP signal from the controller is available at Terminal Blocks position 13 and is also buffered using a 7407. The buffered signal is available at the test point labeled CMP.
- The AEN signal from the controller is applied to the MAX332 analog switch located at U1. The AEN signal is also buffered using a 7407 and the buffered signal is available at Terminal Block position 3
- +12V and -12V signals are available at Terminal Block positions 1 and 2 respectively.
- The controller output signals OUT1, OUT2, and OUT3 are buffered using a 7407 and the buffered signals are available at test points labeled OUT1, OUT2, and OUT3
- 2 differential encoder inputs are available. These inputs are backward compatible with previous ICM-1460 revisions that allowed using only single ended encoders. Please note however, that the Y-MAIN/X-AUX encoder uses the controller inputs IN3 for -INDEX and IN7 for +INDEX.

OPTICAL ISOLATION:

The optical isolation circuits of the ICM1460 REVf may be reconfigured to allow the input isolation and the output isolation signals to be configured as either sinking or sourcing signals. Furthermore, the sink/source settings for the input and output isolation can be configured by a single signal, the input and output isolation can be independently configured using different signals, or they can be configured simply by using a jumper on the ICM-1460.

MODIFICATIONS FOR ANY OPTICAL ISOLATION:

- For any configuration of input isolation, the isolation cuts at U2/U5, U3/U6, and U10/U7 must be made prior to loading the optical isolators.
- For output isolation, the isolation cuts at U8/U9 must be made prior to loading the optical isolators.

CONTROLLING THE SINK/SOURCE USING A SINGLE SIGNAL:

The input/output isolation setting can be controlled using any of the four following signals; CMP/ICOM, +12V, -12V, JP3.

- To use the CMP/ICOM signal for optical isolation, CUT5 must be made. Performing this cut isolates the CMP/INCOM signal at the controller, from the optical isolation circuits and terminal blocks. Making this cut allows the user to control the sink/source setting of both input and output isolation from the CMP/ICOM signal located at Terminal Block position 13. The CMP signal from the controller will still be buffered using the 7407, with the buffered signal available at test point labeled CMP. Failure to perform CUT5 cut may damage the GL1800 in the controller.
- To use the +12V signal for optical isolation, CUT1 and CUT7 must be made, and jumper JP1B must be mounted. Performing CUT1 removes the +12 volts from Terminal Block position 1 making the connection at the terminal block available for use in the optical isolation circuits. Mounting JP1B connects Terminal Block position 1 to the optical isolation circuits. CUT7 must be made to remove the CMP/INCOM signal from the isolation circuits. Failure to perform CUT7 may damage the GL1800 in the controller.
- To use the -12V signal for optical isolation, CUT2 and CUT7 must be made, and jumper JP1C must be mounted. Performing CUT2 removes the -12 volts from Terminal Block position 2 making the connection at the terminal block available for use in the optical isolation circuits. Mounting JP1C connects Terminal Block position 2 to the optical isolation circuits. CUT7 must be made to remove the CMP/INCOM signal from the isolation circuits. Failure to perform CUT7 may damage the GL1800 in the controller.
- To use JP3 for optical isolation CUT7 must be made and jumper JP3 must be mounted. CUT7 must be made to remove the CMP/INCOM signal from the isolation circuits. Failure to perform CUT7 may damage the GL1800 in the controller. Using JP3 for configuring the optical isolation circuit forces the input isolation to be sinking signals.

CONTROLLING INPUT AND OUTPUT SINK/SOURCE INDEPENDENTLY:

The input and output optical isolation can be configured independently using the +12V and -12V connections at the terminal block by making the following modifications:

- Perform CUT1 and CUT2 to remove the +12V and -12V from Terminal Block positions 1 and 2. Perform CUT3 and CUT4 to disconnect the input isolation circuit from the output isolation circuit. CUT3 and CUT4 also remove the CMP/INCOM signal from the isolation circuits. To complete the isolation circuit, mount jumpers on JP1B and JP1C. With this configuration, the CMP/INCOM signal is available at Terminal Block position 13.

