MONXT

LINEAR DOOR OPERATOR

INSTALLATION AND ADJUSTING MANUAL

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FOREWORD

It is the intent of this manual to give the reader certain key points of information critical to the proper installation of the door operator. It is also the intent of this manual to give comprehensive installation procedures for the MONXT Operator and not the installation of door headers, track, hangers, and etcetera.

It is hoped that the procedures presented in this manual will reduce the installation and adjustment time and result in smooth, long lasting door operation.

When properly installed, G.A.L. door operators will give many years of trouble free service.

COMMENTS

All G.A.L. door operators are factory adjusted and tested for the actual job requirements. When installed correctly, they may require minor adjustments to suit actual job conditions.

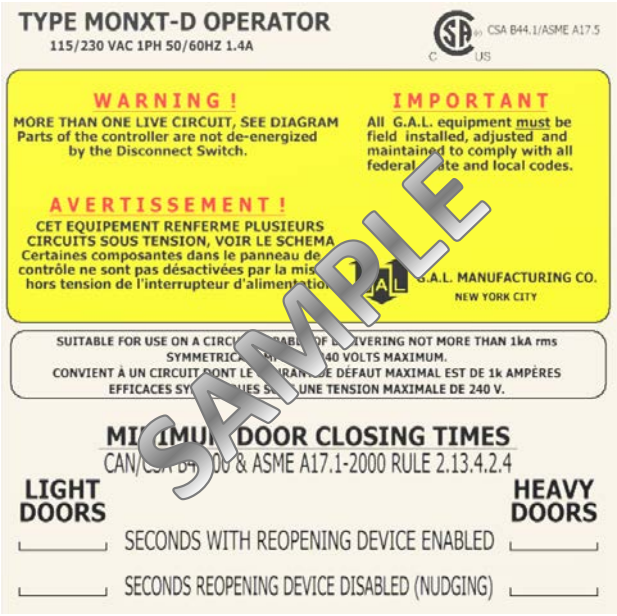
IMPORTANT NOTES

All equipment must be installed, adjusted, tested and maintained to comply with all Federal, State/Provincial, and Local codes.

Kinetic Energy and Stall Force must be adjusted to comply with ASME, A17.1, Rule 112.4/5, and CSA/B44, Rule 2.13.4/5.

Turning on the operator, check that the car door is plumb, free and moves easily without binding. Check the attached standard measurement sheets and install the operator according to the measurements supplied.

Contact G.A.L. if the following label is missing from The door operator.



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Section 1 INSTALLATION

1.1 Introduction to the MONXT LINEAR DOOR OPERATOR

When delivered, the **MONXT** linear door operator requires minimal assembly and is ready to install. The door operator includes a 340-Watt pancake motor, and, drive. Per Figure 1, the kit includes a car door hanger, motor tensioner/idler, controls enclosure, clutch with integrated Car Door Interlock, and header cab support straps. The **MONXT** is available in Side Slide up to two speed, as well as Center Parting up to two speed.

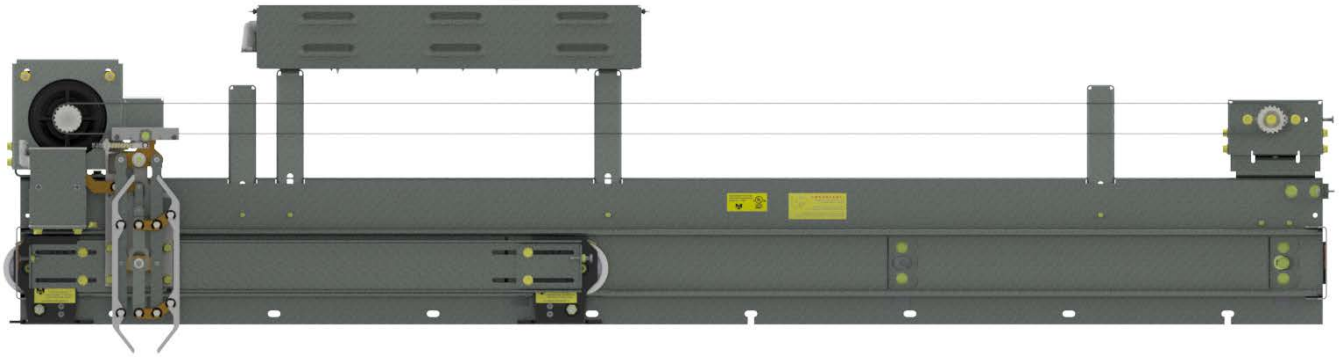


Figure 1: The MONXT Linear Door Operator

1.2 Bolts & Torque

During installation of the MONXT please use the torque specifications listed below. Some connections require special fastening conditions. Table 1 displays the special bolting conditions and correct torque required.

Table 1: Specific Bolt Torque

Adjusting Bolt Torque to Specifications			
Part 1	**Part 2**	**Bolt Size**	**Recommended Torque (ft-lbs)**
GAL Track	GAL Header	5/16-18 UNC	9
Motor Assembly Base			
Tensioner Assembly Base			
Header Support Strap			

Any screws and bolts not listed above should follow the general torque specifications listed below in Table 2.

Table 2: General Torque Requirements

General Torque Specifications for Screws & Bolts	
Bolt/Screw Type	**Recommended Torque (ft-lbs)**
#6	0.75
#8	1.53
#10	1.75
1/4-20 UNC	7
5/16-18 UNC	13
3/8-16 UNC	23
1/2-13 UNC	41

All bolt calculations use a torque coefficient between bolt and receptacle. It is a function of the materials' frictional characteristics, which are based on surface finish, coatings and so on. All bolt torques listed here were calculated with a K-Factor of 0.20 which is a typical dry steel bolt connection. No lubricants should be used on any bolt connection unless otherwise specified.

1.3 Installing the MONXT DOOR OPERATOR

The **MONXT** linear door operator uses quick drop installation in its design. To use the Tee slot mounting, partially install (2) 5/16-18 bolts in the two outside threaded holes in the mounting angle steel of the elevator cab top. The bolt positions should correspond to the Tee slots in the header mounting slots. Lift the operator and slide the tee slots down over the two bolts per Figure 2 and tighten. Install bolts in the remaining header slots.

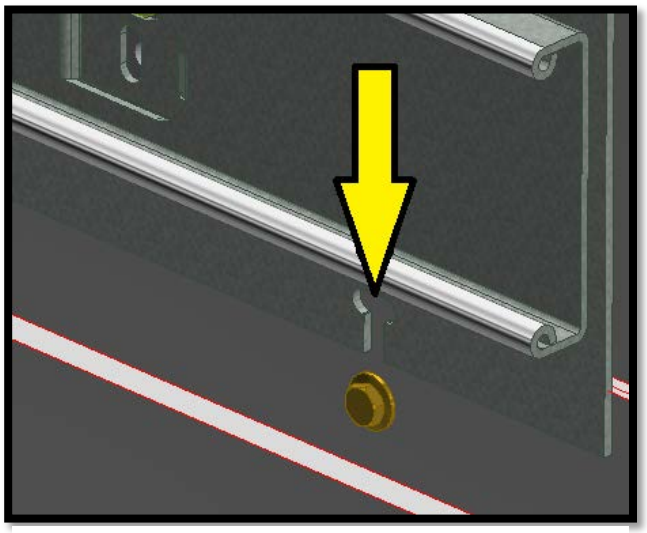


Figure 2: Quick Drop Installation of the Linear Door Operator

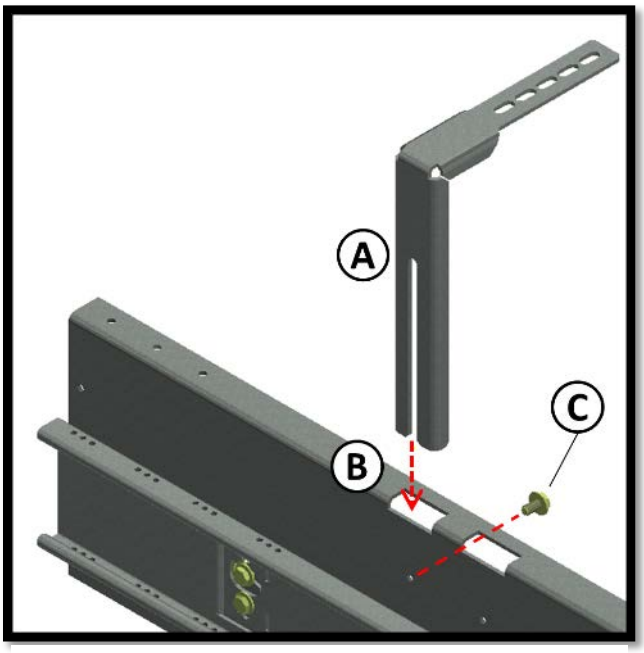


Figure 3: Installation of Header Cab Support Straps

As shown in Figure 3, slide each header cab support strap (A) through each opening (B) in the top flange of the header, and over the corresponding 5/16-18 socket, until the top flat part of the strap rests on the elevator cab. Insert and tighten each 5/16-18 (C) in the back of the header. Secure each strap to the top of the cab using 5/16-18 bolts.

After top straps are installed, continue hanging doors per GAL standards.

Note: The MONXT Linear Operator is designed to be installed with the track leveling eccentric cams such that the track mounting bolts are centered in their respective slots.

1.4 Installing the NXT Roller Release and Hoistway Interlock

If mounting the roller release requires a spanner plate then first secure the spanner plate to the roller release and then secure the entire assembly to the sheaves, as shown in Figure 4, below. The slots shown allow for horizontal adjustment. Roughly center rollers with the center of the clutch vanes.

