



ECI 1000-U LCD Installation Manual

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ECI 1000-U LCD Installation Manual

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0.3	10/22/2015	Changed to ECI 1000-U
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0.5	3/30/2016	Added illustrations for X7,X8,X10
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1 Warning and Disclaimer

Thank you for purchasing equipment from ECI America, INC. We want your new equipment to operate safely. Anyone who installs or uses this equipment should read this publication (and any other relevant publications) before installing or operating the equipment.

To minimize the risk of potential safety problems, you should follow all applicable local and national codes that regulate the installation and operation of your equipment. These codes vary from area to area and usually change with time. It is your responsibility to determine which codes should be followed, and to verify that the equipment, installation and operation is in compliance with the latest revision of these codes.

At a minimum, you should follow all applicable sections of the National Fire Code, National Electrical Code, ASMEA17.1 Safety code for Elevators and Escalators and the codes of the National Electrical Manufacturer's Association (NEMA). There may be local regulatory or government offices that can also help determine which codes and standards are necessary for safe installation and operation. Equipment damage or serious injury to personnel can result from failure to follow all applicable codes and standards. We do not guarantee the products described in the publication are suitable for you particular application, nor do we assume any responsibility for your product design, installation or operation.

Our products are not fault-tolerant and are not designed, manufactured or intended for use or resale as online control equipment in hazardous environments requiring fail-safe performance, such as in the operation of nuclear facilities, aircraft navigation of communication systems, air traffic control, direct life support machines or weapon systems in which the failure of the product could lead directly to death, personal injury, or severe physical or environmental damage ("High Risk Activities"). ECI America, Inc. specifically disclaims any expressed or implied warranty of fitness for High Risk Activities.

This publication is based on information that was available at the time it was printed. WE reserve the right to make changes to the products and/or publications at any time without notice and without any obligation.

2 Trademarks

All trademarks or registered product names appearing in this document, as they pertain to Electronic Controls, Inc., are the exclusive property of Electronic Controls, Inc.

3 Conventions Used



When you see the “notepad” icon in the left-hand margin, the paragraph to its immediate right will be a special note. Notes represent information that may make your work quicker and more efficient. The word **NOTE:** in boldface will mark the beginning of the text.



When you see the “exclamation point” icon in the left hand margin the paragraph to its right will be a warning. The information could prevent injury, loss of property, or even death in extreme cases. Any warning in this document should be regarded as critical information that should be read in its entirety. The word **WARNING:** in boldface will mark the beginning of the text.

4 Safety Information



Know the safety hazards related to any procedure you are about to perform. Know what equipment has been specified for each specific contact and know what tools and materials you should plan to have available. Before connecting electrical wiring, take precautions to prevent accidents from happening to yourself and others around you.

ALWAYS CONSIDER SAFETY FIRST!

- Wear a hard hat when working in the hoist way.
- Wear safety glasses or goggles when using power tools
- Always wear protective gloves when installing or removing access covers, conduits, wireway or electrical devices.
- When working on car canopy, always be aware of where the sides of the car are located.
- Use properly grounded cords and power equipment (ground fault circuit interrupters).
- Make sure there are proper clearances in hoist way between the car and other devices. Before connecting wiring, cover sharp edges to keep hands and arms from being cut.
- Always know where other people are and how the elevator wiring can affect their safety.
- Safety lock and tag out procedures are always required before performing any kind of service, repair, adjustment, lubrication or inspection of power equipment.
- To reduce the danger of electrical shock, always make sure electrical connections are secure. Also make sure no bare wires are exposed after pulling cable.
- Use a circuit tester to be certain the circuit is not active before touching it.





5 Introduction

This manual is intended to help facilitate the installation of ECI 1000U LCD Door Operator board made by Electronic Controls, Inc. The audience of the material included in this manual is for the certified installation personnel. The ECI 1000U LCD control board complies with modern performance specifications and meets or exceeds code requirements. Installation and adjustments must meet local, state and national codes.

