

SOFT LIMIT CONTROL SYSTEM

PERMANENTLY INSTALLED AUTOMATION CHAIN HOIST CONTROL SYSTEMS

USER MANUAL

Operating System

Automation Control Cabinet
1225-D-XX-XXXX
Touch Screen Operating System
A-17-005-XXXX
Remote Access Cabinet
A-26-003-3XXX



This chain hoist control system is intended for professional use only
Read this entire document before installing operating or using
this chain hoist control system

■ ORIGINAL INSTRUCTIONS

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Part Number: 1225-D-UM
Release: 2-2022

Original Instructions
SOFT LIMIT CONTROL SYSTEM
Rev ORG
Released 02-2022

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We have checked that the contents of this document correspond to the device described.
There may be discrepancies nevertheless, and no guarantee can be given that they are completely identical.
The information contained in this document is reviewed regularly and any necessary changes will be included in the next edition.

We welcome suggestions for improvement.

Motion Laboratories Inc. intends this document, whether printed or electronic, to be provided in its entirety.



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FOREWORD

• USER DOCUMENTATION



WARNING

Before installing and commissioning the Soft Limit Control System, you must read all safety instructions and warnings carefully including all the warning labels attached to the equipment. Make sure that the warning labels are kept in a legible condition and replace missing or damaged labels.

REGIONAL CONTACTS

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• USE FOR INTENDED PURPOSE ONLY

The equipment may be used only for the application stated in the manual and only in conjunction with devices and components recommended and authorized by Motion Laboratories Inc.

• IDENTIFICATION

This user manual pertains to 1225-D-XX-XXXX Permanently Installed Soft Limit Automation Control System models containing Touch Screen Operating Systems (TSOS):
A-17-005-XXXX



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WARNINGS

WARNINGS

Symbols



DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

Used with the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. Used without a safety alert symbol indicates a potentially hazardous situation which, if not avoided may result in property damage.

Don'ts

- Do NOT allow lifting operations unless carried out by a competent person.
- Do NOT operate the hoists without a clear view of the load or reliable communication with an observer.
- Do NOT operate the hoists unless the hazard zone has been cleared.
- Do NOT operate the system until a full risk assessment for your application has been completed.
- Do NOT operate the system in "MANUAL" Mode until all safety conditions have been assessed and only in emergency situations or initial setup.
- Do NOT operate the system until the E-stop system has been connected and tested.
- Do NOT operate the system unless all operators and observers have been informed of the location of all Emergency Stop (E-stop) switches.

SAFETY INSTRUCTION

General Safety Information

The manual must be kept by a person in charge in a suitable place and ready for consultation, in optimal conditions. Should it be lost or damaged, the manual can easily be retrieved on the manufacturer's website: www.motionlabs.com.

The manufacturer retains all material and intellectual rights on the manual, and restricts its duplication, even partial, for any commercial use.



CAUTION

Do not remove any machine labeling by grinding, peeling, or any other means. Any unit that does not carry the proper identification references should be removed from service until those references can be replaced.



WARNING

This equipment contains dangerous voltages and potentially dangerous rotating mechanical parts. Non-compliance with or failure to follow the instructions contained in this manual can result loss of life, severe personal injury, or serious damage to property.

Electrical Safety Information

The Soft Limit Control System operates at high voltages. There are no user serviceable parts inside the enclosure.



DANGER

Risk of electric shock. Disconnect the power supply across all poles before opening the equipment for access. Repairs on equipment must only be carried out by trained NA service technicians who are familiar with the technical specifications contained in this unit.

To ensure proper operation and dependability, any defective electrical component must be replaced using parts contained in the relevant spare parts list.

Operational Safety Information

The Soft Limit Control System runs to preset soft limit positions. This system needs to have its encoders positioned and setup in the system for safe and reliable soft limit operation. It is imperative that the user read and understand the instructions contained in the manual before attempting to operate.



DANGER

The manual control function will by-pass all safety features. Care must be taken to assess the area and chain hoists carefully before operating in this mode.

OVERVIEW

Product Definition

The Soft Limit Control System identified in this manual range from a 4 to 80 channel control systems that are built into wall mounted enclosures.

The Soft Limit Control System is a standalone control system that operates chain hoists, connected to the system. Each channel has position control with the option to monitor weight and to stop movement if either an upper or lower weight limit is exceeded. Position control is achieved with the use of an encoder for position feedback.

These systems are intended to operate fixed speed electric chain hoists modified to provide feedback required. The components or Kits available for feedback are encoders/kits and loadcells. For reference part numbers for those parts are as follows:

- A-16-003-0001 – A-16-003-0099 Encoders
- A-16-003-0100 – A-16-003-0199 Encoder Kits
- A-17-003-XXXX Load Cells

The Soft Limit Control System has the following features:

- E-stop system with global E-stop switches and reset switches.
- HMI Touchscreen operator/display
- Manual Override input connector

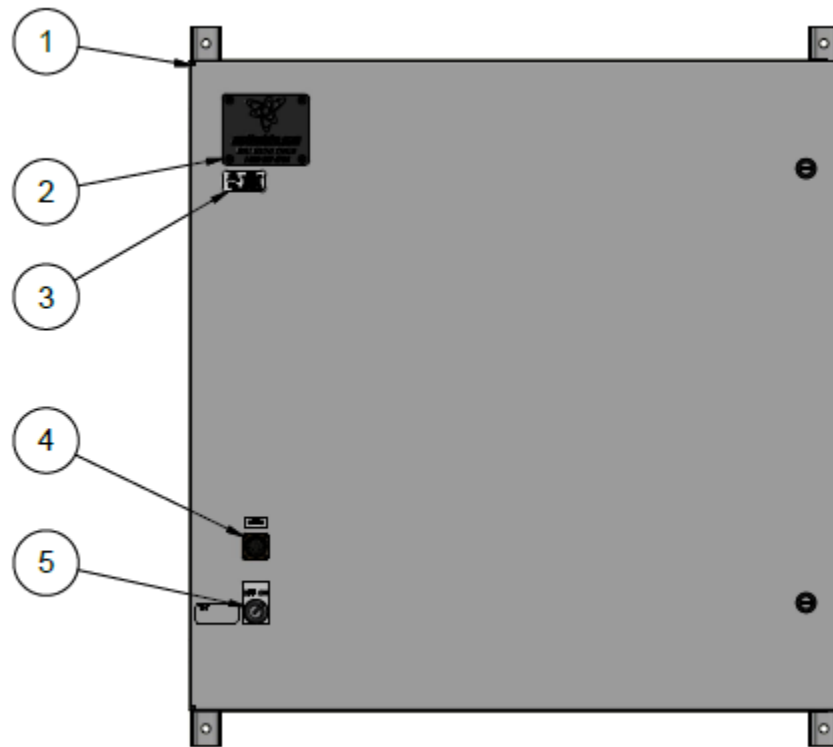
Product Performance

The Soft Limit Control System identified in this manual, monitors, and reacts to the following criteria:

- Load Manager: an optional feature that when used with the proper components, allows the system to monitor the imposed weight on each hoist. It allows the user to set upper and lower limits that if surpassed will stop motion.
- Position Manager: an optional feature that when used with the proper components, allows the system to monitor verification of movement, direction of movement and position.