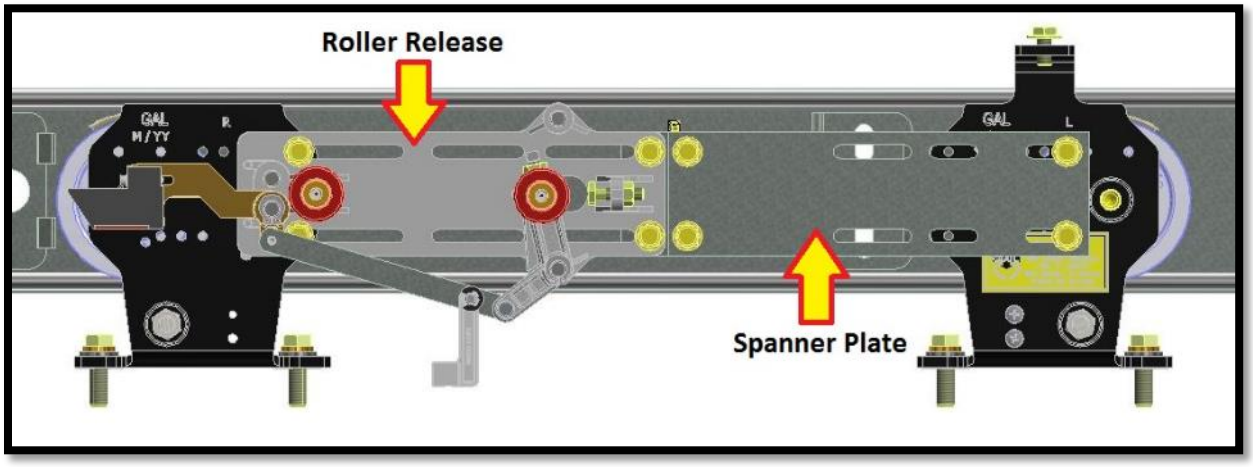


Figure 4: Mounting NXT Roller Release

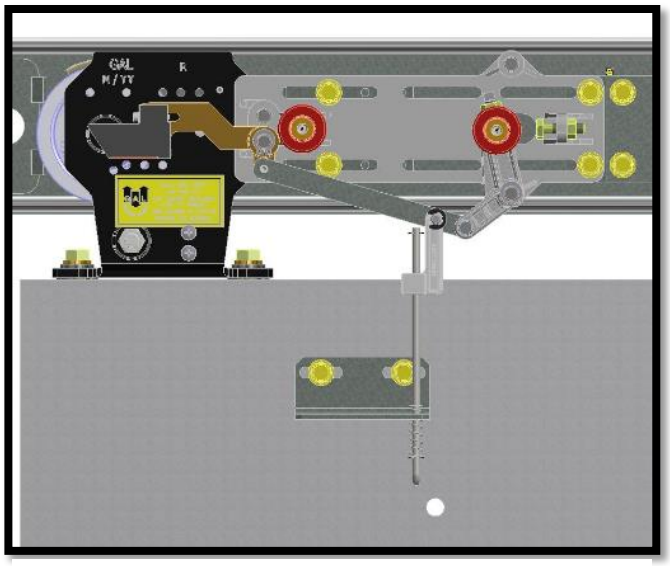


Figure 5: Securing Access Link Bracket to Fast Door

The access link bracket is secured to the hall door with (2) ¼-20 bolts, consistent with the GAL drilling templates in relation to the emergency keyhole. The spring in this assembly should provide a small amount of downward pressure to the keeper when in the locked position.

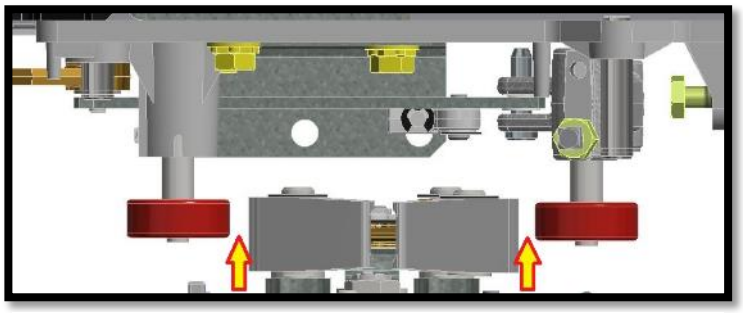


Figure 6: Centering of the Clutch Vanes Between the Pick-Up Rollers

When the roller release is in the locked and door closed position, and the clutch is in the collapsed and door locked position, the vanes of the clutch should be centered between the 2 pick up rollers as shown in Figure 6, left. Failure to center could affect the performance of the clutch.

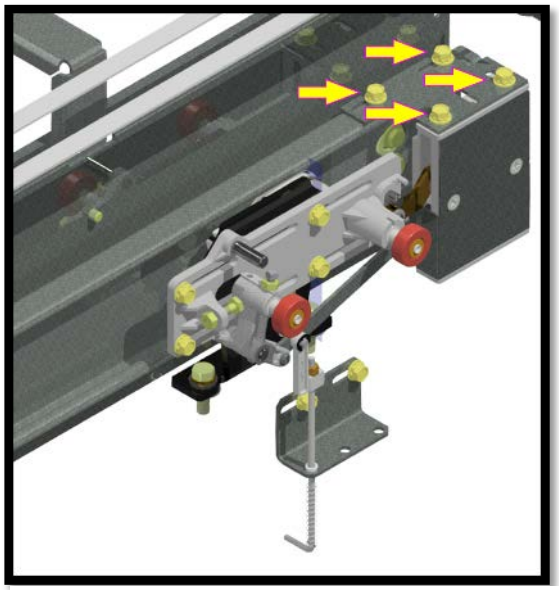
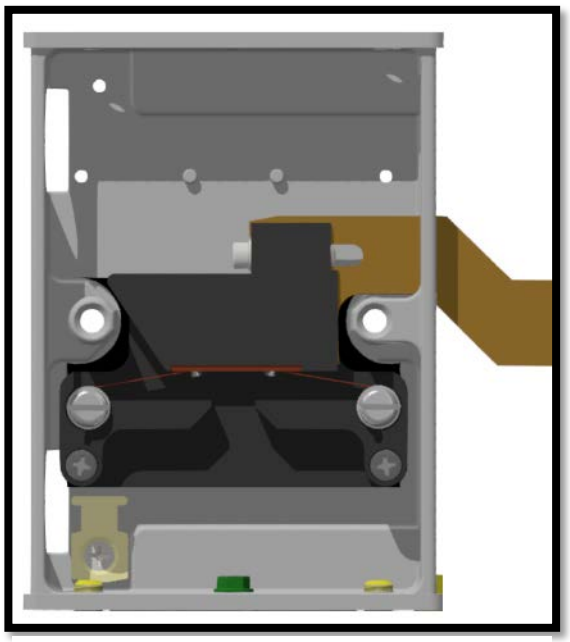


Figure 7: Securing NXT Interlock to Mounting Plate

The NXTi interlock is secured to its mounting plate with (4) ¼-20 bolts, as shown on the left in Figure 7.



Adjust the interlock so that the keeper head is centered on the contacts (you will need to remove cover to see the keeper head). In addition, make sure the keeper is equally spaced between the front and back of the opening of the interlock box.

Figure 8: NXTi Keeper centered inside of NXTi Lock

For center opening hoistway doors, the roller release is mounted to the door that will interface with the clutch, similary to what is done for side opening doors. The hoistway door that will not interface with the clutch has a “fixed keeper” (Figure 9) mounted to it that is captured by the interlock. The interlock is mounted to the track from the top with its mounting bracket and (4) ¼-20 screws (Figure 9)

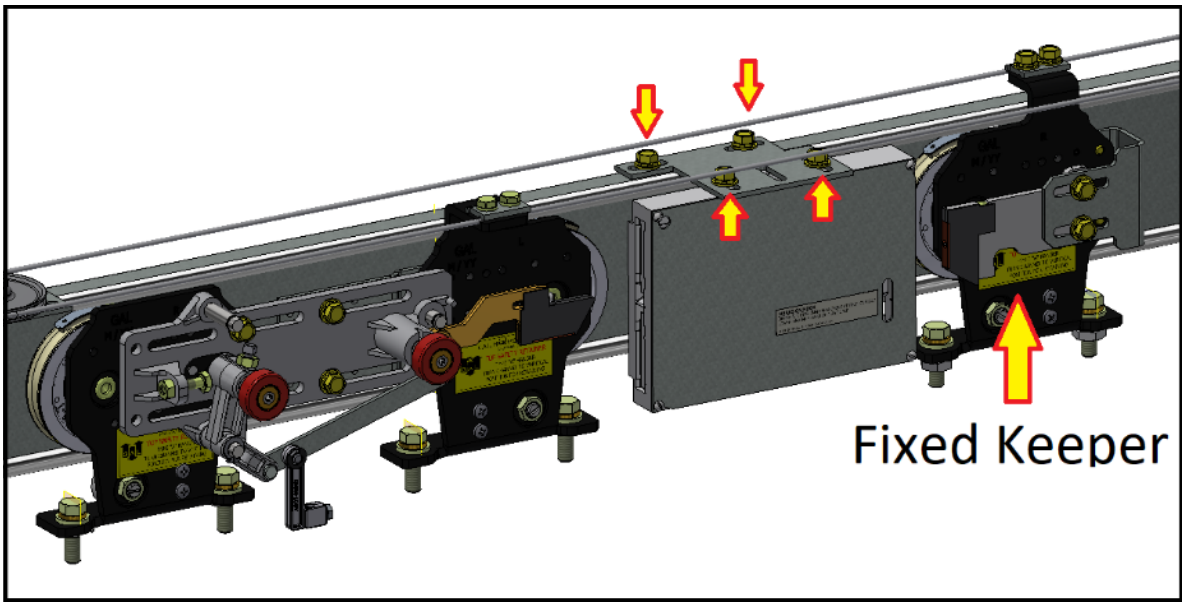


Figure 9: NXTi-CP Hoistway

Section 2 MECHANICAL SETUP

2.1 Adjusting the NXT Roller Release

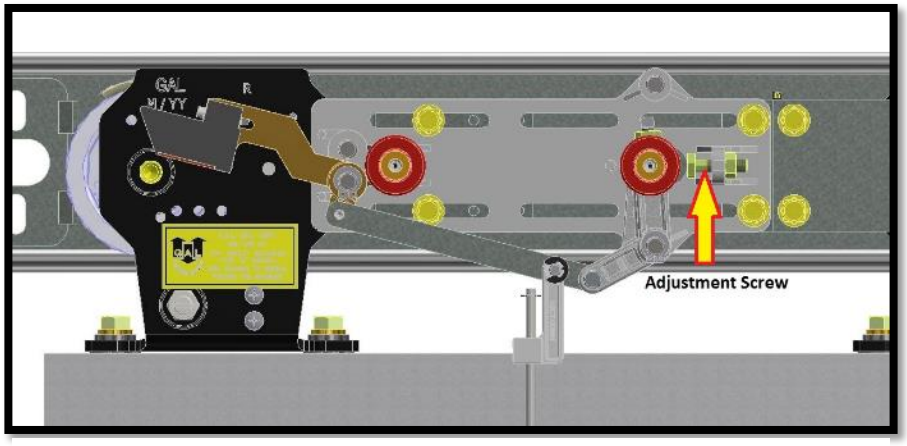


Figure 10: Finding the Adjustments for the NXT Roller Release

The adjustment screw controls how wide the roller release can open, and thus controls the engagement of the clutch. To set this stop, position the clutch vanes between the rollers, and ensure the clutch is fully open. Adjust the stop (see Figure 10) until the roller fully activates the sensing vane. Tighten the locking nut on the adjustment screw.