6 System Overview

The ECI 1000U LCD door controlled is a microprocessor-based board that controls all aspects of the door motion including direction, velocity, deceleration and force.

The ECI 1000U LCD replaces the Elevator Components Industries 1001-1300, 1000-500 and 1000-1400 door controls boards.

The motor controller is a unique design for simple installation and reliable performance. It provides for total control and adjustment through the entire door cycle and includes nudging. The door are held under power while standing closed, running and while standing open. There are no potentiometers to adjust speeds. All adjustments are performed by changing settings displayed on the LCD screen.

6.1 Electrical

120VAC single phase

48VDC motor output

Controller interface signals 120VAC/VDC or 24VDC

6.1.1 Fuses

F1 – 250V/3A AGC

F2 – 250V/2A AGC

F3 – 250V/9A GBB

6.2 Connections

6.2.1 X12 Power connection

L1A – AC neutral

L2A – AC hot

6.2.2 X11 connections

24B – 24VDC power input for 24VDC controller interface levels. For 120VAC controller this input is tied directly to F1 of X11

F1 – Fused L2A (3A fuse)

COM – 24VDC return from controller power source. For 120VAC controller voltages this input is tied directly to L1A of X11

L1A – unfused L1A

24B2 -



6.2.3 X13 Controller interface

The voltage of controller interface signals are adjustable through the **Input Voltage** parameter located under the **Edit Parameters** menu. These signals are AC/DC compatible.

- DO3** – Open limit output to controller
- DO10** – Open command input
- DO7** – Close command input
- DO4** – Nudging command input
- DO18** – Door locking command input
- DO17** – Close limit output to controller

6.2.4 X9 Connections

- 0V** – Negative or return voltage for 54P from operator
- 54P** - +54VDC power source from operator
- RB1** and **RB2** - External braking resistor located in operator
- A1** and **A2** – 48VDC output to motor

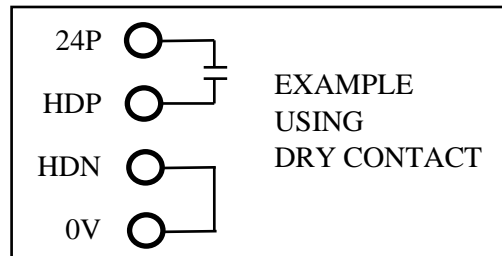
6.2.5 X4 and X5 connections

CAM switch assembly connectors. Refer to Figure 5 – CAM Switch Wiring

6.2.6 X7 and X10 Connectors

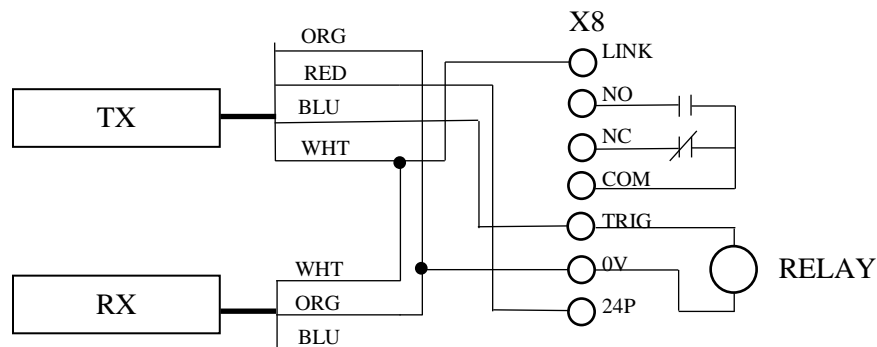
Heavy Door option connectors. These 2 connectors are the same pinout located on opposite sides of the board for installation convenience.