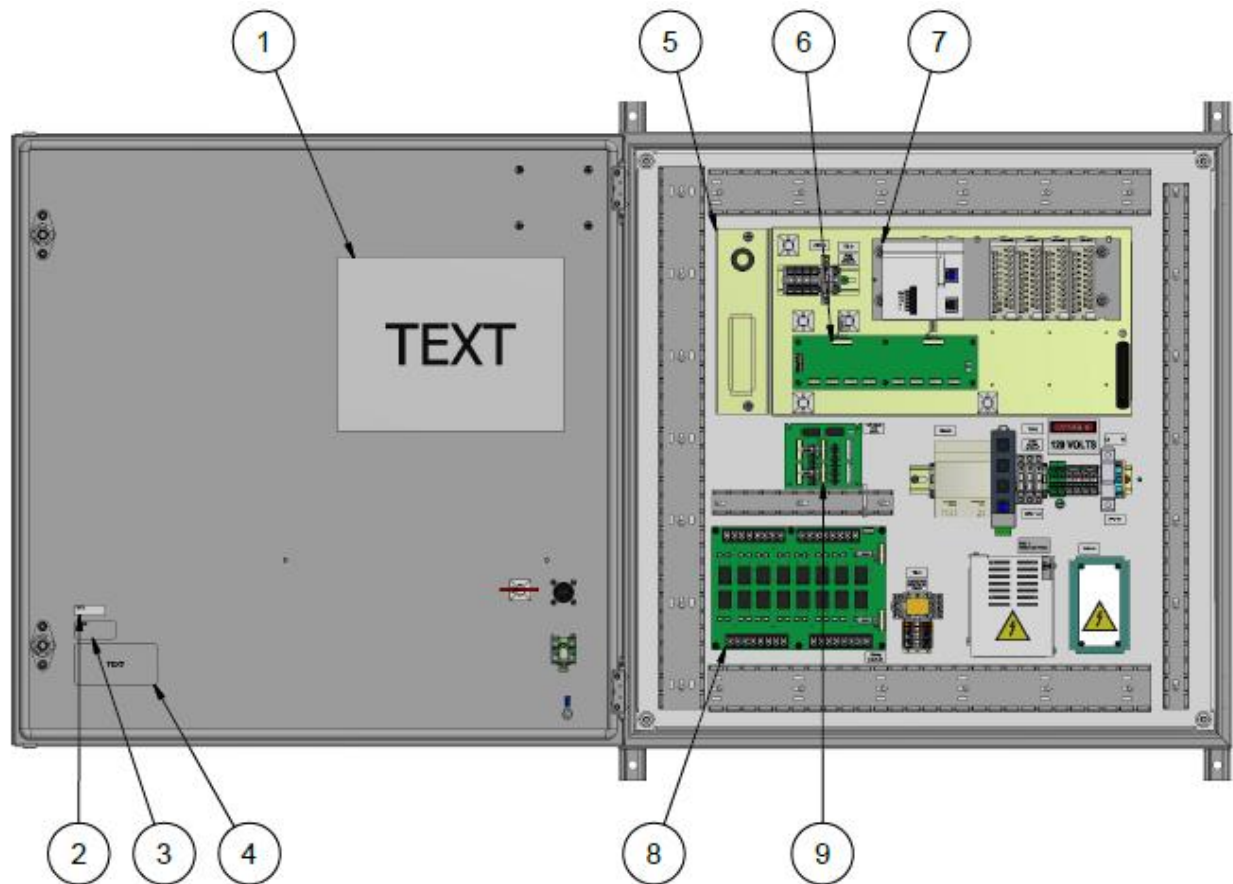
Control Cabinet Exterior

Note: All automation control cabinets vary in size and contents. This will detail the standard component layouts.



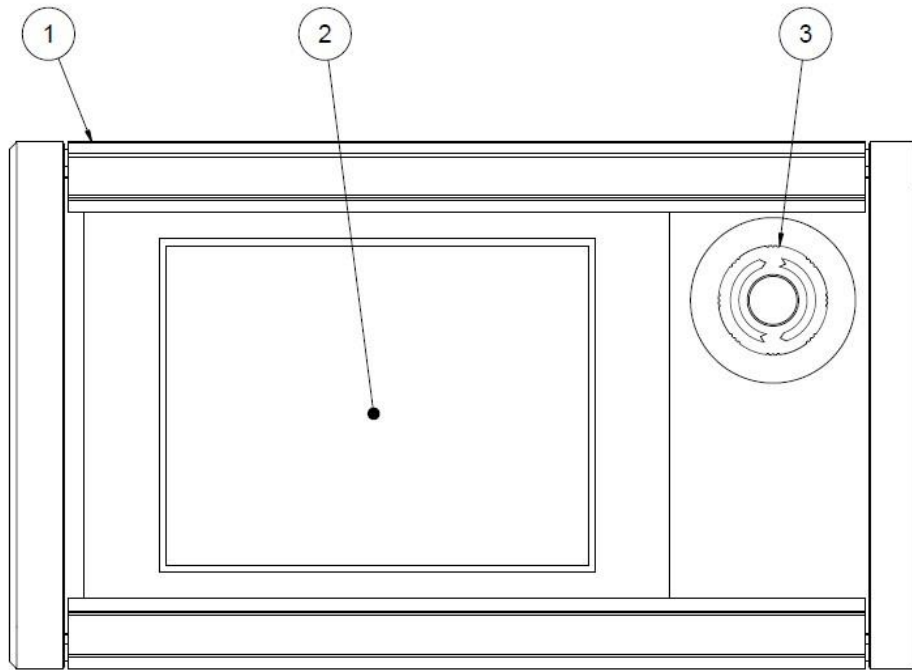
1. **Enclosure.** Standard systems come with NEMA 3R Enclosures.
2. **Logo Plate.** Motion Laboratories Logo Plate.
3. **Electrical Testing Laboratories (ETL) Label.**
4. **Manual Control Input.** Connection for manual handheld remote.
5. **On / Off Switch.** On / Off key switch for powering the cabinet.

Control Cabinet Interior



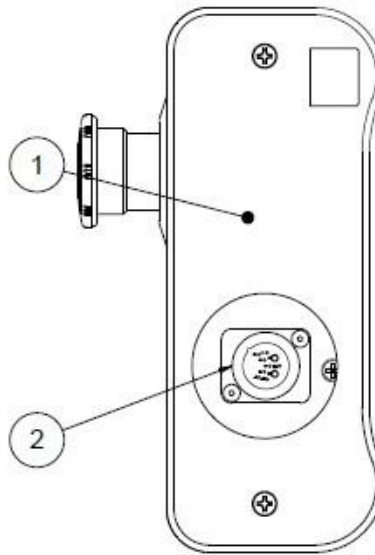
1. **Cabinet Schematic Label.** Contains the schematic.
2. **System Ladder Diagram Label.** Contains the system ladder diagram identifier.
3. **Fuse Replacement Label.** Contains the ratings for all replaceable fuses.
4. **Part Label.** Contains part number, serial number, and any other relevant information.
5. **Programmable Logic Controller (PLC) Assembly.** Assembly with swing door for connections underneath.
6. **Encoder card.** Printed Circuit Board that acquires feedback from encoders and translates it into a signal that the PLC can discern.
7. **PLC.**
8. **Relay Board.** Printed Circuit Board that controls the hoist low voltage control circuits for up to eight hoists.
9. **Local Remote Board.** Changeover circuit board for primary and secondary control.

Touch Screen Operating System Handheld Front



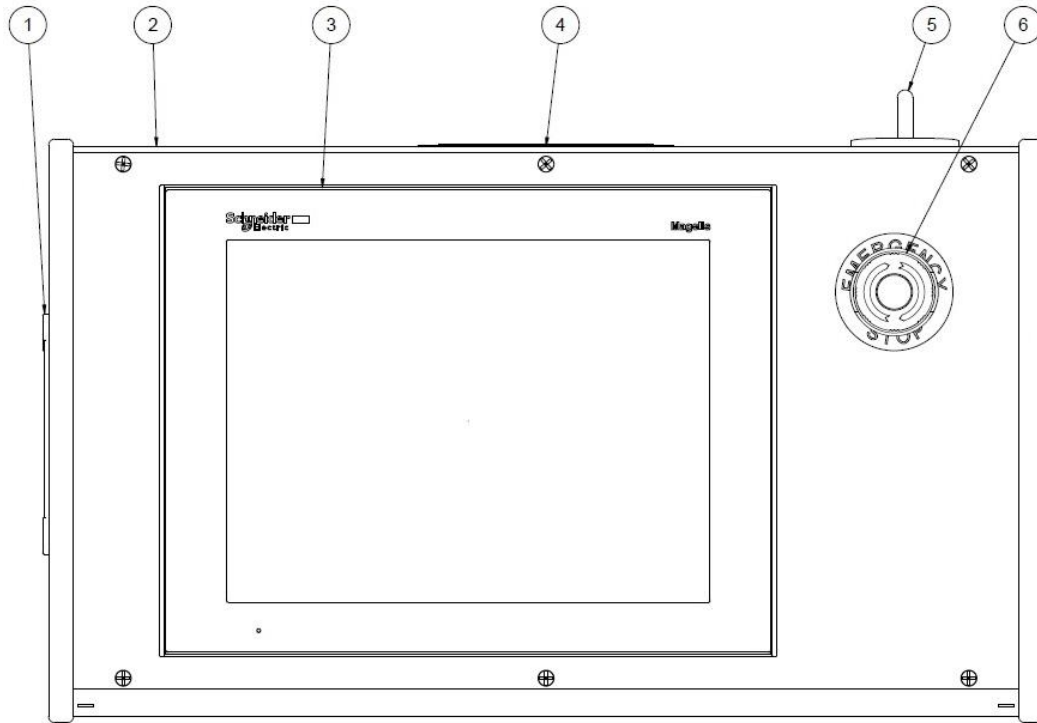
1. **Enclosure.** Plastic outer enclosure.
2. Human Machine Interface (HMI).
3. **Emergency Stop Mushroom Button.** Button for activating the emergency stop circuit.