2.2 Clutch Adjustment

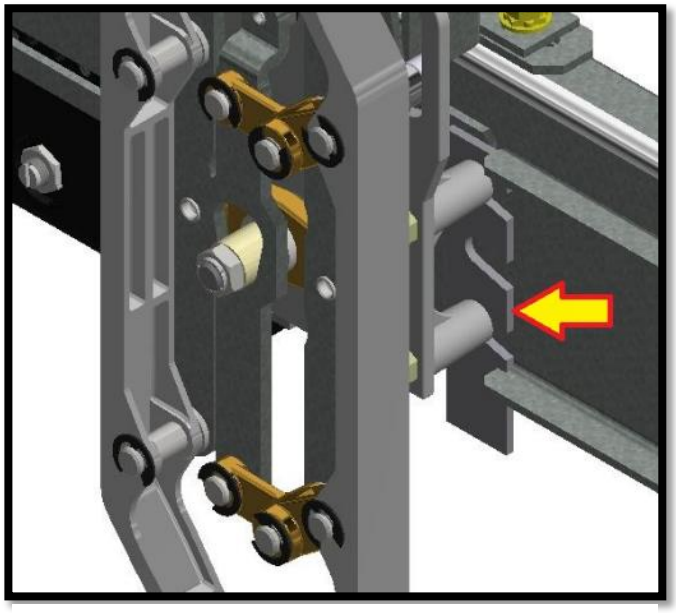


Figure 11: Clutch Adjustment Spacer

The running clearance of the clutch can be adjusted by adding or removing spacers from between the clutch base and clutch mount plate. See Figure 11.

2.3 Open Stop Adjustment

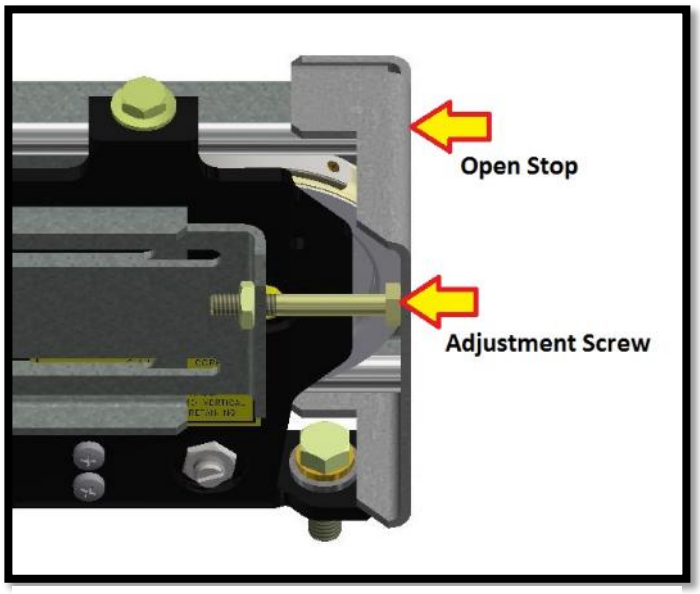


Figure 12: Open Stop Adjustment

When fully open, the leading edge of all door panels should be flush with the open-door jamb. To ensure this, adjust the open stop adjustment screw to the appropriate distance and secure with the nut (Figure 12).

2.4 Closed Stop Adjustment (Side Slide)

When fully closed, the edge of the leading door panel should overlap the door jamb by minimum ¾". This overlap measurement is controlled by the closed stop. To set the overlap correctly, adjust the closed stop adjustment bolt to the appropriate distance and secure with the nut. Closed stop and adjustment screw are the same as for the open stop adjustment. See Figure 12 for reference.

2.5 Closed Stop Adjustment (Center Parting)

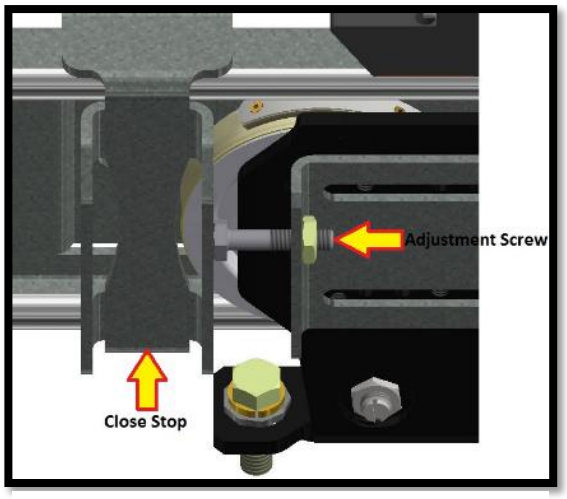


Figure 13: Closed Stop Adjustment (Center Parting)

When fully closed, the leading edges of the door panels should meet at the center of the door opening. To ensure this, adjust the closed stop adjustment bolts appropriately and secure with nuts.

2.6 Clutch Cam

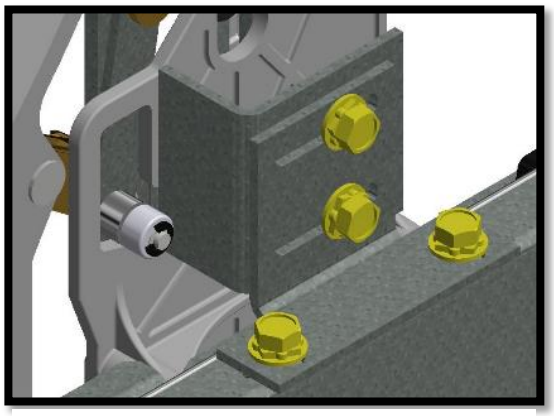


Figure 14: Clutch Unlock Plate Engaging Locking Arm

To disengage the clutch from the hatch roller release for travel between floors, the clutch must first be in the unlocked position. The clutch is unlocked by the unlock plate pushing the locking arm into the unlocked position as seen in Figure 14.

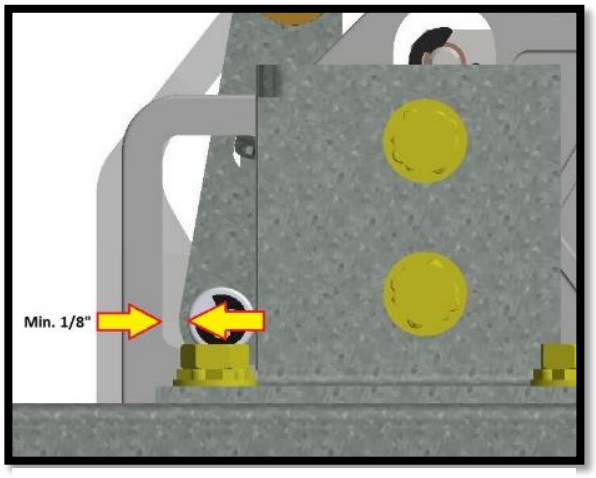


Figure 15: Locking Arm Clearance

The unlock plate must also be adjusted such that the locking arm does not rub against the clutch base when in the unlocked position (Figure 15).

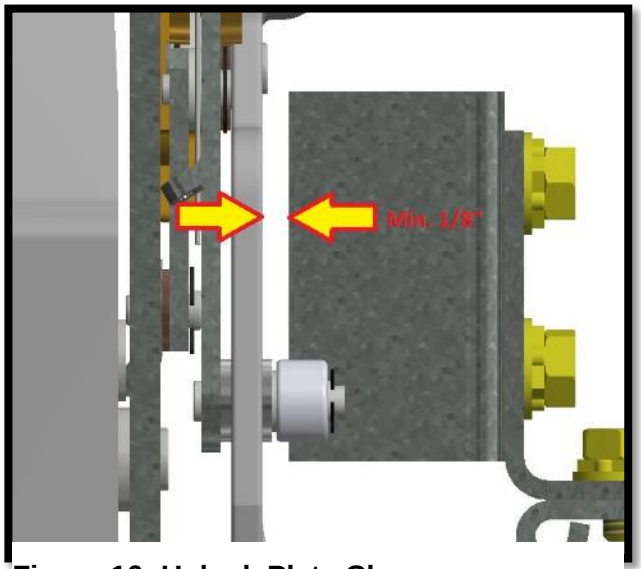


Figure 16: Unlock Plate Clearance

It is important to adjust the unlock plate such that the unlocking arm does not make contact with the clutch base (Figure 16).

2.7 Align Car Door Interlock

The NXTi interlock is secured with its mounting plate with (4) ¼-20 bolts, as shown on the below in Figure 17.