- 24P** – +24VDC power output
- HDP** – Heavy door +24VDC input
- HDN** – Heavy door 24VDC common input
- 0V** – 24VDC common output



6.2.7 X8 Infra-red Door Detector Connections

Compatible with Memco model 640. Dry relay contacts to controller 250VAC/3A, 24VDC/3A





6.3 User Interface

6.3.1 Toggle switches

Run/Test – Two position switch. In **RUN** position the door board is controlled through the controller interface. In the **TEST** position door operation is controlled through the **OPEN/CLOSE** switch.

OPEN/CLOSE – 3 position switch. Middle position if off. With the **RUN/TEST** switch in the **TEST** position door operation can be controlled with this switch.

NUDGE/LOCK – 3 position switch. Middle position if is off. With the **RUN/TEST** switch in the **TEST** position both **NUDGE** and **LOCK** are controlled through this switch.

6.3.2 Keypad

+ button – Used to move curser up or increase speed settings

- button – Used to move curser down or decrease speed settings

ENTER - Used to select menu options or enter parameter settings

ESC – Used to exit menu or go to previous menu

6.3.3 LED Indicators

CL – On when CAM is on CL switch

DO17 - On when CAM in on CL switch

OL - On when CAM in on OL switch

OSDL - On when CAM in on OSDL switch

PL – On when CAM in on the PL switch

CLX – On when CAM in off the CLX switch

OLX – On when the CAM is off the OLX switch

SS – On when the CAM is on the SS switch

HDCSDL – On when cam is on switch

DO4 – On when DO4 present

DO7 – On when DO7 present

DO18 – On when DO18 present

6.3.4 Main Menu

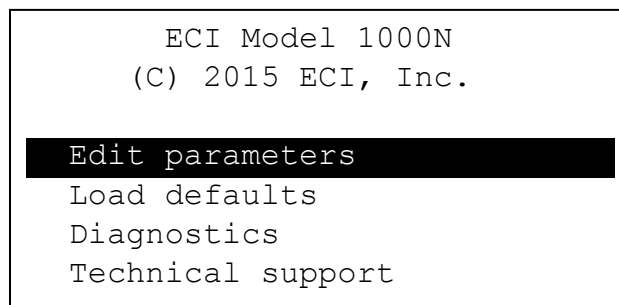


Figure 1 - Main Menu



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Figure 1 - Main Menu shows the top 4 items of the main menu. Pressing the “-“ button moves the cursor/hi-light down to reveal other menu options

Edit parameters – Pressing ENTER with the Edit Parameters hi-lighted will enter the parameters menu.

Load Defaults – Pressing ENTER with Load defaults hi-lighted will load the default settings for all parameters. See section 6.3.5.2 for default settings

Diagnostics – Pressing ENTER with Diagnostics hi-lighted will display the diagnostics screen. See section 6.3.7 - Diagnostic Menu for more details.

Technical Support – Pressing ENTER with Technical support hi-lighted will display the technical support screen.

Rotate screen – (Not shown above) Pressing ENTER with Rotate Screen hi-lighted will flip the screen 180°

6.3.5 Edit parameters Menu

ECI Model 1000N	
(C) 2015 ECI, Inc.	
CF cl fast sp.	60
CS cl slow sp.	20
SS cl sl. start	20
CFH cl fast HD	20

Figure 2 - Edit Parameters Menu

Figure 2 shows the top of the edit parameters menu. All parameters are listed in Section 6.3.5.2 - Parameter settings and defaults. Pressing the “-“ button moves the cursor down and pressing the “ENTER” button selects the highlighted parameter setting. Any changes occur in real time with no need to press “ENTER”. Pressing “ENTER” closes the parameter and sets the parameter at the setting in the display. Pressing “ESC” returns to the Main Menu.



For speed and force settings, the higher the setting the fast the speed or higher the force. For DEC the higher the setting the slower the deceleration rate.



Press “ESC” to return to main menu after all settings are complete. This saves all changes into permanent memory. Failing to do so will result in parameters reverting to default setting should a power loss occur.