Touch Screen Operating System Handheld Side



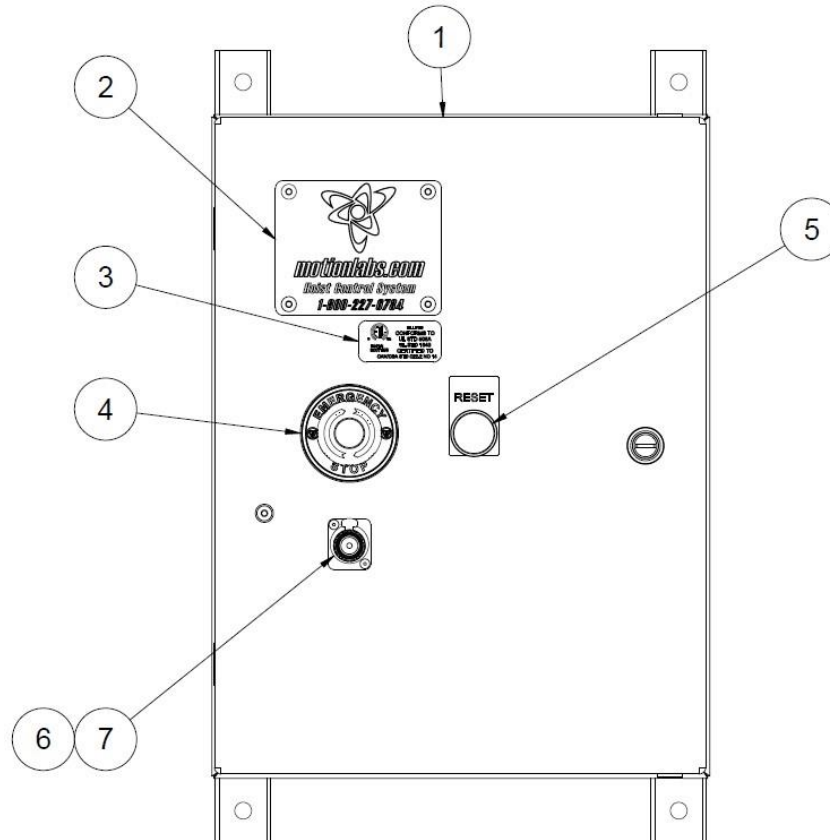
1. **End cap.** Plastic end protecting connector.
2. **10 pin XLR Connector.** This is for the connection of the Touch Screen Operating System (TSOS) to the Remote Access Cabinet. Connection for power, communications, and the emergency stop circuit.

Touch Screen Operating System Console



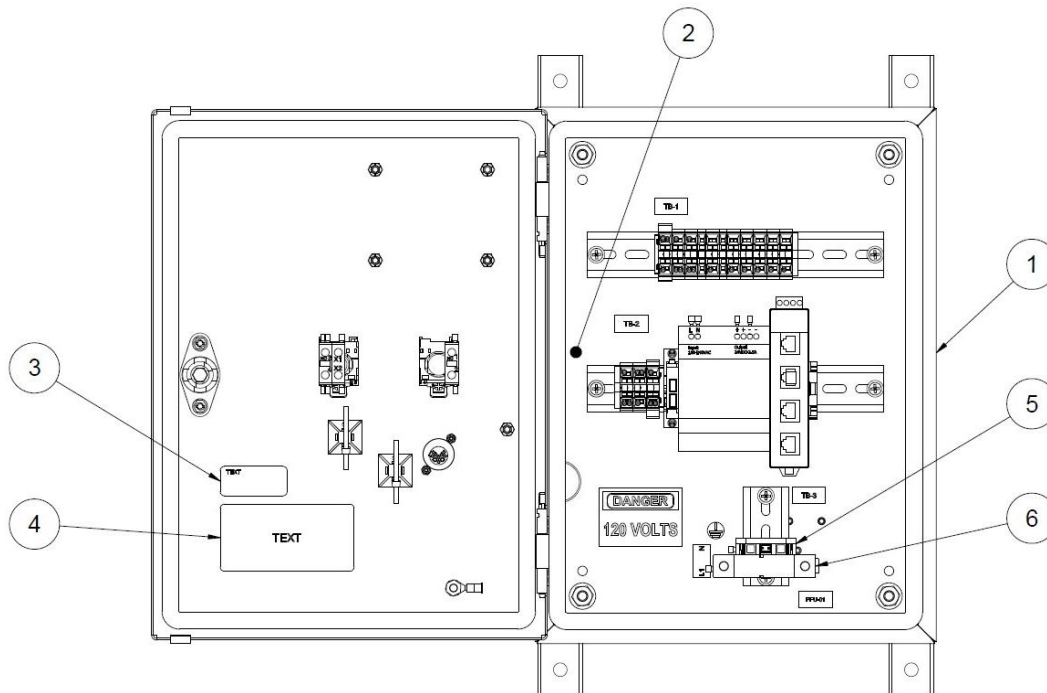
1. **Side Grab Handles.** Ergonomic handle for carrying the TSOS.
2. **10 pin XLR Connector.** This is for the connection of the TSOS to the Remote Access Cabinet. Connection for power, communications, and the emergency stop circuit.
3. **HMI**
4. **Carry Handle.** Safe, single carry handle for carrying the TSOS.
5. **Fall Protection Anchor.** A place to connect wire rope for fall protection.
6. **Emergency Stop Mushroom Button.** Button for activating the emergency stop circuit.

Remote Access Cabinet Exterior



1. **Enclosure.** Standard systems come with NEMA 3R Enclosures.
2. **Motion Labs Logo Plate.**
3. **ETL Label**
4. **Emergency Stop Mushroom Button.** Button for activating the emergency stop circuit.
5. **Emergency Stop Reset Button.** Button for resetting the emergency stop circuit.
6. **10 pin XLR Connector.** This is for the connection of the Touch Screen Operating System to the Remote Access Cabinet. Connection for the power, communications, and the emergency stop circuit.
7. **Emergency Stop Shorting Plug.** Connector, tethered to the cabinet. (See Power Up section.)

Remote Access Cabinet Interior



1. **Enclosure.** Standard systems come with NEMA 3R Enclosures.
2. **Schematic Label.** (On interior side of the cabinet.)
3. **Fuse Replacement Label.** Contains the ratings for all replaceable fuses.
4. **Part Label.** Contains part number, serial number, and any other relevant information.
5. **Neutral Input Connection.** Connection for neutral input wire.
6. **Main Fuse Line Input Connection.** Connection for line input wire

TECHNICAL SPECIFICATIONS

Part Numbers

Part Numbers

PART NUMBER CONFIGURATION	
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CATEGORY 1225 = Permanently Installed Motor Control System	-	TYPE A = Power Only D = Automation	-	CHANNELS XX = Number of Channels	-	ID NUMBER xxx = Iteration
--	---	---	---	--	---	-------------------------------------

GROUP A = Top Level Assembly	-	CATEGORY 17 = Rigging Electronics	-	SUB DIVISION 005 = HMI Touch Screen Operating System	-	ID NUMBER xxx = Iteration
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GROUP A = Top Level Assembly	-	CATEGORY 26 = Fly Boxes	-	SUB DIVISION 003 = Data	-	ID NUMBER xxx = Iteration
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STANDARD PART NUMBER TABLE	
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PART NUMBER	DESCRIPTION
A-17-005-0014	PLC Control System, Touch Screen Operating System (TSOS), HMI 12", Console, XLR-10-01, E-Stop, Truss Mount
A-17-005-0015	PLC Control System, Touch-Screen Operating System (TSOS), HMI 7.5", Hand Held, XLR-10-01, E-Stop
A-26-003-3013	Flybox, E-Stop, TSOS Remote Plug-in, XLR 10Pin, 16X12X8, 120VAC
A-26-003-3005	Flybox, Network Access w/ Ethernet Switch, 8X10X4, 120VAC

System Capacity

The Soft Limit Control System in this manual can operate 1 to 80 Chain Hoists. The TSOS's capacity is based on user scope and how many hoists can be defined on a specific HMI Screen size. Typically, the A-17-005-0015, a 7.5" HMI, would be able to operate up to 12 channels. Typically, the A-17-005-0014, a 12" HMI, would be used for 16 channels and above.

- Automation Control Cabinet

- Touch Screen Operating System, Handheld

- Touch Screen Operating System, Console

- Remote Access Cabinet

- Automation Control Cabinet

- Touch Screen Operating System, Handheld

- Touch Screen Operating System, Console

Page 16 of 44

TECHNICAL SPECIFICATIONS

Front Panel..... .090" Aluminum, black powder coat finish
 Chassis Width..... 14.35"
 Chassis Height..... 4.1"
 Chassis Depth..... 7.52"
 Weight..... 5 lbs.

- Remote Access Cabinet

Enclosure..... Hoffman CSD Concept, ANSI 61 gray polyester powder coat finish
 Enclosure Mount Type..... Wall Mount
 Internal Panel..... 125" Aluminum, white powder coat finish
 Enclosure Height..... 16"
 Enclosure Width..... 12"
 Enclosure Depth..... 8"
 Weight..... 35 lbs. to 100 lbs.

Data Specifications

Data Communication Protocol, Hoist to Hub..... RS485 Full Duplex

Environmental Specifications

- Automation Control Cabinet

Indoor Use Only
 IP Rating..... IP40
 NEMA..... NEMA1
 Operating Temperature Range..... 0°C to 70°C

- Touch Screen Operating System, Hand Held

Indoor Use Only
 IP Rating..... IP40
 NEMA..... NEMA1
 Operating Temperature Range..... 0°C to 70°C

- Touch Screen Operating System, Console

Indoor Use Only
 IP Rating..... IP40
 NEMA..... NEMA1
 Operating Temperature Range..... 0°C to 70°C

- Remote Access Cabinet

Indoor Use Only
 IP Rating..... IP40
 NEMA..... NEMA1
 Operating Temperature Range..... 0°C to 70°C

Cable Specifications

- Hybrid Data Cable

The Hybrid Data Cable uses 10 pin XLR (8 + 2) connectors with 26/7 Cat6 and 4 16AWG shielded hybrid cable. The cable is a Motion Lab Inc. (MLI) product, part number series 1400-06-86-XX-015 with a black outer jacket.