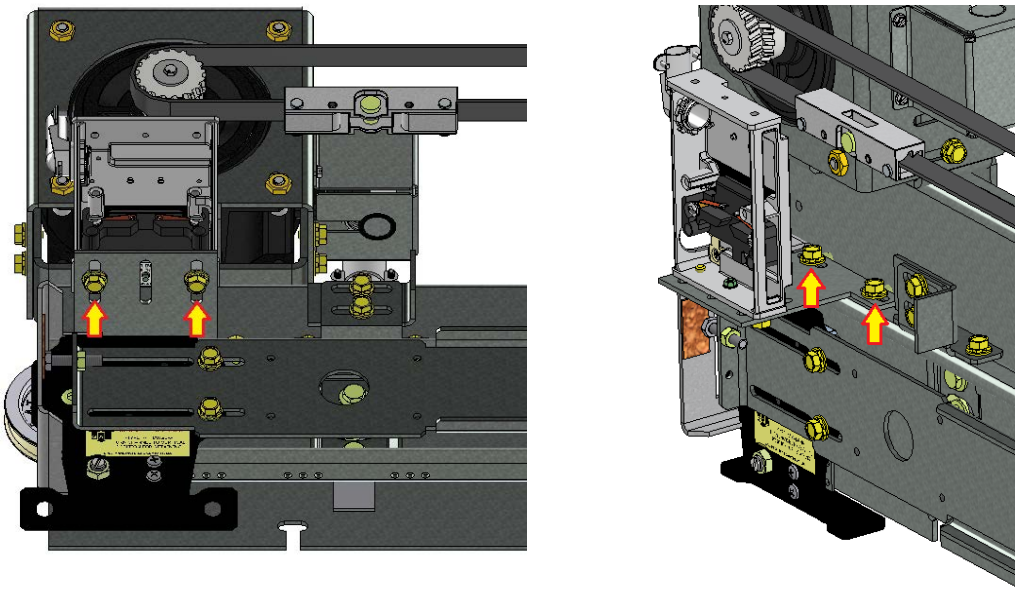


Figure 17: NXTi Mounting

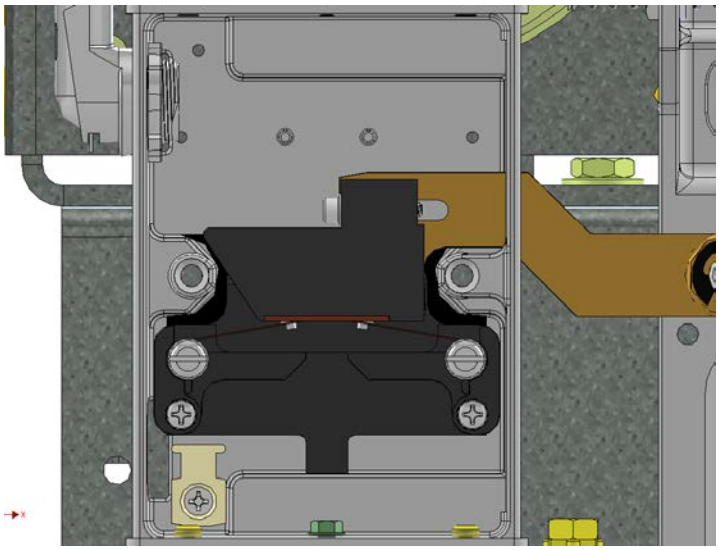


Figure 18: NXTi Adjustment

With the door in the full closed position and against the stop, center the keeper head on the interlock contacts (Figure 18). Clutch and interlock are adjusted using the slots available on interlock mounting plate and the clutch mounting plate. Adjust the interlock in/out such that the keeper head is centered in the opering when entering or leaving the interlock box. There should be approximately 1/16” on either side of the keeper head when in the interlock opening. This narrow opening is required to to make the interlock “finger safe”.

For the NXTi-CP (Figure 18 and Figure 19), adjust the interlock so that both keeper heads are centered on the contacts (you will need to remove cover to see the keeper heads). Start with the clutch keeper alignment, then set the dummy keeper. For the NXTi, there is only the clutch keeper to adjust. In addition, make sure the keepers are equally spaced between the front and back of the opening of the interlock box

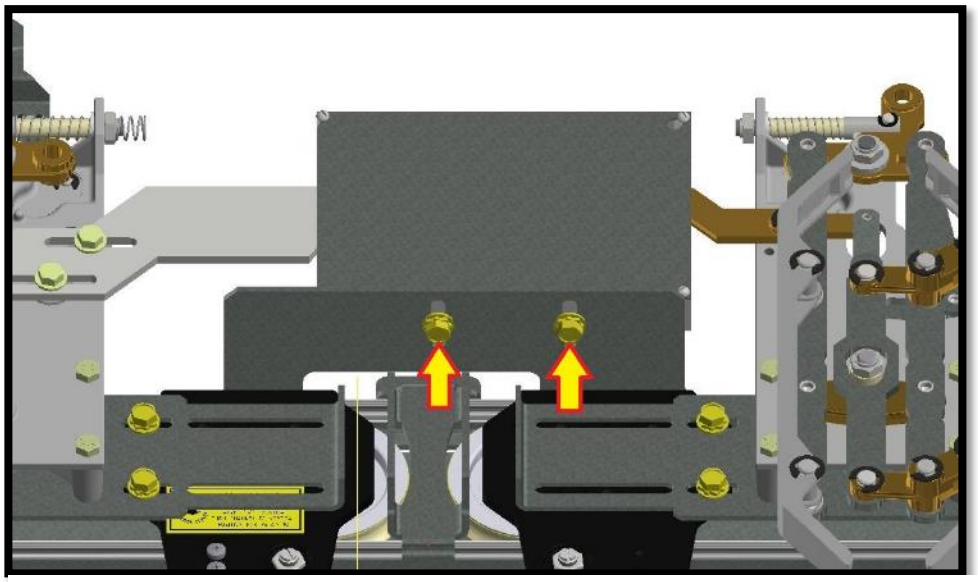


Figure 19: NXTi-CP Interlock Forwards/Backwards Adjustment

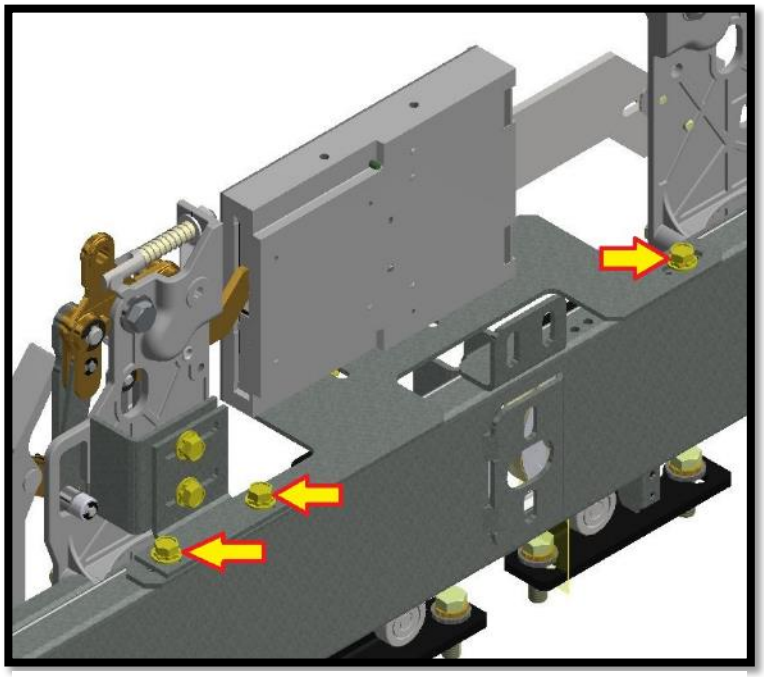


Figure 20: NXTi-CP Interlock Side-To-Side Adjustment

The NXTi-CP includes a window in the cover of the interlock to monitor the engagement of the fixed keeper (Figure 20).

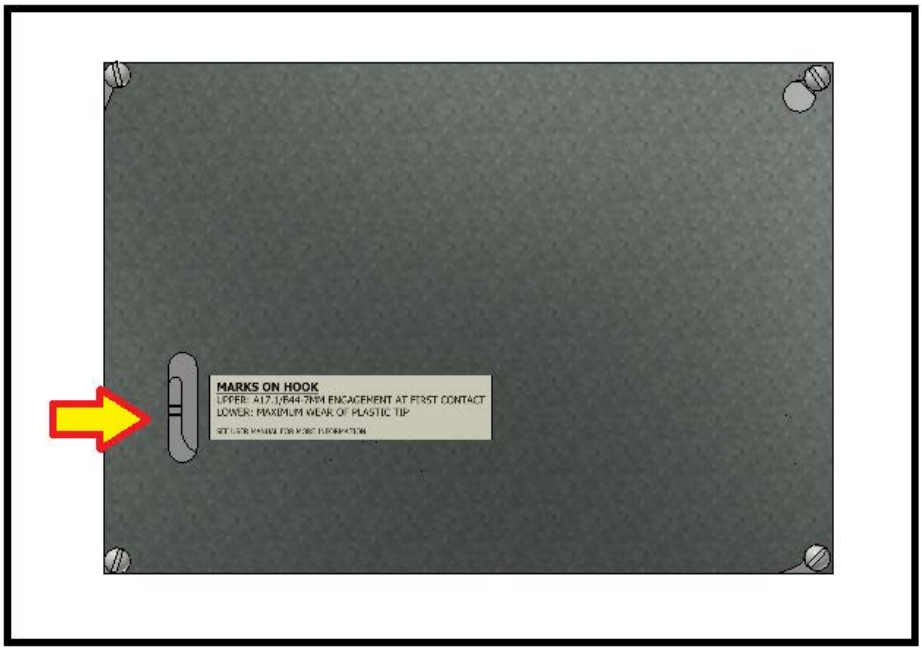


Figure 21: NXTi-CP Inspection Window

Through this window you will see 2 lines cast into the rocker arm of the interlock. During normal operation, both of the lines should be above the lowest point of the fixed keeper when locked. The upper line indicates that you have the required 7mm of engagement with the keeper required by ASME A17.1/CSA B44. The lower line is a wear indicator for the tip of the rocker arm (Figure 21). If during regular servicing, this line is seen to be below the lowest point of the fixed keeper when locked, the rocker arm of the interlock should be replaced. GAL recommends inspecting this part annualy.

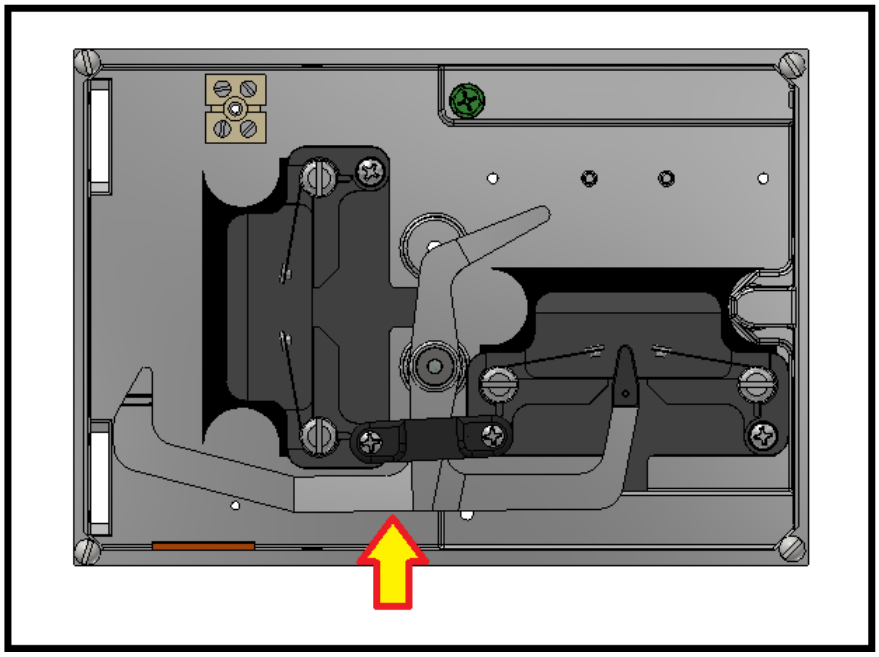


Figure 22: NXTi-CP Rocker Arm

2.8 Belt Alignment

Once the clutch is installed as required for running clearance, the clutch will determine the correct belt distance from the header. Adjust the motor assembly and tensioner assembly so that the tensioner pulley, motor pulley, and clutch pivot are in line with each other, and are parallel to the header. **CAUTION:** A misaligned belt can cause the belt to wear prematurely or jump teeth during operation. To adjust the motor assembly, loosen (4) ¼-20 bolts on both sides of the assembly, as well as (1) ¼-20 in the base of the assembly (Figure 23). With all (5) ¼-20 bolts loose, the motor assembly should slide freely in and out. Push the door closed so the clutch is near the motor assembly, and then align the motor pulley with the clutch pivot. Once aligned, tightened all (5) ¼-20 bolts.