6.3.5.1 Adjustment notes

This equipment must be installed, adjusted and maintained to conform to code requirements.

Parameters must be set to conform to kinetic energy code limitations for maximum and average kinetic energy for ALL door/all floors (specialty or otherwise heavy doors taken into account).

Parameters must be set to conform to closing force limitations. The closing force may not exceed 135N (30LBS). During closing, the kinetic energy may not exceed 10 joules (7.4lbs/ft)

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6.3.5.2 Parameter settings and defaults

- CF** – Close Fast Speed – Default setting is 60. Range is 1-100
- CS** – Close Slow Speed – Default setting is 20. Range is 1-100
- SS** – Close slow start – Default setting is 20. Range 1-100.
- CFH** – Close Fast Heavy Door Speed – default is 20. Range is 1-100
- PL** – Open slow Start speed – Default is 20. Range is 1-100
- OS** – Open Slow speed – Default is 20. Range is 1-100.
- OF** – Open Fast speed – Default is 60. Range is 1-100.
- N** – Nudging speed – Default is 10. Range is 1-100
- CCL** – Closing Force – Default is 30. Range is 1-100
- DLF** – Door Locking Force – Default is 10. Range is 1-100
- DEC** – Deceleration Rate – Default is 10. Range is 1-100.
- ACC** – Acceleration Rate – Default is 10. Range is 1-100
- FDEC** – Reversal Deceleration Rate – Default is 10. Range is 1-100.
- Motor Direct** – Used for swapping open/close direction. 1 is forward 2 is reverse
- Input voltage** – Default is 110. Range is 24 – 320.

6.3.6 Load Defaults menu

Selecting Load Defaults sets all parameters to their default settings. Refer to section 6.3.5.2 for default settings.

6.3.7 Diagnostic Menu

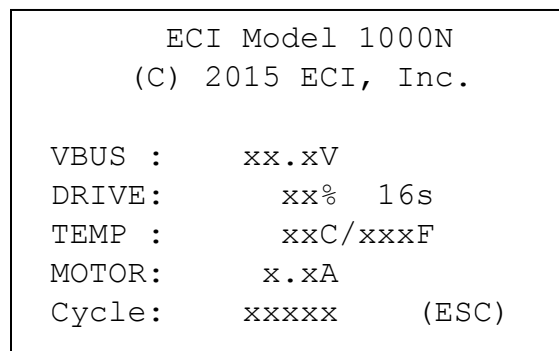


Figure 3 - Diagnostic Menu

- VBUS** – Displays the current voltage of the 54P input
- DRIVE** – The drive to the motor is pulse width modulate. This number reflects the percentage of drive to the motor. 0% will be no power to the motor and 100% will be max drive.
- 16s** – This is the present count of the 16 second stall timer. Should an open or close cycle time out the door board will stall the motor until the open/close command is cycled off/on.
- TEMP** – Displays the current temp in °C/°F of the output driver transistors.
- MOTOR** – Displays the current amperage to the motor.
- SPEED** – Displays the current speed of the open or close cycle.
- CYCLE** – Displays the number of cycles the door board has performed since manufacture. One cycle is an open and close.



6.3.8 Technical Support Menu

Selecting Technical Support displays Technical support contact information and the software revision.

6.3.9 Rotate Display

Selecting Rotate display will flip the display 180°

7 Installation



Be sure all power is turned off to the operator before starting installation.



The ECI 1000U LCD board replaces three different boards. Follow the appropriate procedure for the board being replaced.