GENERAL NOTES ABOUT OPTICAL ISOLATION:

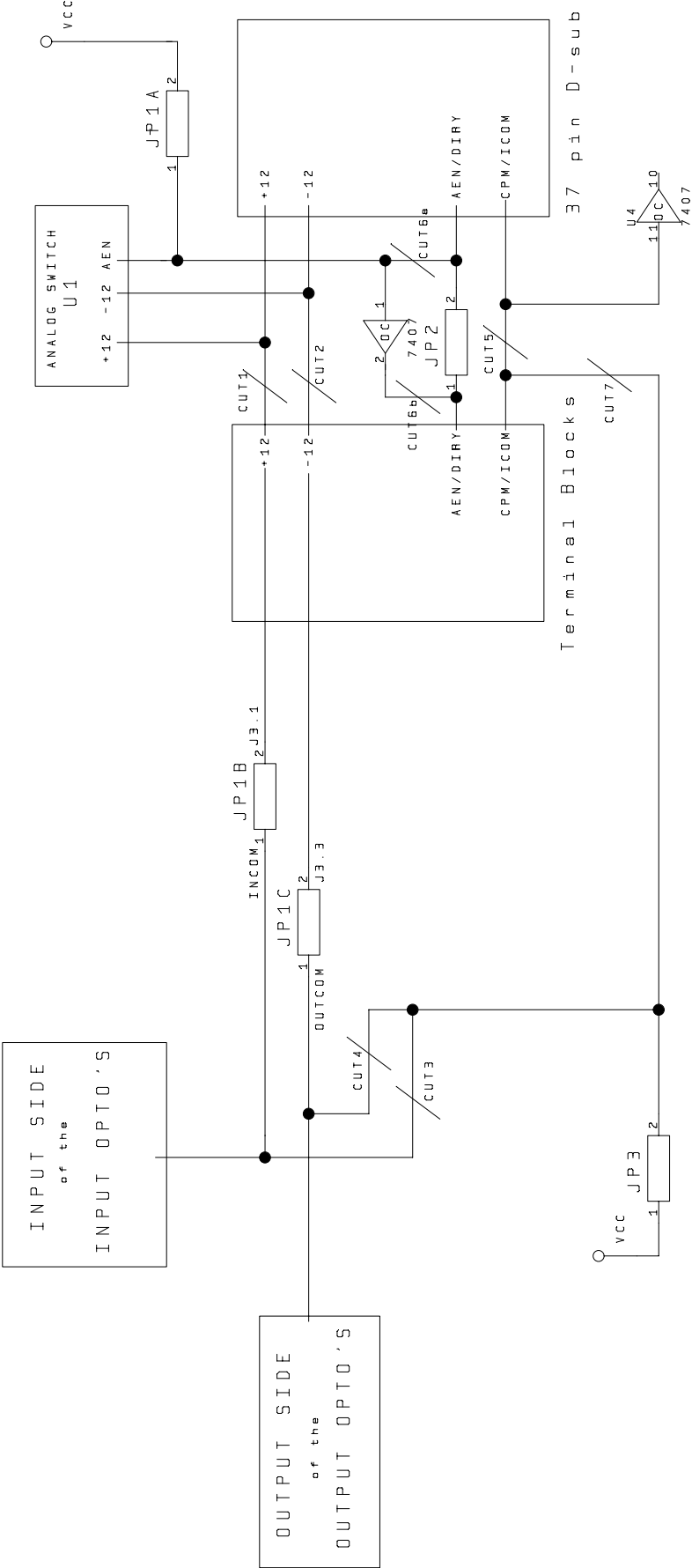
- The ICM-1460 REVF can accommodate optical isolators from two different manufactures; PS2505 from NEC and ILQ5 from Seamans. If used, the PS2505 must be populated in U5, U6, U7 and U8 whereas the ILQ5 must be populated in U2, U3, U9 and U10.
- Only the PS2505 optical isolators can be used with sourcing input signals.
- If the output signals are configured as a sourcing signal, then the output optical isolator at location U8 or U9 should be populated from the topside of the ICM-1460. If, however, the output signals are configured as a sinking signal, then the PS2505 must be used, and it must be populated from the bottom-side of the ICM-1460.
- If the output isolators are used, then the user should supply either a pull-up or a pull-down resistor depending upon whether the signal is sinking or sourcing.

USING THE ICM-1460 REVF WITH A TWO AXIS STEPPER CONTROLLER:

The ICM-1460 REVF can be used with a two axes stepper controller by using the ERR and AEN signals as the PULSEY and DIRECTIONY respectively. To enable this configuration:

- Perform CUT6a and CUT6b and mount jumpers at JP2 and JP1A. CUT6a and CUT6b remove the AEN signal from the analog switch located at U1. JP2 provides a direct connection of the AEN signal from the controller to Terminal Block position 3 (i.e. the AEN signal will no longer be buffered by the 7407.) JP1A applies +5V to the AEN signal at the analog switch, essentially providing a permanent AMP ENABLE signal to the analog switch.
- Components located at D1 and R2 should not be populated when using a second axis.

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