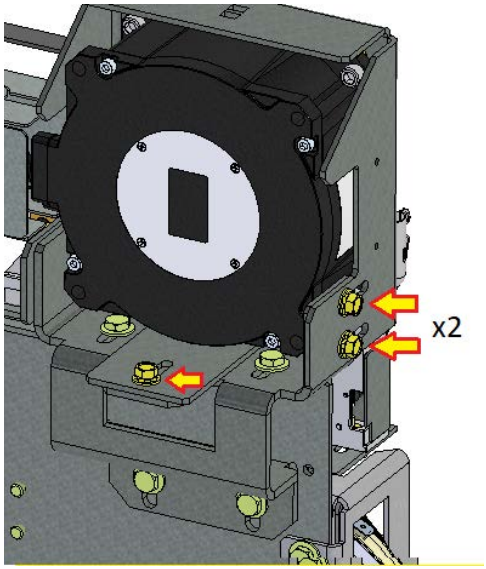


Figure 23: Motor Bolts for Belt Alignment

To adjust the tensioner assembly alignment, slide the door(s) completely open to where the clutch is nearest the tensioner. The tensioner has the same (5) bolt pattern and is adjusted in the same manner as the motor assembly, shown in Figure 24.

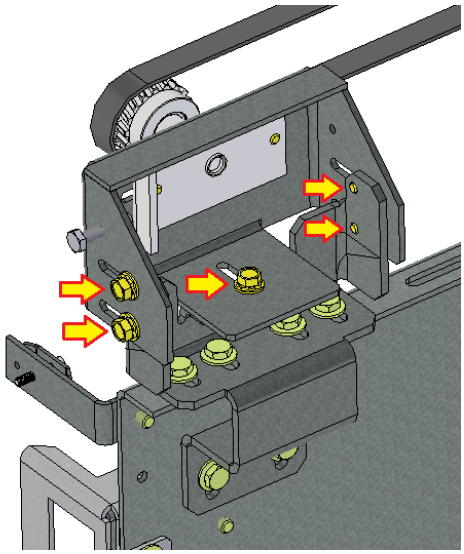


Figure 24: Tensioner Bolts for Belt Alignment

2.9 Belt Tension

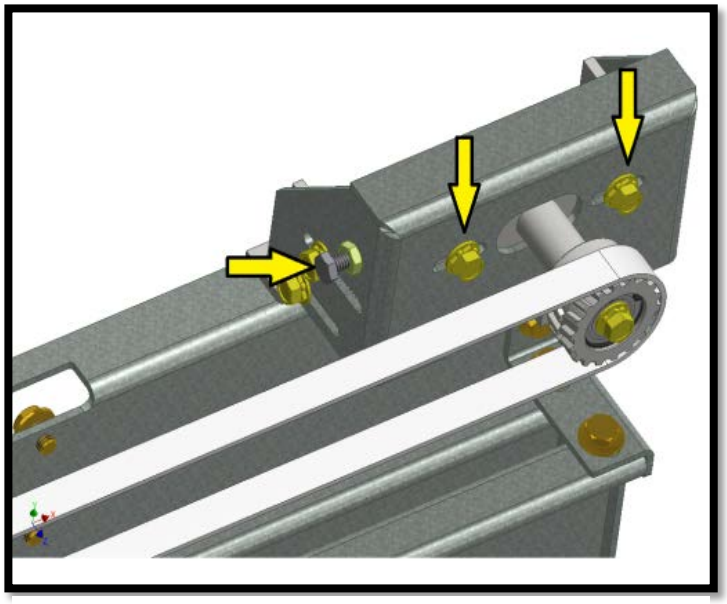


Figure 25: Locating Bolts for Adjusting Belt Tension

Make sure that the motor assembly is tightly secure where mounted. Loosen the tensioner assembly slightly, loosening the (2) ¼-20 bolts on the face, so the tensioner assembly can slide left or right, as displayed in Figure 23. Tighten the tensioner adjustment screw, pushing the tensioner away from the motor assembly to moderately increase tension on the drive belt. Then retighten the (2) ¼-20 bolts on the assembly face. The belt tension should be as such that you can squeeze the upper and lower sides of the belt together using moderate pressure. (**NOTE:** While a loose belt can jump teeth, an overly tightened belt can be noisy.)

Section 3 KENETIC ENERGY CODE

3.1 Kinetic Energy and ASME A17.1 2000 for Elevator Door Systems

******This section is for reference only. The MONXT Linear Operator automatically calculates the Kinetic Energy requirements and sets the speed to meet code according to door weights and openings******

Requirement 2.13.4.2.4 of ASME A17.1 2000 states that a data tag must be attached to the door operator or car crosshead. If you are in a jurisdiction that has adopted the 2000 code, you need to read and understand this requirement, and all related requirements. (See attached)

The code requires the data tag to show:

- The minimum code closing time for the door system that will result in average kinetic energy of less than 7.37 ft-lbs.
- The minimum code closing time for the door system when in nudging mode, that will result in average kinetic energy of less than 2.5 ft-lbs.

Data tables available on G.A.L's website provide customers with the information necessary to comply with these requirements. If you use all G.A.L. equipment, and follow all G.A.L. instructions, these sheets will give you the minimum code closing time for all of the normal door configurations, sizes, and operator models available.

3.2 Code Closing Distance / Time

For side opening doors, the code closing distance starts 2" from the jamb and goes to 2" from full close (Door Opening – 4").

For center opening doors, the code closing distance starts 1" from the jamb and goes to 1" from full close (Door Opening – 4").

3.3 Average Kinetic Energy (7.37 ft lbs)

This is the requirement for which the times shown on the data tables were calculated. G.A.L.'s calculations include the rotational inertia of the motor and door operator The calculations include any rigidly connected equipment there, and they also accommodate all hangers, rollers, clutches, closers, releases, and any normal reopening devices.

3.4 Actual (peak) Kinetic Energy (17 ft lbs)

Using G.A.L. equipment and following G.A.L. instructions, you will not exceed the requirement for actual (peak) KE.

3.5 Nudging Kinetic Energy (2.5 ft lbs)

When you find the minimum code closing time for your application and double it, you will have a safe time margin to use for the requirement under nudging. (Note – this is a very conservative time, if you want to close your door more quickly while in nudging, call G.A.L. for an absolute minimum.)

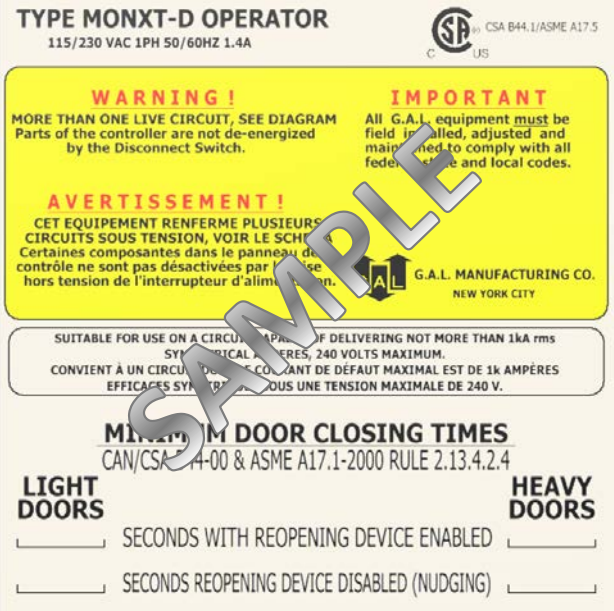
3.6 2.13.4.2.4 Data Plate

A data plate conforming to 2.16.3.3 shall be attached to the power door operator or to the car crosshead and shall contain the following information:

(a) minimum door closing time in seconds for the doors to travel the code zone distance as specified in 2.13.4.2.2 corresponding to the kinetic energy limits specified in 2.13.4.2.1(b)(2);

(b) minimum door closing time in seconds for the doors to travel the Code zone distance as specified in 2.13.4.2.2 corresponding to the kinetic energy limits specified in 2.13.4.2.1(c)(2), if applicable [see 2.27.3.1.6(e)];

(c) where heavier hoist-way doors are used at certain floors, the minimum door closing time in seconds corresponding to the kinetic energy limits specified in 2.13.4.2.1(b)(2) and 2.13.4.2.1(c)(2), if applicable, for the corresponding floors shall be included on the data plate



3.7 2.13.4.2.1 Kinetic Energy

(a) Where the hoist-way door and the car door/gate are closed in such a manner that stopping either one manually will stop both, the kinetic energy of the closing door system shall be based upon the sum of the hoist-way and the car door weights, as well as all parts rigidly connected thereto, including the rotational inertia effects of the door operator and the connecting transmission to the door panels.

(b) Where a reopening device conforming to 2.13.5 is used, the closing door system shall conform to the following requirements:

(1) The kinetic energy computed for the actual closing speed at any point in the Code zone distance defined by 2.13.4.2.2 shall not exceed 23 J (17 ft-lbf); and

(2) The kinetic energy computed for the average closing speed as determined in accordance with 2.13.4.2.2 shall not exceed 10 J (7.37 ft-lbf).