7.1 Replacing the ECI Canada ECI-1001-1300 with ECI 1000U LCD

1. Switch power to the door operator off and wait for the capacitors to discharge.
2. Remove the cover to access the door board
3. Unplug all connectors from the existing board.
4. Unscrew the four nuts holding the existing board in place and remove board.
5. Install the ECI 1000U LCD board and secure board in place.
6. Plug in all connectors
7. Connect the ground wire to **X13** pin 1 (unlabeled pin) of ECI 1000U LCD board
8. Ensure the **TEST/RUN** switch is in the **TEST** position and the **OPEN/CLOSE** and **NUDGE/LOCK** switches are in **center** positions.
9. Perform Section 8 Initial Power up and Adjustments

7.2 Replacing the ECI Canada ECI-1000-500 with ECI 1000U LCD board

1. Switch power off to door operator and wait for capacitors to discharge
2. Remove cover to access door board.
3. Unplug connectors from existing board.
4. Disconnect **L1A** and **L2A** from existing board and connect to **X12 (2 pin connector)** for the ECI 1000U LCD board.
5. Disconnect all wires from **J2** (old board) and connect to **X13 (7 pin connector)** for ECI 1000U LCD board: **DO3, DO10, D07, D04, DO18, DO17.**
6. Remove 0V yellow wire form **J4** connector (old board) and connect to 0V pin of **6 pin connector** for ECI 1000U LCD board.
7. Remove **RB1, RB2, A1, A2** from old board and connect to **6 pin connector** for those same signals of the ECI 1000U LCD board.
8. Disconnect **-VS** from the old board and remove the old board.



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9. Remove the mounting plate from the door operator.
10. Remove the wires from the capacitor along with the wire previously connected to **-VS** from the negative [-] terminal of the rectifier and pull them out. The capacitor is left out of the circuit.
11. Place the **ORANGE** wire supplied with the ECI 1000U LCD board onto the positive terminal [+] of the rectifier.
12. Replace the mounting plate.
13. Connect the **ORANGE** wire from the + terminal of the rectifier to **54P** pin of the **6 pin connector** for the ECI 1000U LCD board.
14. Install the ECI 1000U LCD board and connect 4 pin MOLEX connector to X1 for **F1, 16V1, 16V2, L1A**.
15. Connect the Molex connectors from the CAM switches to the connectors of the ECI 1000U LCD board. The 15 pin Molex connector should be mounted with **PIN 1** closest to the corner of the ECI 1000U LCD board. **Pin 16 is not used.**
16. For 110/120VAC inputs from the controller jumper **L1A to COM** and **F1 to 24B** of the **5 pin connector** for those signal of the ECI 1000U LCD board.
17. Ensure the **TEST/RUN** switch is in the **TEST** position and the **OPEN/CLOSE** and **NUDGE/LOCK** switches are in **CENTER** positions.
18. Connect 2 pin connector with L1A and L2A to ECI 1000U LCD board.
19. Perform Section 8 Initial Power up and Adjustments.

7.3 Replacing the ECI Canada ECI-1000-1400 with the ECI 1000U LCD board

1. Switch power to the door operator off and wait for the capacitors to discharge.
2. Remove the cover to access the door board
3. Unplug all connectors from the existing board.
4. Unscrew the four nuts holding the existing board in place and remove board.
5. Install the ECI 1000U LCD board and secure board in place.
6. Plug in all connectors
7. Connect the ground wire to X13 pin 1 (unlabeled pin)
8. Ensure the **TEST/RUN** switch is in the **TEST** position and the **OPEN/CLOSE** and **NUDGE/LOCK** switches are in **center** positions.
9. Perform Section 8 Initial Power up and Adjustments

8 Initial Power up and Adjustments

8.1 Testing Operation

1. Disconnect connector X13
2. Ensure the Nudge/Lock switch is in the center position, the TEST/RUN switch is in TEST and the OPEN/CLOSE is in CENTER position.
3. Apply Power to Door operator. The MAIN MENU screen should appear in the display
4. Select the DIAGNOSTICS menu.
 - a. The VBUS voltage should be 54VDC +/-10%
 - b. DRIVE and MOTOR readings should be 0
5. With the TEST/Run switch in TEST set the OPEN/CLOSE switch to the OPEN position.