10 PIN HYBRID DATA CABLE 		
PIN	FUNCTION	WIRE
1	TX+	Brown (of Brown & White Pair)
2	TX-	White (of Brown & White Pair)
3	RX+	Blue (of Blue & White Pair)
4	Emergency Stop In	Green (of Green & White Pair)
5	Emergency Stop Out	White (of Green & White Pair)
6	RX-	White (of Blue & White Pair)
7	Reset In	Orange (of Orange & White Pair)
8	Reset Out	White (of Orange & White Pair)
9	24 VDC	16AWG Wire 1
10	0 VDC	16AWG Wire 2

TECHNICAL SPECIFICATIONS

• 26 Pin Remote Cable

The 26 Pin Remote Cable uses Souriau 26 pin ¼ turn connectors with a 26 conductor, 22AWG cable. The cable is a MLI product, part number series 1400-05-39-XX-001 with a yellow outer jacket and part number series 1400-05-38-XX-001 with a black outer jacket.

26 PIN REMOTE CABLE		
PIN	FUNCTION	COLOR
A	Channel 1 Up	Pink
B	Channel 1 Down	Tan
C	Channel 2 Up	Red / Green
D	Channel 2 Down	Red / Yellow
E	Channel 3 Up	Red / Black
F	Channel 3 Down	White / Black
G	Channel 4 Up	White / Red
H	Channel 4 Down	White / Green
J	Channel 5 Up	White / Yellow
K	Channel 5 Down	White / Blue
L	Channel 6 Up	Yellow
M	Channel 6 Down	Violet
N	Channel 7 Up	Gray
P	Channel 7 Down	Orange
R	Channel 8 Up	Blue
S	Channel 8 Down	Brown
T	Kill	Red
U	Go	Black
V	12 VDC	White
W	0 VDC	Green
X	Not Used	White / Brown
Y	Not Used	White / Orange
Z	Not Used	White / Gray
a	Not Used	White / Violet
b	Remote Connected	White / Red / Black
c	Remote Connected	White / Green / Black

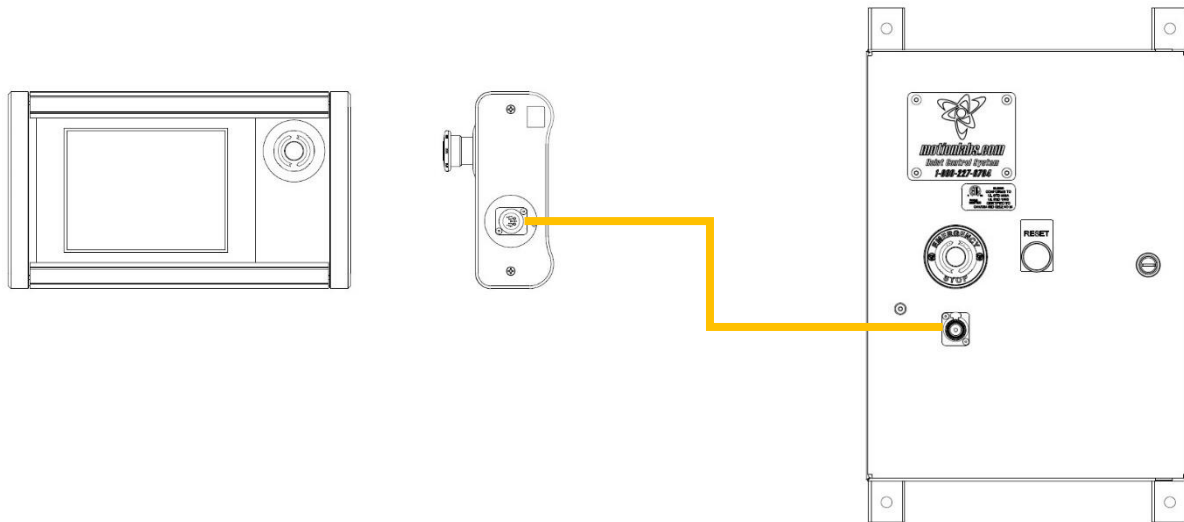
INSTALLATION

INSTALLATION

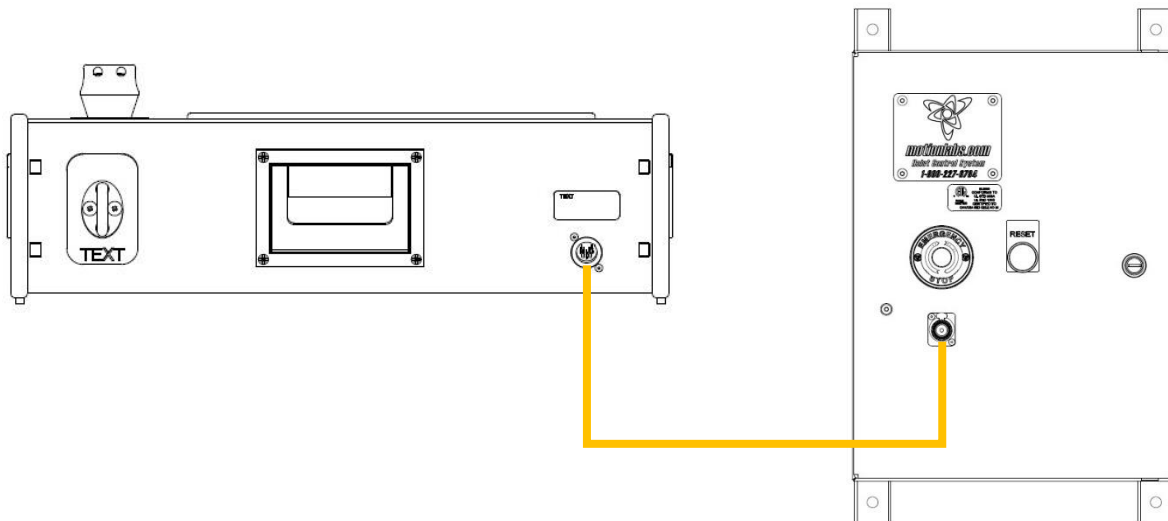
System Connections

Note: System connections will detail all cable connections related to Permanently Installed Automation Chain Hoist Systems. Refer to the Permanently Installed Chain Hoist Control System Manual or the job specific field wiring diagram for other connections in the system.

- Touch Screen Operating System (TSOS) Connections, Handheld



- Touch Screen Operating System (TSOS) Connections, Console



Power Up



WARNING

Before powering up the Soft Limit System there must be a Commission and Start Up that occurs. These actions ensure that the whole system has been installed to the required standards and that there are qualified personal available to operate the system.



WARNING

Do not operate the system without the encoder cables connected! This will result in your position values becoming corrupt.



DANGER

Risk of electric shock! Do not attempt to power up this system with any of the components open or damaged.

Follow these steps to power up the system.

1. Validate all cables are connected.
2. Validate your service and branch circuits, powering your system cabinets, are energized.
3. Power up control cabinet(s). Every control cabinet has a key switch mounted on the front to turn on the cabinet. Every system includes two keys.
4. Power up the power cabinet(s). Every power cabinet has a main breaker lever mounted on the front that supplies power to the cabinet.
5. Validate your TSOS is powered up. Your TSOS will power up when the Hybrid Data Cable has been connected to it and the Remote Access Cabinet.
6. Satisfy the emergency stop circuit. Every time the system is powered up or the emergency stop circuit is opened the emergency stop function is active. To satisfy the function you must make sure the emergency stop circuit is closed. To do this make sure all emergency stop mushroom buttons are deactivated and the TSOS or Shorting Plug is properly plugged into the Remote Access Cabinet. At this point your Reset Lamp should be lit indicating your emergency stop system is ready to be reset. Press the Reset Button to satisfy the emergency stop system.

Once the PLC and other electronic devices in the unit have cycled on and booted up, the TSOS will be ready to operate.

QUICK START

QUICK START

Here is a quick list of items that should be done to operate the Soft Limit System

1. Make Sure All system connections are made, and all cables are in proper working order.
2. Power up the system following the Power up routine.
3. Make sure the emergency stop circuit has been satisfied.
4. Go to the Soft Limit Control page.
5. Choose groups or hoists to move.
6. Press the Go to Soft Limit button for the desired Soft Limit.