(c) Where a reopening device is not used, or has been rendered inoperative (see 2.13.5), the closing door system shall conform to the following requirements:

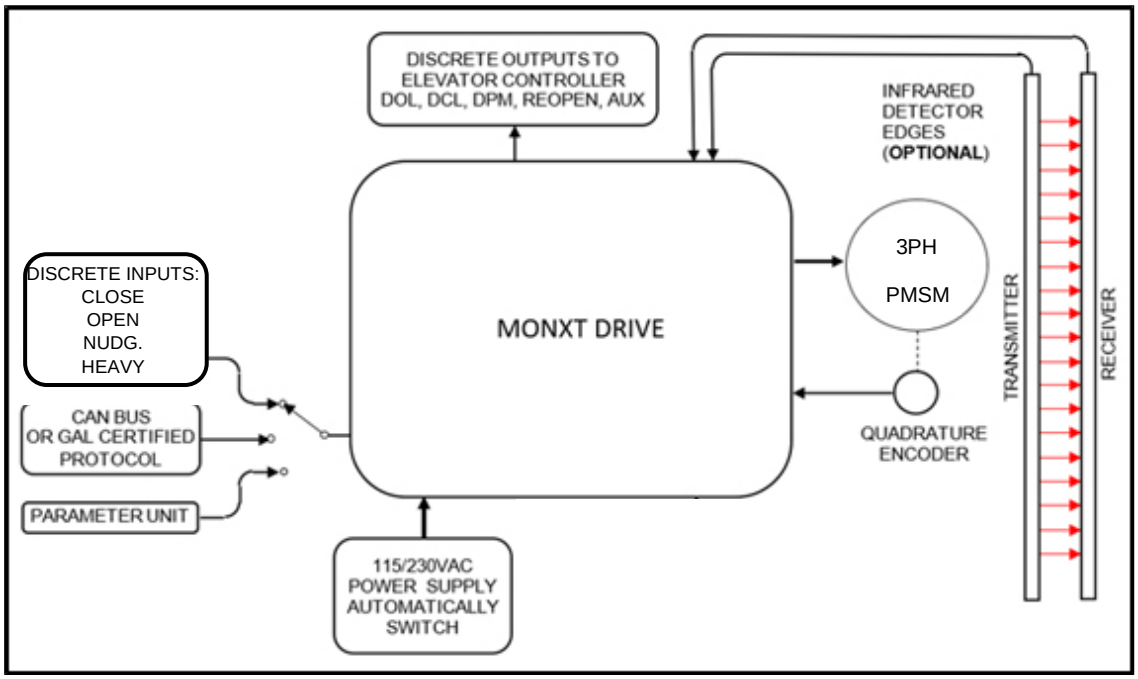
(1) The kinetic energy computed for the actual closing speed at any point in the code zone distance defined by 2.13.4.2.2 shall not exceed 8 J (6 ft-lbf).

(2) The kinetic energy computed for the average closing speed within the code zone distance (see 2.13.4.2.2), or in any exposed opening width, including the last increment of door travel, shall not exceed 3.5 J (2.5 ft-lbf).

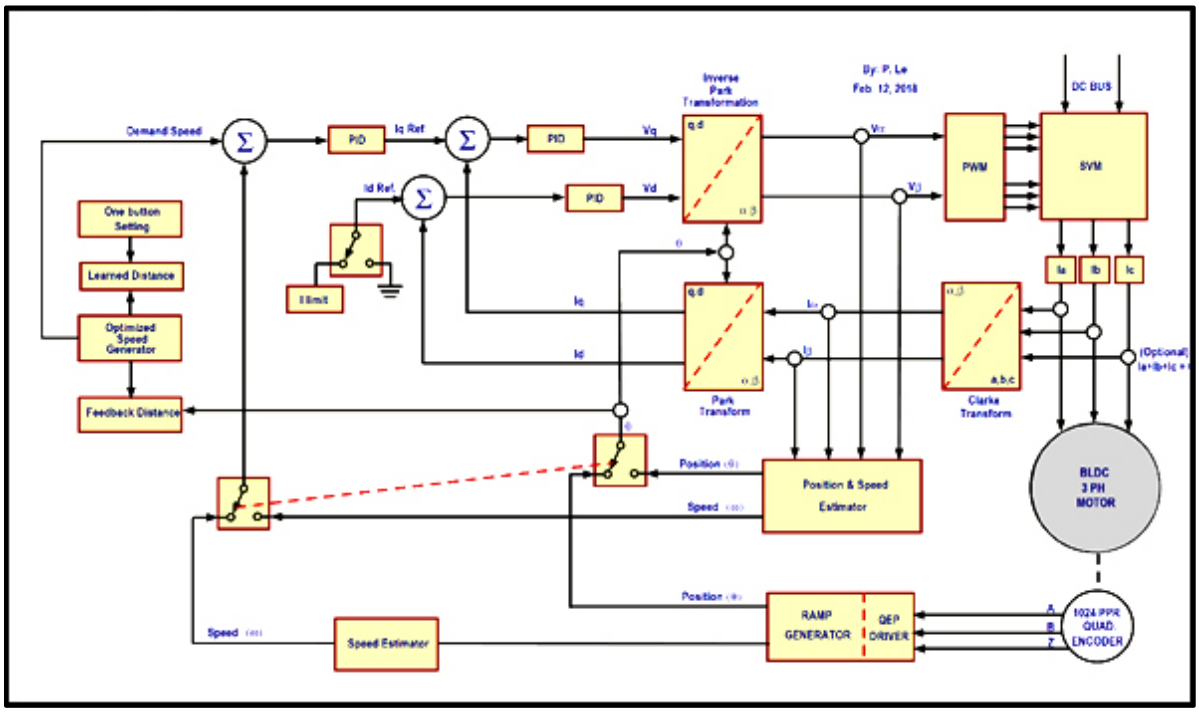
Section 4 ELECTRICAL INSTALLATION

4.1 Overview

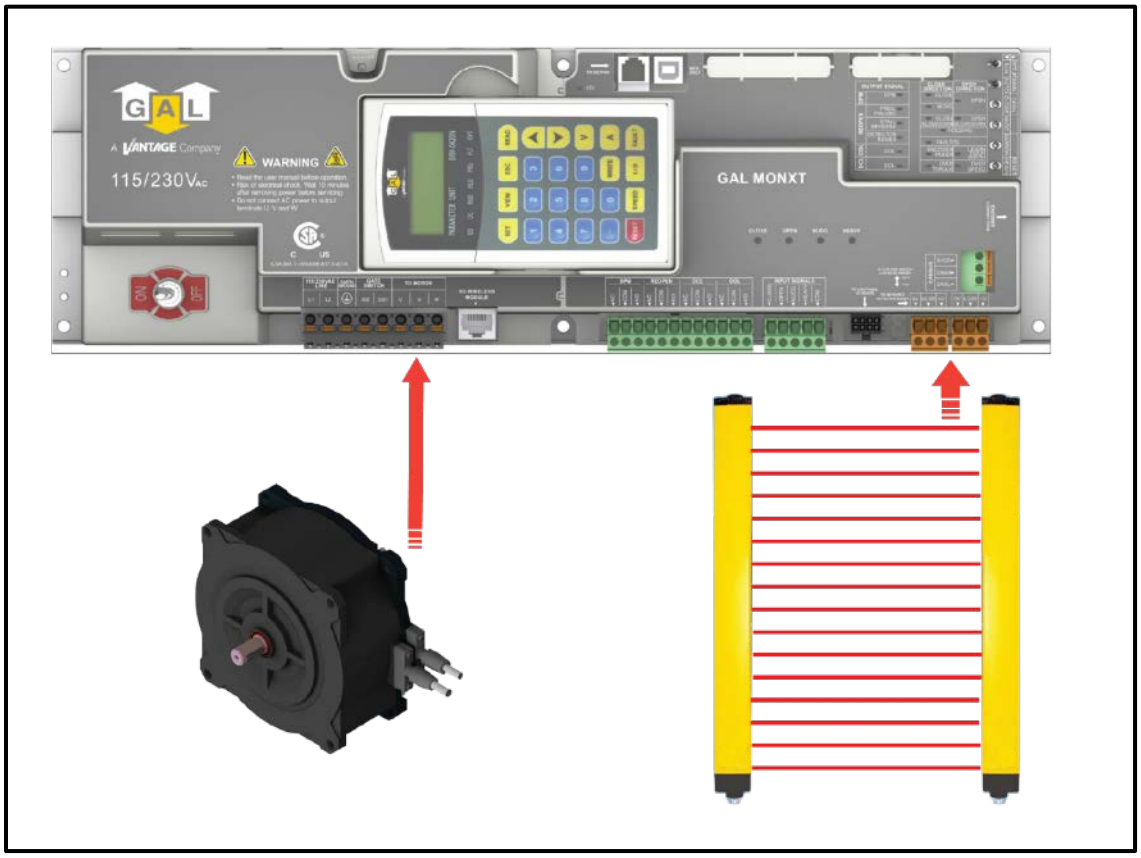
The block diagram of the Linear MONXT is illustrated below:



Below is a simplified control algorithm diagram of the MONXT.



The MONXT door operator has the following features:



DOUBLE FEEDBACK SYSTEM FOR SMOOTH PERFORMANCE:

- Distance and velocity closed-loop system
- Once the door-width is tuned, the MONXT will optimize control of the elevator door(s)
- Parameters sets are provided to maximize the performance of the system

SAFETY STANDARDS:

- CSA Certified. B44.1/ASME- A17.5
- Complies with the following CE and IEEE safety standards of the followings:
- Walkie Talkie Test: 15cm from the Drive with 4w 153.05 Mhz & 464.5Mhz
- EN61000-4-2: Electro-Static-Discharge Immunity Test.
- EN61000-4-3: Radiated Susceptibility Test
- EN61000-4-4: Electrical Fast Transient (EFT)/Burst Immunity Test
- EN61000-4-5: Surge Test (Bi Wave)
- EN61000-4-6: Conducted Susceptibility Test
- EN61000-4-8: Power Frequency Magnetic Field Immunity Test
- IEEE STD C62.45-2002: Surge Test (Ring Wave)
- EMC conformity report is available

A POWERFUL SYSTEM:

- Automatically switching between 230VAC and 115VAC power supply input.

SENSORLESS:

- Signals of DCL, DOL, DPM, & AUX are decoded from Encoder. No sensors needed.

CONVENIENCE INDICATORS:

- Light Emitting Diodes (LEDs), on the mainboard, are used to indicate the status of all important functions:

  Door Open/Close, Nudging, Heavier/Narrower Input Signals, Door Open/Close Directions, Open/Close Slowdown, The Obstruction Detection Signal, Stall Reverse, Frequency Failure, DOL, DCL, AUX (Narrower Door), and DPM (Door Protection Monitor)* Signals, Door-Width Learning Completion.

UNIVERSAL INPUTS AND OUTPUTS:

- Universal inputs accept control signals in the form of contacts or signal voltages;

  24-230V AC or DC.

- Output contacts rated at 10Amp, 230VAC, and they are:

  Door Close Limit (DCL), Door Open Limit (DOL), Re-Open (RE-OPEN), Door Protection Monitor (DPM),

  Auxiliary/Narrower Door (AUX), Edges Timeout (ET*)*

- All input modules, output relays, and connectors are pluggable for easy replacement.

KEYPAD (PARAMETER UNIT):

- Keypad programming with LCD display is available to adjust, monitor, copy, change parameters, upload parameter sets, and to learn the door-width.
- The default parameter sets are ready for all operator models.
- Different parameter sets for the heavier door and narrower door are available for proper adjustments to comply with codes.
- The feature of copying (reading) and downloading (writing) parameter sets are implemented to reduce the setup time on similar door operators.