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- a. The doors should start moving and the DRIVE and MOTOR reading in the DIAGNOSTICS menu should increase. If the doors do not move refer to section ??????
 - b. When the doors are fully open the DRIVE and MOTOR readings should go to 0 and the OL LED should light
6. Set the OPEN/CLOSE switch to the CLOSE position.
- a. The doors should start moving in the CLOSE direction and the MOTOR and DRIVE readings should increase. If the doors do not move refer to section ????
 - b. When the doors are fully closed the MOTOR and DRIVE readings should go to 0 and the CL LED should light.

8.2 Door Adjustments

8.2.1 Adjustment Notes

This equipment is to be installed, adjusted and maintained to conform to code requirements. Parameters must be set to conform to kinetic energy code limitations for both maximum and average kinetic energy for ALL doors/all floors (specialty or otherwise heavy doors taken into account).

Parameters must be set to conform to closing force limitations. The closing force may not exceed 135N (30lbs). During the closing, the kinetic energy may not exceed 10 joules (7.4lb/ft)

8.2.2 Door Speed Adjustments

Select the EDIT PARAMETERS menu

At this time adjustments can be made to open and close speeds by moving the cursor to the desired setting and pressing the ENTER button. Any changes happen in real time so there is no need to press enter for each change. When complete press the ENTER button and move to the next parameter. Refer to Figure 4 for an example of OPEN and CLOSE cycles.

To adjust NUDGING set the NUDGE/LOCK switch to the NUDGE position then set the OPEN/CLOSE switch to CLOSE.

To adjust DOOR LOCKING FORCE (DLF) have the door fully closed. Set the NUDGE/LOCK switch to LOCK then set the OPEN/CLOSE switch to the CLOSE position.

8.2.3 Heavy Door Adjustment

1. Heavy door adjustments must be made at a heavy door entrance.
2. Check that there is 24VDC at connector X7 pins HDP and HDN.
3. Starting from a fully open position, TEST/RUN switch in TEST, set the OPEN/CLOSE switch to CLOSE and adjust the CFH (Close Fast Heavy door) parameter. Adjust the HDCSDL cam for smooth operation if required.



NOTE: The heavy door closing speed must be set slower than a standard door to comply kinetic energy requirements set by the Elevator Codes.



NOTE: Must press ESC button to save all changes into permanent memory. Failing to do so will result in parameters reverting to default settings in the event of a power loss.

8.2.4 Door Closing Force Adjust

1. Set the TEST/RUN switch to the TEST position.
2. Set the doors to fully OPEN
3. Select EDIT PARAMETERS menu then select CCL parameter.
4. Set the OPEN/CLOSE switch to the CLOSE position and adjust the CCL parameter until the closing force is below the 30lbs maximum allowed by code as measured by an approved gauge per manufacturer's specifications and directions.
5. Perform several open/close cycles then recheck force to insure force is still within code.
6. Once closing force is set within specifications, be sure to press ESC button to return to main menu.

8.3 RUN Operation

1. Put the TEST/RUN switch in the TEST position.
2. Put the OPEN/CLOSE switch in the center position
3. Go to EDIT PARAMETERS menu and select Input Voltage.
4. Set the Input Voltage parameter to the voltage of the controller inputs that will be present at connector X13. These inputs are AC/DC compatible.
5. After entering the proper voltage press the ENTER key then the ESC key to return to MAIN menu.
6. Connect controller inputs to X13
7. Put TEST/RUN switch in the RUN position and perform several OPEN and CLOSE cycles to verify proper operation.