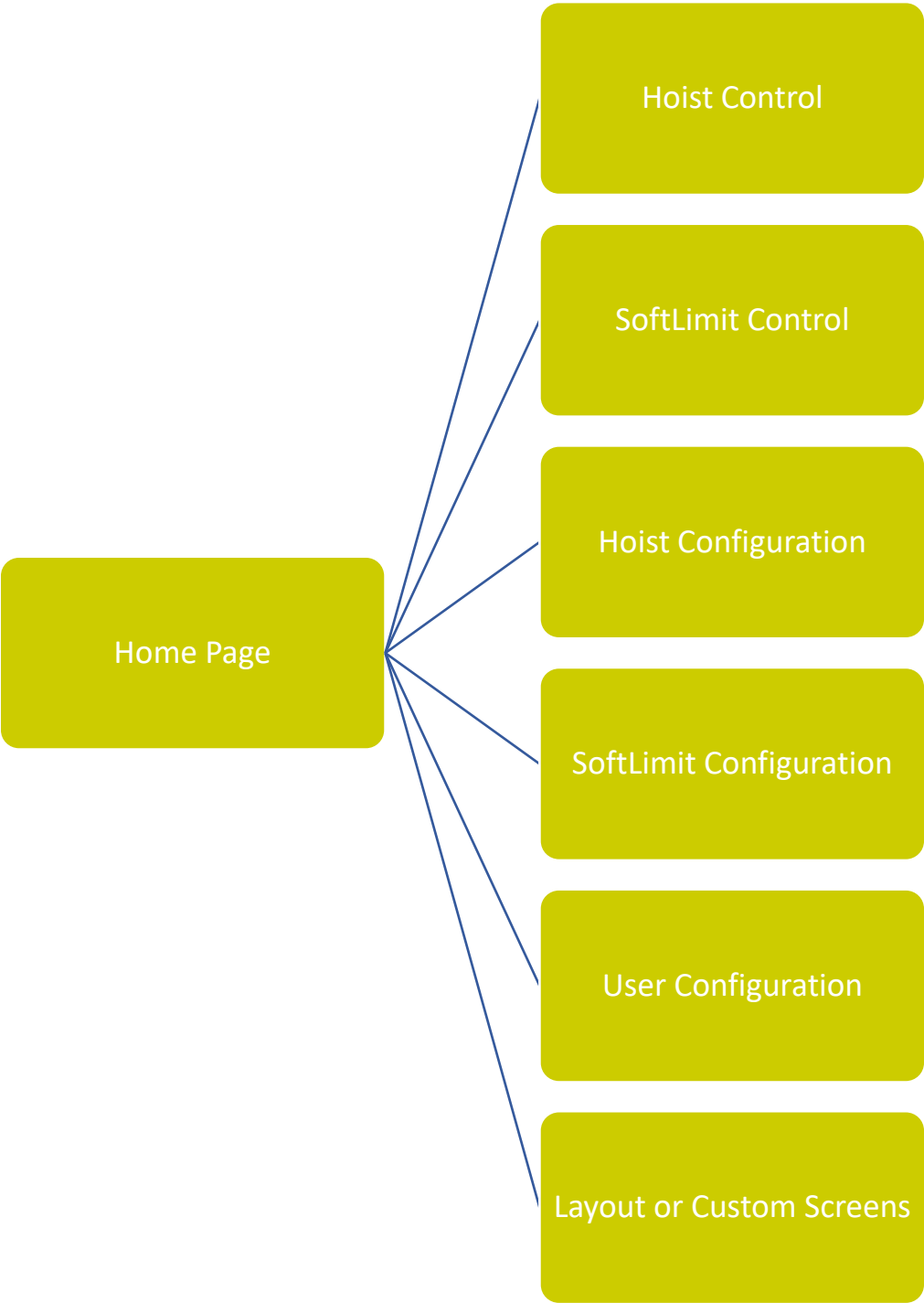


You may need to cycle power to the PLC, if you are having trouble resetting the emergency stop circuit.

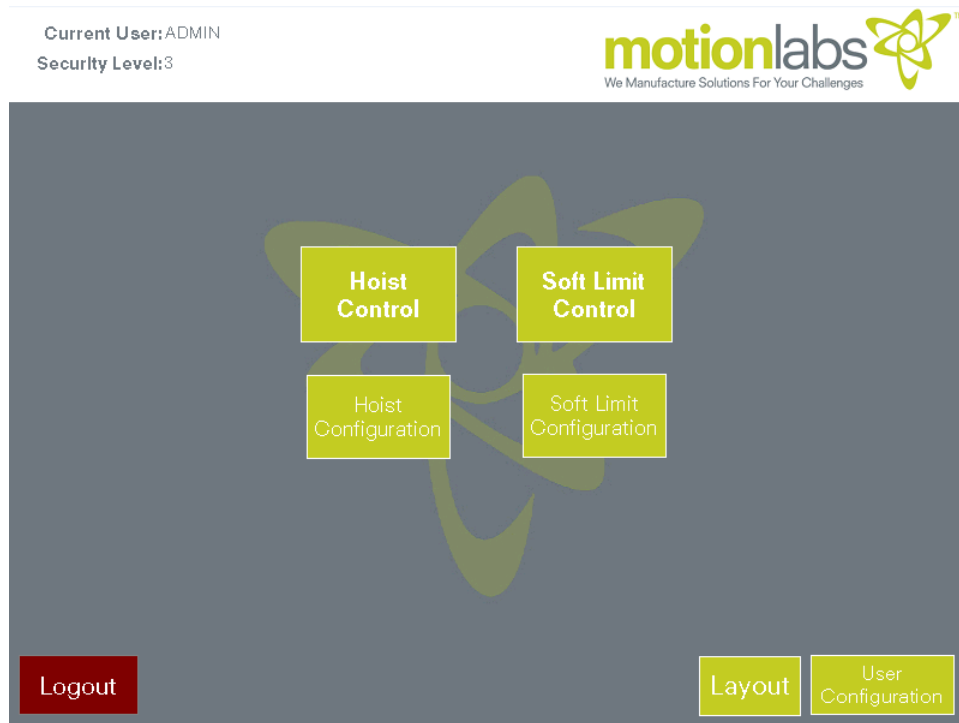


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OPERATION
Navigation Guide



- Home Page



The Home Page is the main page. It is the first page that will be displayed when the device is powered on. All other pages are accessible from here. This is where users can log in. Different user levels will have different pages available. The admin security level will have access to configuration pages and control pages while the user security level would just have access to preprogrammed control.

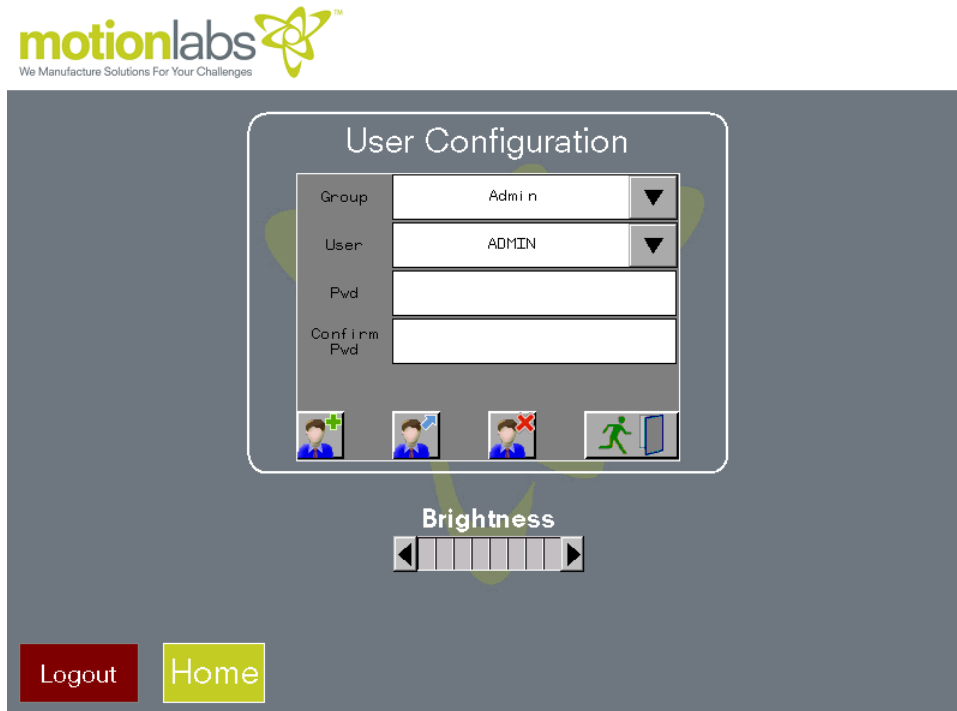


There are small variants to the screens due to system size and

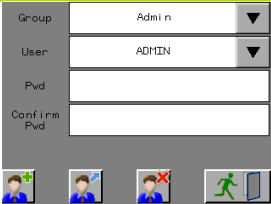
Control	Graphic	Function/Instruction
Hoist Control	Hoist Control	Displays Hoist Control Page
Soft Limit Control	Soft Limit Control	Displays Soft Limit Control Page
Hoist Configuration	Hoist Configuration	Displays Hoist Configuration Page
Soft Limit Configuration	Soft Limit Configuration	Displays Soft Limit Configuration Page
Layout	Layout	Displays Layout Page
User Configuration	User Configuration	Displays User Configuration Page
Logout	Logout	Logs current user out of system

- User Configuration

The User Configuration page allows an administrator to add, modify or delete users.