TOGGLE SWITCHES FOR MANUAL TESTING:

- Toggle switches are provided for manual operation, diagnostics, and operational verification regardless of the control wiring to the elevator controller

OVER-TORQUE AND OVER-SPEED DETECTIONS:

- Over-torque and over-speed detection and restriction are parameterized for easy adjustment to comply with codes

PLUG-AND-PLAY INFRARED DETECTOR EDGES:

- Both NPN and PNP infrared detector edges can be connected directly to the MONXT

SERIAL COMMUNICATION TO MONXT:

- CAN (Controlled Area Network) or other communication protocols can be used to communicate with MONXT serially.
- CAN bus counter and Analyzer are built-in to monitor the CANbus activities.

TROUBLESHOOTING ASSISTANCE DISPLAY:

- The Faults display will explain to users the possible causes and shows the remedies for each fault code.

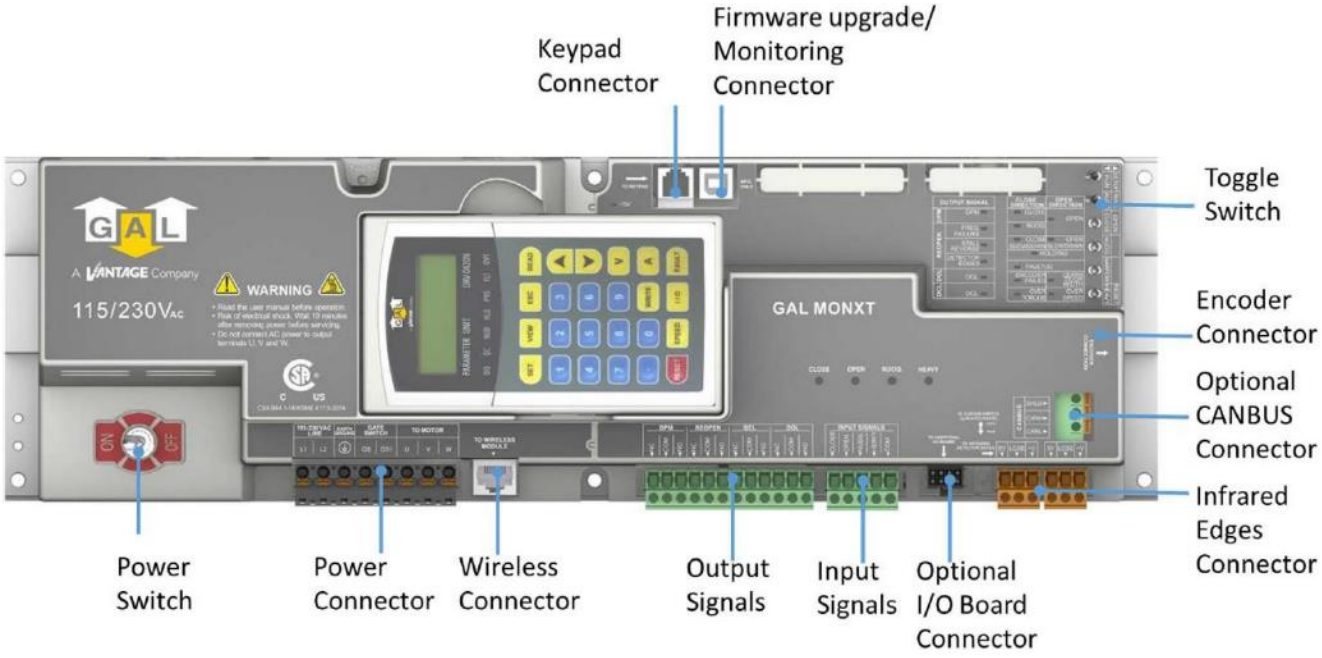
DISPLAY THE CLOSING TIME:

- The Code Distance closing time is displayed to assist users in complying with codes.

AUTO FALLBACK TO SLOW MODE IF SENSORS OR ENCODER FAIL:

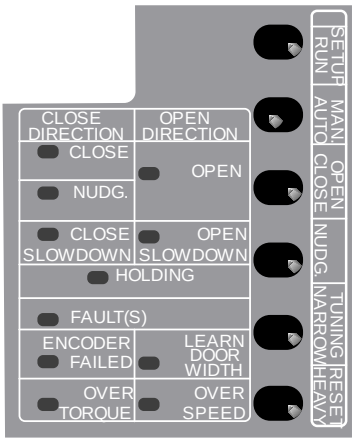
- If the encoder failed, the MONXT door operator will continue to operate in slow-scanning mode until the repair is completed
- Door Protection Monitor (DPM) is used as an input for the FM-0018N, which is a door lock and gate switch protection device. Its purpose is to meet the ASME A17.1 RULE 210.15 and CAN/CSA-B44-M90 RULE 3.12.1.5.
- Fault Monitor device can be purchased separately via GAL.

4.2 ELECTRICAL COMPONENTS OF THE MONXT



4.2.1 Toggle Switches

Six toggle switches are provided for users to Tune, Troubleshoot, Operate in Manual Mode, and Verify the operational functions of the door.

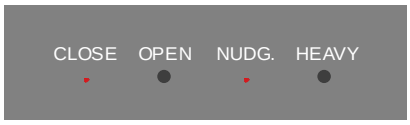


SEQ. NO.	LABEL	REMARKS
1	RUN/SETUP (Run or Setup)	**RUN:** The RUN position is for normal operation. **SETUP:** The SETUP position allows users to adjust certain crucial Parameters that can not be changed during operation. The SETUP position will put the drive into the STOP mode, and no power will be delivered to the motor.
2	AUTO/MAN. (Automatic or Manual)	**AUTO:** The AUTO position is for normal operation. **MAN.:** The MAN. position allows opening and closing the door by means of the OPEN/CLOSE NUDG., NARROW, and HEAVY toggle switches.
3	CLOSE/OPEN (Close or Open)	When the RUN/SETUP Sw is in RUN & AUTO/MAN. Sw is in the MAN. position, if the CLOSE/OPEN switch is pressed in the OPEN or CLOSE positions, it will Open or Close the door respectively.
4	NUDG. (Nudging)	NUDG. Sw allows closing the door at a reduced speed (Nudging speed). To test the Nudging speed in Manual mode, the RUN/SETUP Sw is in RUN & the AUTO/MAN. Sw must be in the MAN. Position. The CLOSE/OPEN and NUDG. switches must be pressed to the CLOSE and NUDG. positions.
5	NARROW/ TUNING (Narrower Door or Tuning)	When the RUN/SETUP Sw is in RUN & the AUTO/MAN. Sw is in the MAN. position, if the NARROW switch is pressed in the NARROW position, it will work in conjunction with the OPEN/CLOSE, and NUDG. switches to Open, Close, or Nudge the door. See details of the Tuning provided in the Manual
6	HEAVY/RESET (Heavier Door or Reset)	**HEAVY:** When the RUN/SETUP Sw is in RUN & the AUTO/MAN. Sw is in the MAN. position, if the HEAVY/RESET switch is pressed in the HEAVY position, it will work in conjunction with the OPEN/CLOSE, NUDG. switches to Open, Close, or Nudge the heavier door. **RESET:** The RESET position allows a manual reset of faults if faults have occurred in the drive. Otherwise, pressing the RESET side has no effect.

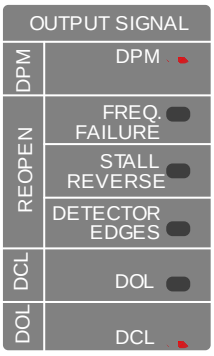
4.2.2 LED Indicators

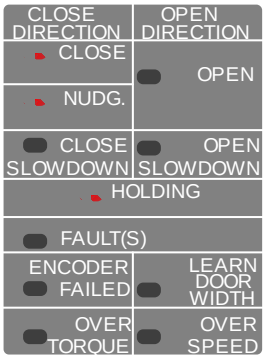
A red LED is provided on each of the input modules (Open, Close, Nudge., or Heavy). There are more LEDs, on the mainboard, to indicate the completion of the door tuning, the directions, the final limit positions, nudging, holding, dynamic slowdown distances, input signals, output signals, and voltage levels as shown below.

LED 1



LED 2





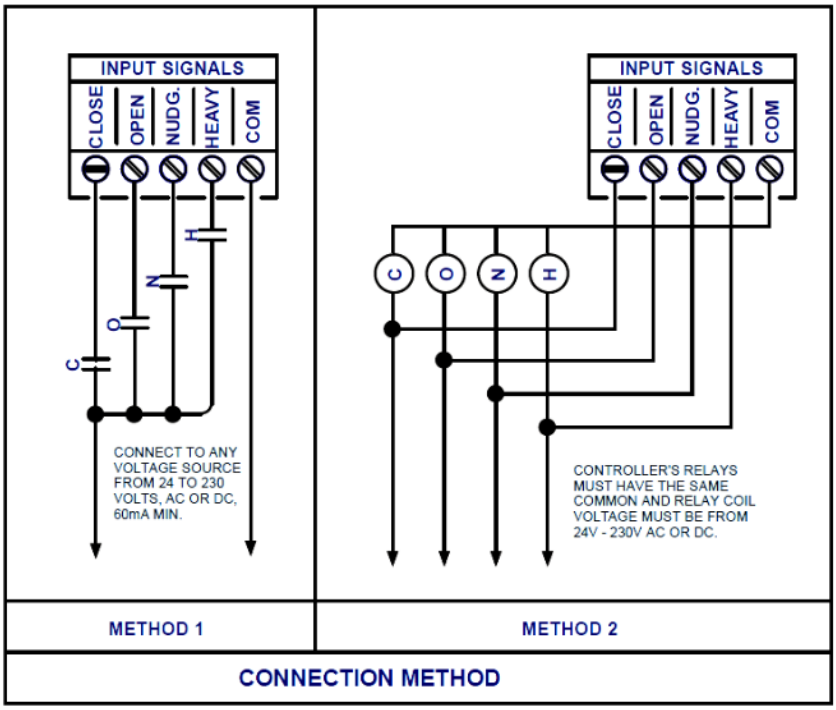
LED 3

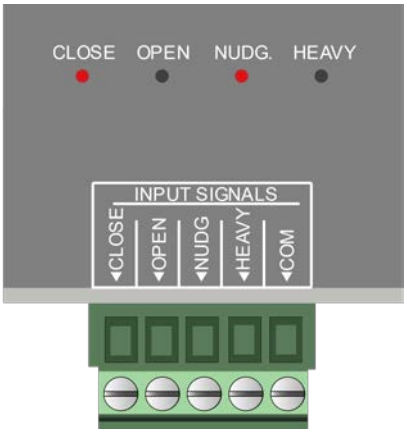
LABEL	REMARKS
DOL	DOL: Door Open Limit. After Initial Tuning, MONXT will assign the DOL output signal at the fully open position of the door. Par. 81
AUX NARROWER	Set Par. 199=0 to use the NARROWER position (Par. 67) as the DOL input of the Narrower door. Set par. 199 = 1 to deselect the NARROWER position (Par. 67) as the DOL input of the Narrower door.
DPM	DPM: Door Protection Monitor, the DPM cam triggers the DPM Relay and activates ½ inch before the Gate switch makes. Par. 66
DCL	DCL: Door Close Limit. After Initial Tuning, MONXT will assign the DOL output signal at the fully open position of the door. Par. 139

4.2.3 Inputs

Four inputs are provided to interface with OPEN, CLOSE, NUDGE, and HEAVY commands from the elevator controller.