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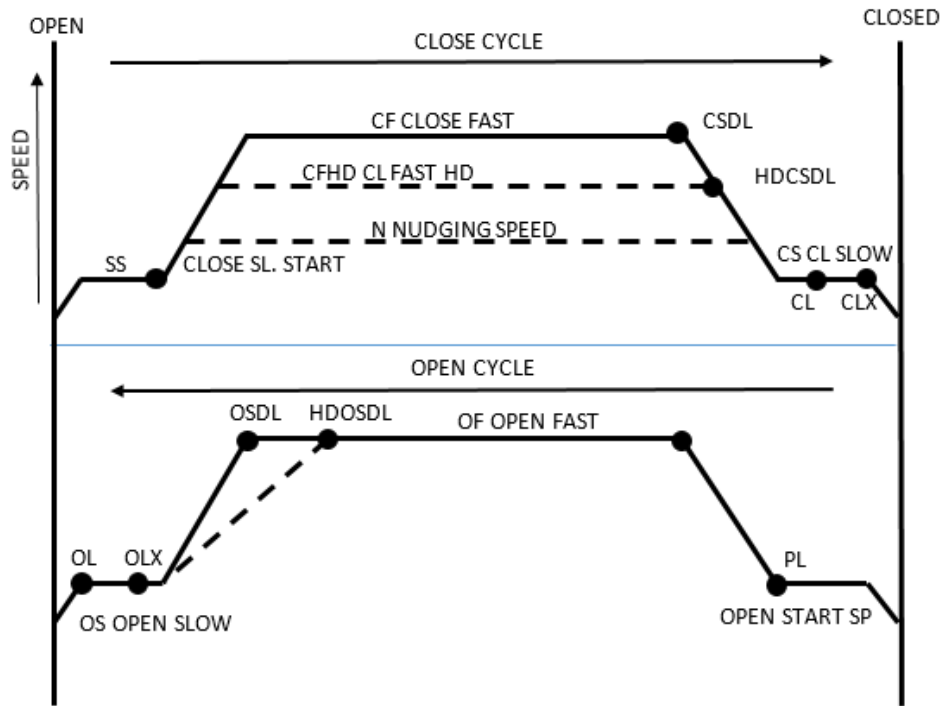