The screenshot shows the 'User Configuration' interface. At the top left is the motionlabs logo with the tagline 'We Manufacture Solutions For Your Challenges'. The main content area is a light gray box with a white border. Inside, the title 'User Configuration' is centered at the top. Below the title are four input fields: 'Group' (with a dropdown arrow showing 'Admin'), 'User' (with a dropdown arrow showing 'ADMIN'), 'Pwd', and 'Confirm Pwd'. Below these fields are four icons: a person with a green plus sign, a person with a blue checkmark, a person with a red X, and a person walking through a door. Below the icons is a 'Brightness' slider with a black arrow on the left and a black arrow on the right. At the bottom left are two buttons: 'Logout' (red) and 'Home' (yellow).

Control	Graphic	Function/Instruction
User Config Menu		Used to add/edit/delete users
Home		Displays Home Page
Login		Displays Sign in Screen
Logout		Logs current user out of system

OPERATION

• User Configuration

User Configuration allows for the addition of users and security groups.

The system comes with two preloaded users and passwords. One with user level security and one with administrator level security.

User Level Security (1) allows access to:

- The Home Page.
- Select and operate hoists using the HMI and front panel GO button.
- Read faults.

Administrator level security (3) allows access to all program features and parameters.

Note that you must be logged in as ADMIN to add, remove, or edit user level information. Admins cannot be created, only the password can be changed.

Username	Password	Security Level
USER	USER	Operator Tech (1)
ADMIN	ADMIN	Administrator Level (3)



It is advisable to change the default passwords on initial startup. Add any new user information here but keep password records in a secured location.

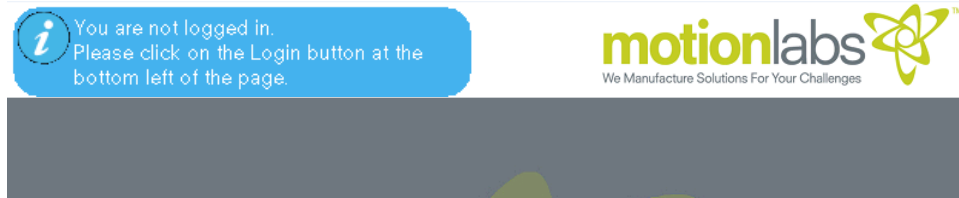
Control	Graphic	Function/Instruction
Security Group Drop-Down-List		Selection of Security Level
User Drop-Down-List		Selection of User
PWD		Password field used when adding or editing a User
Confirm PWD		Confirm Password field used when adding a user
Add User		Adds new user to the security group: 1. Select the security group from the drop-down list. 2. Enter the new user's name in the user field. 3. Enter the new user's password into both the "Pwd" and "Confirm Pwd" field. Press the Add User Button to add user
Edit User		Edits the user (password): 1. Select the security group from the drop-down list. 2. Select the user from the user drop-down list. 3. Enter the new password into both the "Pwd" and "Confirm Pwd" fields. 4. Press the edit button to change the password.
Delete User		Deletes the selected user: 1. Select the security group from the drop-down list. 2. Select the user from the user drop-down list. 3. Press the delete button to delete the user.
EXIT		Returns to the previous page.

OPERATION

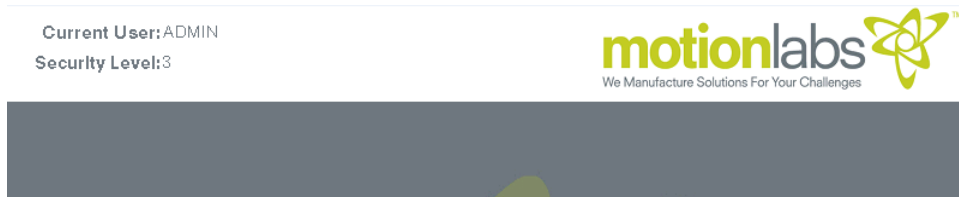
- Sign In Screen

From the Home screen you will be able to sign in. Observe to the upper left corner of the Home screen. It will show you if you are logged in or not. It will also show you your log in info if logged in.

Not Logged in:



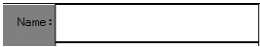
Logged in:



If you are not logged in press the green Login button on the bottom left of the Home screen to pull up the Sign In screen.

Name :	
Password :	
Current User : <none>	
	
	

OPERATION

Control	Graphic	Function/Instruction
Username		Press the Name field to launch a virtual keyboard screen' Type a username and select enter
Password		Press the Password field to launch a virtual keyboard screen. Type the password associated with the username and select enter.
HOME		Press the Home button to go to the Home screen.
Unlock		Press the unlock icon to unlock the user. The unlock button serves as an Enter button. If the username matches the password associated, the user will be logged in and their username will appear in the current user field.
Previous		Press the Previous button to go to the previous screen.

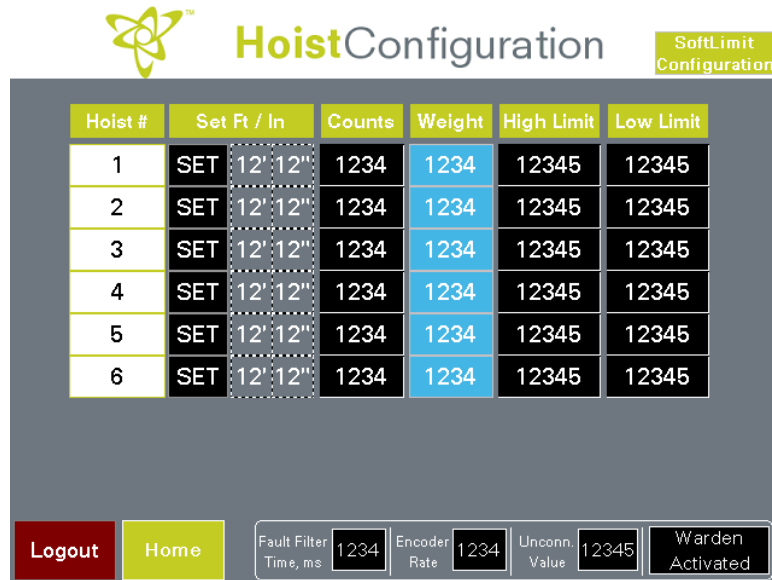


Once you are successfully logged in, the HOME page will display your security level and login name.

Hoist Configuration

- Screen Layout

The screen allows a user with administrator level security (3) to set hoist operating parameters including, encoder configuration, weight monitoring configuration and high and low limits for positioning.



The screenshot shows the 'Hoist Configuration' screen. At the top, there is a logo and the title 'Hoist Configuration' with a 'SoftLimit Configuration' button. Below this is a table with 6 rows, each representing a hoist. The columns are: Hoist #, Set Ft / In, Counts, Weight, High Limit, and Low Limit. The 'Set Ft / In' column has a 'SET' button and a position input field (12' 12"). The 'Counts' column has a 'Counts' button and a value field (1234). The 'Weight' column has a 'Weight' button and a value field (1234). The 'High Limit' and 'Low Limit' columns have value fields (12345). At the bottom, there are buttons for 'Logout' and 'Home', and a status bar showing 'Fault Filter Time, ms' (1234), 'Encoder Rate' (1234), 'Unconn. Value' (12345), and 'Warden Activated'.

Hoist #	Set Ft / In	Counts	Weight	High Limit	Low Limit
1	SET 12' 12"	1234	1234	12345	12345
2	SET 12' 12"	1234	1234	12345	12345
3	SET 12' 12"	1234	1234	12345	12345
4	SET 12' 12"	1234	1234	12345	12345
5	SET 12' 12"	1234	1234	12345	12345
6	SET 12' 12"	1234	1234	12345	12345

Logout Home Fault Filter Time, ms 1234 Encoder Rate 1234 Unconn. Value 12345 Warden Activated

Control	Graphic	Function
Set Button		Sets the current position of the associated hoist to the value in Position Input fields. Hold the button down to apply that position as the new current position.
Position Input Field		Press the input field to open number popup and enter position in feet and inches field for the associated hoist.
Encoder Counts Input field		Enter the encoder rate for the associated hoist by pressing the Encoder Counts field. A keyboard number popup will appear. This number is used to convert encoder counts to engineering units.
Actual Weight Display Field		Displays the current load for specified hoist. This is a read only field.

OPERATION

Weight Limits

High Limit	Low Limit
12345	12345

Sets the high and low weight limits for the hoist. Select the field to enter the high and low limits in pounds (lbs). A keyboard popup will appear to enter weight limits. See the Warden Load Manager for more details.

Warden Load Manager

Fault Filter Time, ms	1234	Encoder Rate	1234	Unconn. Value	12345	Warden Activated
--------------------------	------	-----------------	------	------------------	-------	---------------------

The Warden Load Manager allows the user to configure the system to monitor and react to weight limits.

Home

Home

Displays Home Page

Logout

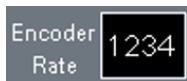
Logout

Logs current user out of system.

• Warden Load Manager

The Warden Load Manager section found on the Hoist Configuration Screen primarily deals with Load monitoring. It obtains its name from a MLI Product the Warden and incorporates its functionality virtually.

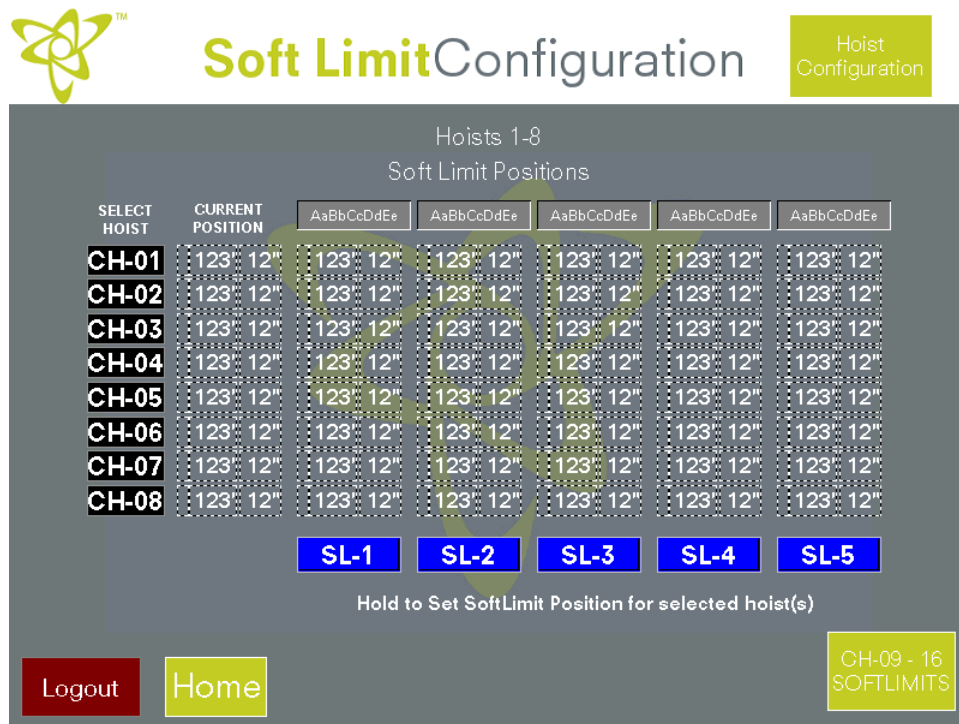
Fault Filter Time, ms	1234	Encoder Rate	1234	Unconn. Value	12345	Warden Activated
--------------------------	------	-----------------	------	------------------	-------	---------------------

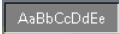
Control	Graphic	Function
Fault Filter Input Field		Enter a value between 0-500ms. This is the time in milliseconds that a load must be under or over the limits before the controller will trigger a fault.
Encoder Rate input Field		An encoder rate is the distance a chain hoist will travel per pulse of its encoder. Variables such as speed and gearing may change the encoder rate value from hoist to hoist.
Unconnected Value Input Field		This is the value that the Cellmate system returns when no loadcell is connected. The current value for this is 65500.
Warden Activated Button		Allows user to enable or disable the Warden feature of the load manager. When enabled the system will use upper and lower weight limits to stop movement when over or under loaded. When disabled, the load manager only monitors the load and does not make decisions to stop the system.

Soft Limit Configuration

- Screen Layout

This screen allows a user with administrator level security (3) to configure 5 Soft Limit position setpoints for each hoist. A setpoint is assigned by capturing the hoist's current position. Each of the 5 Soft Limit Positions can have a custom name assigned for easy identification. For example, the user would use manual mode to jog hoists to position, say for storage. The user could name the first position SL-1 "Storage" then select the hoists (with SELECT HOIST button) whose position they wish to capture. The selected hoists' current position will be captured and stored when the SL-1 button is pressed and held.



Control	Graphic	Function
Select Hoist		Press the Select Hoist button to inform system to capture the hoist's current position when a Soft Limit button is selected. Black – Not selected. Green - Selected
Current Position Display		Displays current hoist position.
Soft Limit Name Tag		Create a custom name for each of the 5 Soft Limit Positions by selecting the field and entering a name using the popup keyboard

OPERATION

Soft Limit Position		Pressing the SL-# button will capture the selected hoists' current position(s) and store them as setpoints under that Soft Limit Position number.
Home		Displays Home Page
Logout		Logs current user out of system.

Hoist (Manual) Control

- Screen Layout

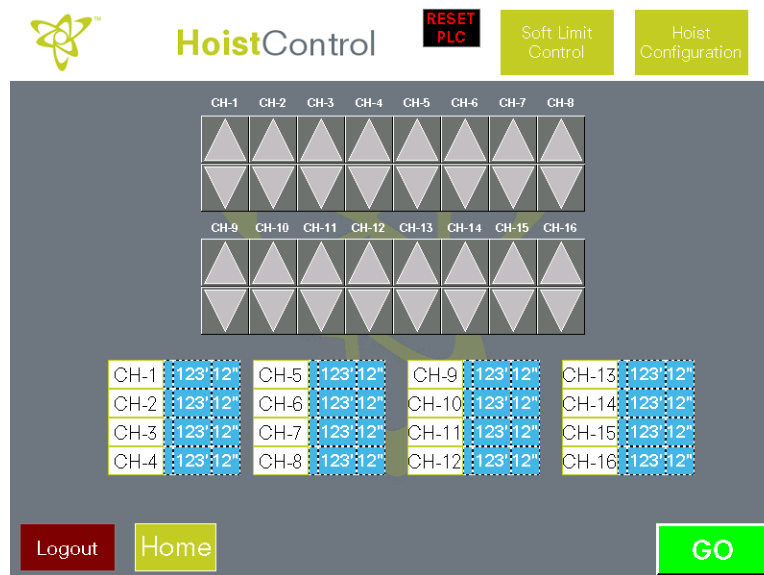
This screen is used to run hoists in manual control. Hoists will move in the direction selected by the user and will run when the GO button is pressed. The hoist(s) will run until the GO button is released or an end of travel limit switch is made. The hoist would also stop in the event of an E-stop or any fault condition.

- Selecting Hoists

To manually control any of the hoists, select either UP or DOWN for the desired hoist. Once selected an indicator will light up enabling UP or DOWN for the specified hoist.

- Go Button

If there are hoists selected in the UP or Down position, by pressing GO, the selected hoists will move in their respective direction.



OPERATION

Control	Graphic	Function
PLC Comms Button		When using multiple PLC's, PLC communication time may vary. By pressing Reset PLC, this will allow all PLCs to communicate in sync.
Channel direction Toggle button		Press Gray Up Arrow to choose the up direction. Pressing a Green Up Arrow will deselect the up direction. Press the Gray Down Arrow to choose the down direction. Pressing a Yellow Down Arrow will deselect the down direction. Green Arrow – Indicates Up direction has been selected. Yellow Arrow – Indicates Down direction has been selected. Gray Arrow – No direction selected
Actual Position		Displays Actual Position of Hoist in feet and inches.
GO Button		Causes hoist to move in direction selected.
Home Button		Displays Home Page.
Logout Button		Logs current user out of system.

Soft Limit Control

• Screen Layout

The Soft Limit Control screen is used to move a hoist or a group of hoists to a pre-configured position. Positions are captured as setpoints using the Soft Limit Configuration Screen.

• Running to Soft Limits

To execute a Soft Limit Group, select the hoist(s) or group(s) desired to move. Then, press and hold the desired Soft Limit Group (Example : SL-1 or the custom name for the group).

Make sure to hold the group button until hoist movement is complete.

If you release the group button, all hoists in the Soft Limit Group will stop.

The PLC is a 1 Touch Enable Screen and will prevent accidental operation of other hoists while running Groups.