Figure 4 – Speed Profiles

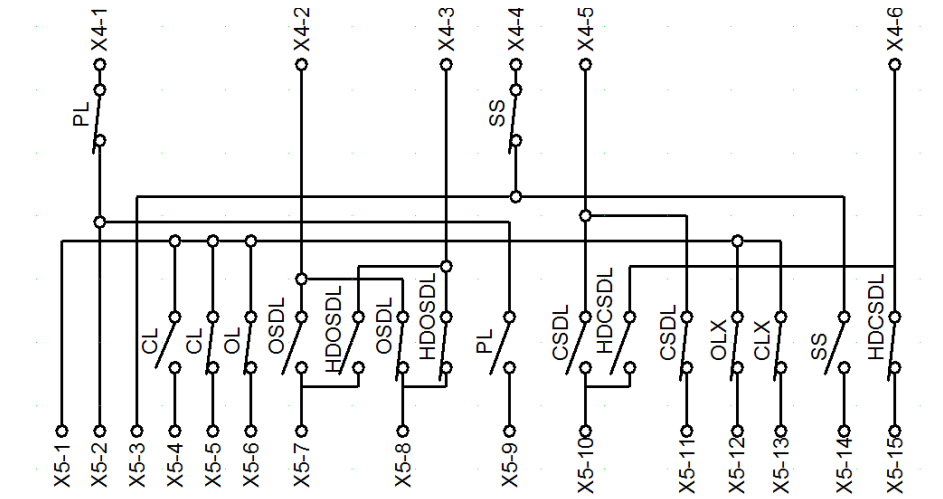


Figure 5 – CAM Switch Wiring



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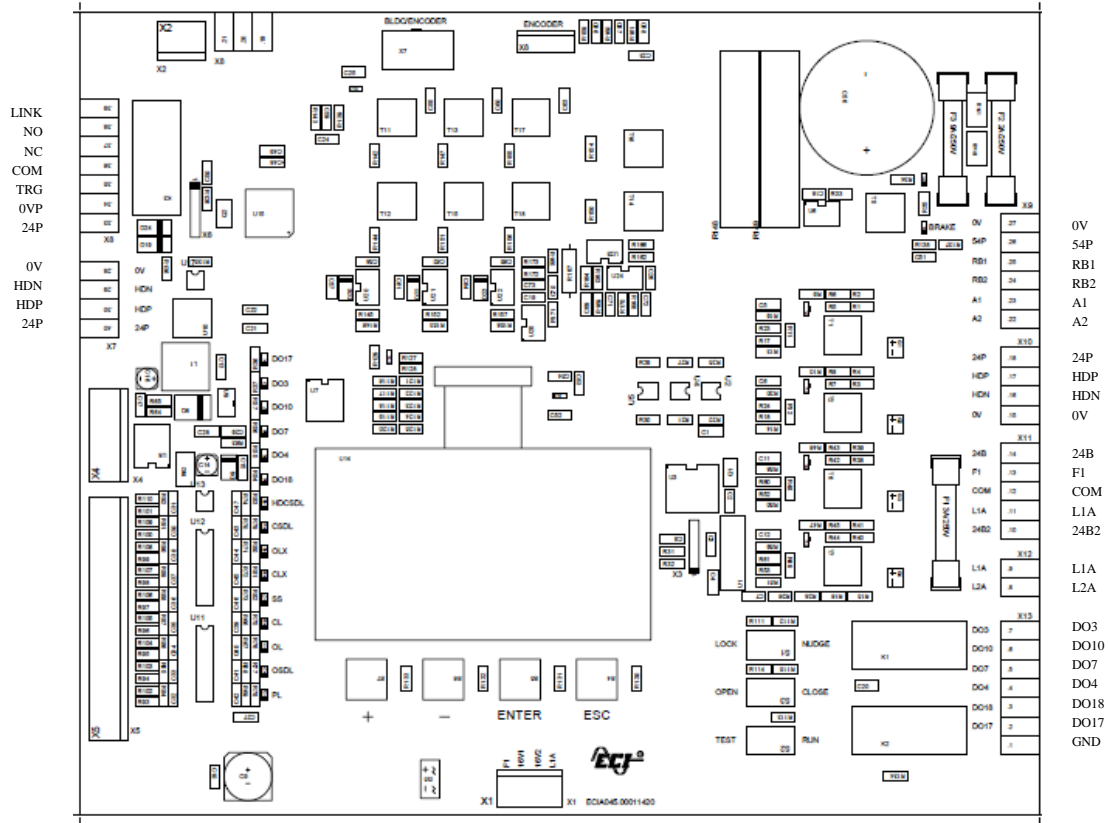


Figure 6 – ECI 1000-U



9 Trouble Shooting

OPERATION	LED STATUS														
	PL	OSDL	OL	CL	SS	CLX	OLX	CSDL	HDCSDL	DO18	DO4	DO7	DO10	DO3	DO17
Door Closed	ON	OFF	ON	ON	OFF	OFF	ON	ON	OFF					ON	OFF
Door open	OFF	ON	OFF	OFF	ON	OFF	ON	OFF	OFF					OFF	ON
Door locked	ON	OFF	OFF	ON	OFF	ON	OFF	ON	**	ON	OFF	ON	OFF	ON	OFF
Heavy Door Closed	ON	OFF	OFF	ON	OFF	ON	OFF	ON	ON					ON	OFF
Doors Closing	*	*	*	*	*	*	*	*	*	OFF	OFF	ON	OFF	*	*
Doors Closing Nudging	*	*	*	*	*	*	*	*	*	OFF	ON	ON	OFF	*	*
Doors Opening	*	*	*	*	*	*	*	*	*	OFF	OFF	OFF	ON	*	*

Table 1- LED Status

* LED will change state during operation

** On if heavy door