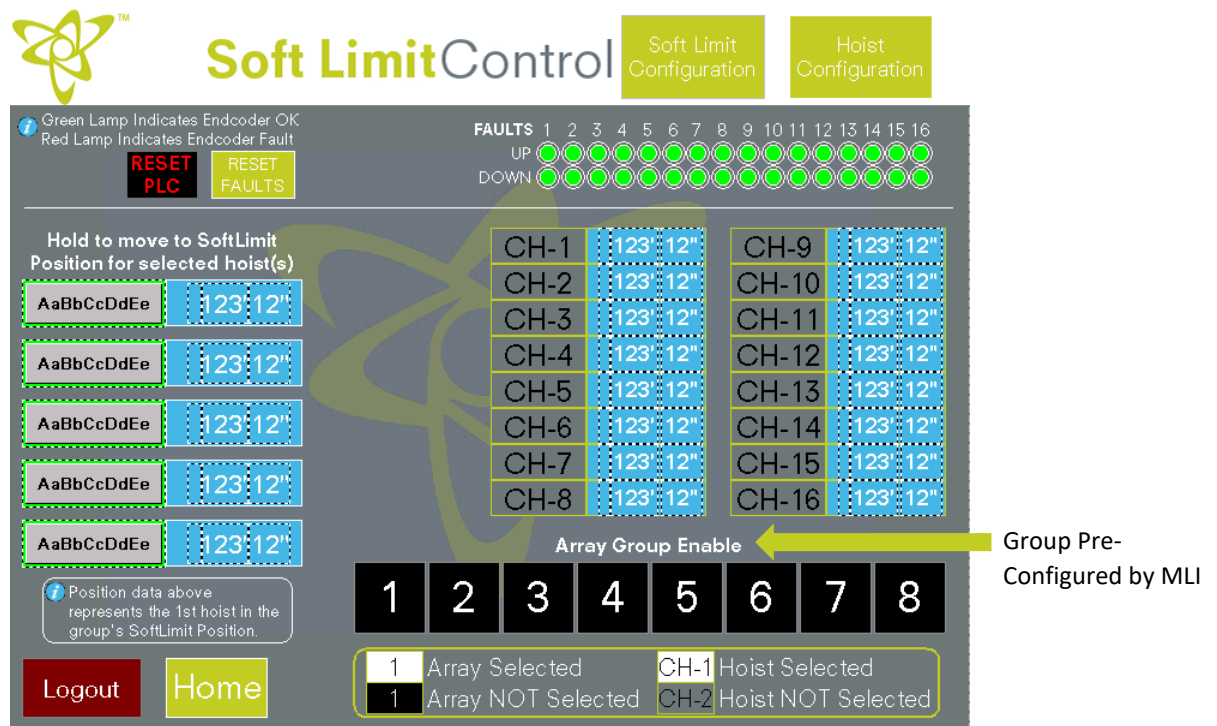


Figure 1 !6- Channel System

Control	Graphic	Function
Soft Limit Configuration Navigation Button		Displays Soft Limit Configuration Page
Hoist Configuration Navigation Button		Displays Hoist Configuration Page
PLC Comms Button		When using multiple PLC's, PLC communication time may vary. By pressing Reset PLC, this will allow all PLCs to communicate in sync.
Fault Indicators		Fault indicators for Load Cells Green – OK Red – Fault If a hoist(s) is out of the Preset High / Low Weight, all movement will stop. A Fault indicator will flash on the channel linked to the hoist(s). Once the weight is adjusted, press Reset Faults, to continue operation.
Reset Faults		Allows fault to be reset after fault condition is cleared.
Soft Limit Position Button		Soft Limit Name / Position Tag
Soft Limit Setpoint		Displays the position setpoint for the first hoist in the group's Soft Limit Position.
Hoist Select Button and Current Position		Button allows user to select a hoist for movement. Number field displays hoist's current position. White – Hoist Selected Gray – Hoist Not Selected
Group Button		Button allows user to select a pre-configured group for movement. White – Selected Black – Not Selected
Home Button		Displays Home Page
Logout Button		Logs current user out of system

Layout

Layout pages are custom pages that detail where equipment is in a venue. These pages are optional and created based on the project scope. Layout out pages are programmed before shipping and must be requested during specification. Examples of possible layouts are shown below.

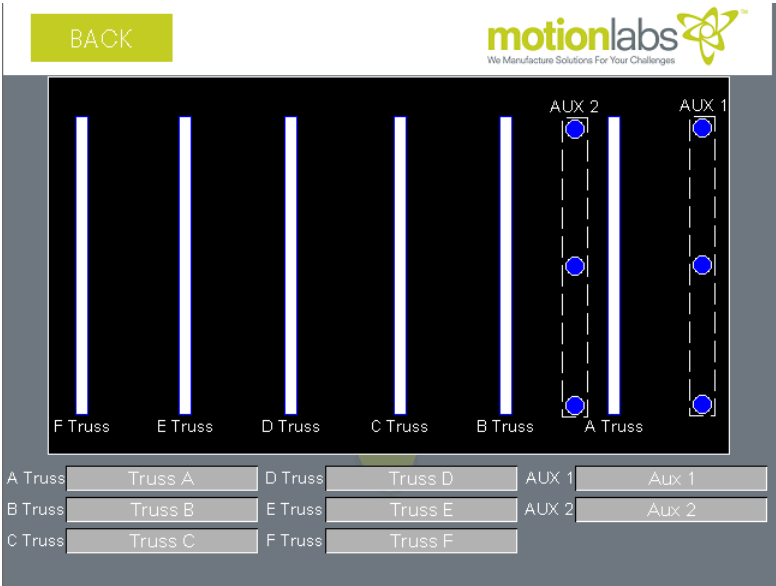


Figure 2 Example 1

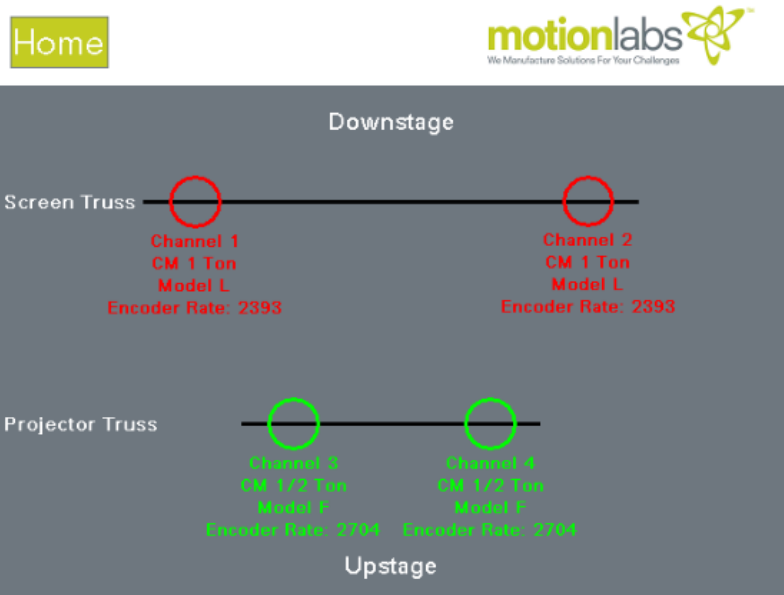


Figure 3 Example 2

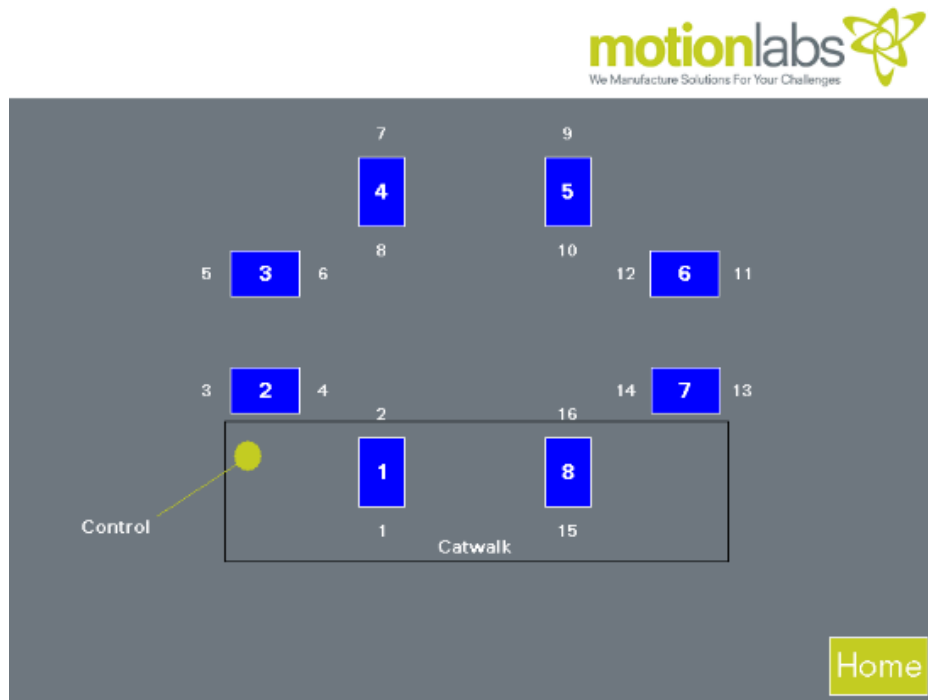


Figure 4 Example 3

MAINTENANCE

- **INSPECTIONS**

Maintenance and inspections should be carried out by competent personnel.

Check units for loose or missing hardware.

Clean front panel filters as needed.

Check electrical connections on system cables.

Verify that all switches, doors, and connection points are operating easily and as intended.

Verify E-stop system operation

SPARE PARTS AND DISPOSAL

- SPARE PARTS

Only original spare parts may be used. Motion Laboratories Inc. cannot be held responsible for failures and breakdowns caused by the use of non-OEM or incorrect spare parts.

In case of necessity, please contact:

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DECLARATION OF CONFORMITY



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