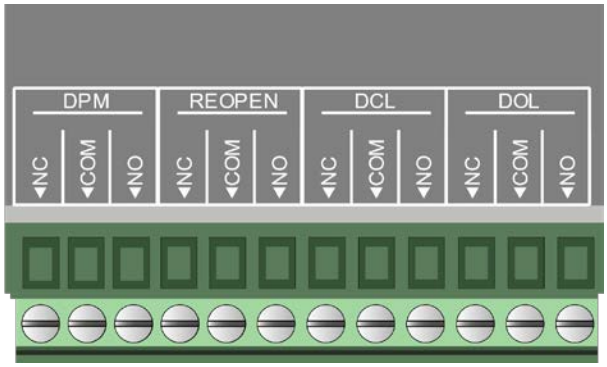
These *universal inputs* accept control signals either in the form of dry contacts or signal voltages from 24-230V AC or DC. LEDs of the input modules draw currents from the elevator controller, not from the MONXT. Therefore, these LEDs must be lit to indicate that the elevator controller sent commands. In AUTO mode, the MONXT will only monitor input signals from the elevator controller, not from toggle switches.





4.2.4 Outputs

There are four relay outputs DPM, RE-OPEN, DOL, and DCL signals in the form of contacts. The relay contacts are rated at 10Amp, 250VAC maximum, and 100mA, 12VAC minimum.



LABEL	MEANING	REMARKS
DCL	Door Close Limit	Door Close Limit
DOL	Door Open Limit	Door Open Limit
REOPEN	Re-open	This output is used to flag the elevator controller that the door needs to be reopened. The reopen output DOES NOT reopen the door directly. The signal to reopen the door must come from the elevator controller. Re-open relay is triggered by one of the following detections: - Stall Reverse; controlled by Par. 148. - Frequency Failure; controlled by Par. 136. - Detector Edges; controlled by Par. 202
DPM	Door Protection Monitor	DPM is designed to work with the Fault Monitor (FM). FM is a patented door lock and gate switch protection device. Its purpose is to meet the ASME A17.1 RULE 210.15 and CAN/CSA-B44-M90 RULE 3.12.1.5. The setting position of DPM is ½ inch before the gate switch makes.

4.2.5 Encoder Connection

The optical galvanic isolation encoder is connected to the MONXT drive with DB9 shielded connectors

Figure 26: Encoder Connection

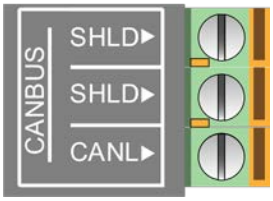
4.2.6 CAN Bus Connection Port

The CAN bus card is one of the methods to interface between and the elevator controller and the MONXT

TO ENABLE CAN BUS:

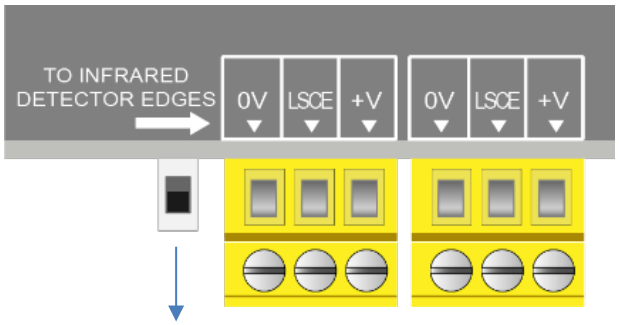
1. Set the RUN/ SETUP switch to SETUP
2. Set Par. 11 = 5.
3. Set the RUN/ SETUP switch to RUN.
4. Set the AUTO/MAN to AUTO

Other communication protocols are also available upon request. However, an agreement between GAL and the requesting party must be made prior to the implementation of the communication protocols. Contact GAL for more details on CAN or other protocols.



4.2.7 Infrared Detector Edges Connection Ports

To simplify connections between infrared detector edges, and the elevator controller, GAL offers GAL Certified Infrared Detector Edges. These infrared detector edges can be connected directly to the MONXT. The procedure below will assist users to plug and play GAL Certified Infrared Detector Edges with the MONXT.



NPN or PNP output:
The info of NPN or PNP output should be obtained prior to installation. Read the label on the cover tube or the detector edges' manual to know the output type of the infrared detector edges. It is either NPN or PNP. Set the selector switch accordingly. If the info of NPN or PNP is unavailable, then, use the trial-and-error method. *Assume that the edges' output is NPN for the 1st trial.*
Set Par. 202 = 1 for NPN type. Set Par. 202 = 2 for PNP type.
Set par. 202 = 0 to disable or should detector edges are **not connected** to the MONXT.
Connect the *GAL Certified Infrared Edges* to connectors that labeled [0V | LCSE |+V]
Note! Connectors that labeled [0V | LCSE |+V are interchangeable.

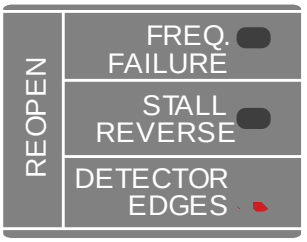
Make sure the REOPEN output contact is connected to the elevator controller.

Test the detector edges:

- Obstruct the infrared detector edges. The DETECTOR EDGES LED, should be ON.
- The REOPEN relay should be activated to send the REOPEN signal to the elevator controller.
- The elevator controller will send the Door Open command signal to the MONXT to REOPEN the door. The LED of the Open Input module should be ON.

If the detector edges function does not work.

- Check the manual for correct connections between edges and the MONXT.
- Check for 24VDC between 0V and +V on either CN4 or CN5.
- Repeat testing the detector edges.



If it still does not work. Then,

- Jump **0V** to LCSE on either CN4 or CN5 connector for NPN type.
- Jump **+V** to LCSE on either CN4 or CN5 connector for PNP type
- The DETECTOR EDGES LED should be OFF.
- The RE-OPEN Relay should be activated.

  Otherwise, the problem is in the MONXT drive.

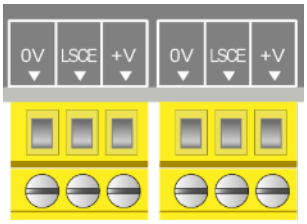
If the above step works as described, then the problem is in the detector edges.

If the infrared detector edges have intermittent problems:

- Check continuity of the TX and RX cables of the infrared detector edges.
- If the cables are good, but the problem still exists, then check the True Earth Ground connection to the edges.
- Users may need to lower the Carrier Frequency in Par. 1 gradually until problems are resolved.

Note! The lower carrier frequency will create more audible noise in the motor.

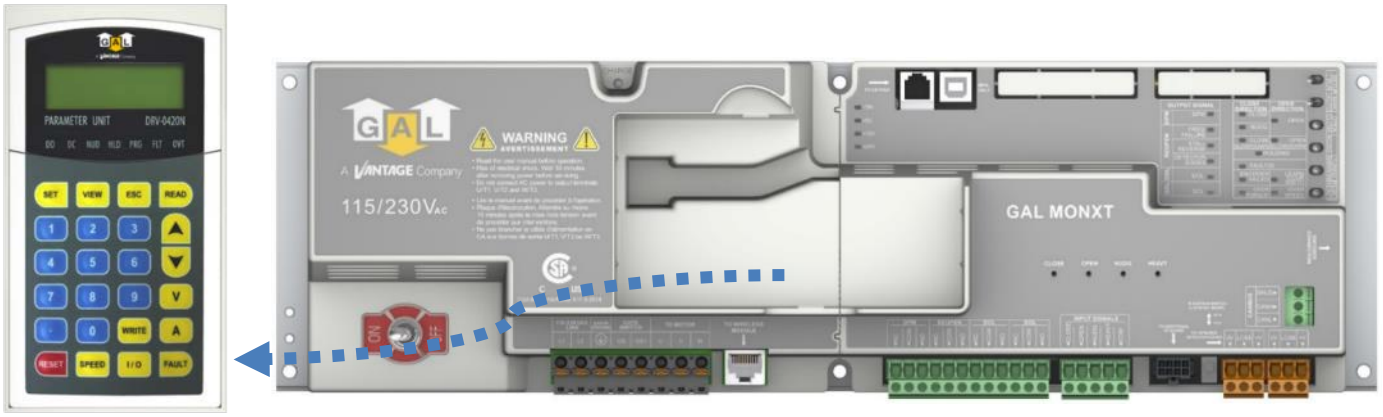
The major advantages of connecting GAL certified infrared detector edges via MONXT are:



- Users do not need to use an extra power supply for the detector edges.
- The REOPEN relay that is used for the infrared detector edges interface also has 2 more safety features to reopen the door. They are over-speed and over-torque detections.
- The table below assists users to identify the colors, numbers of each wire from infrared detector edges to the MONXT door operator.

GAL CERTIFIED INFRARED DETECTOR EDGE CONNECTION									
GAL P/N	MFG.	TX			RX			CONNECTION BETWEEN TX & RX	REMARKS
		V+	LCSE	0V	V+	LCSE	0V		
DPTT-0004N	TRITRONICS	RED	WHITE	ORANGE				NONE	2D
DPFS-1004N	FORMULA SYSTEMS	BLUE 1	BROWN 2	GREEN YELLOW	BLUE 1	BROWN 2	GREEN YELLOW	NONE	2D
DPFS-0015N	FORMULA SYSTEMS	BLACK 1	NONE	GREEN YELLOW	BLACK 1	BLACK 3	GREEN YELLOW	BLACK #2 OF TX & RX	BLACK #3 OF TX IS NOT USED. 3D EDGE
DPSG-0008N	GAL SCANGUARD	BROWN	NONE	BLUE	BROWN	BLACK	BLUE		2D
(♦): Connect an additional wire from 0V to a true EARTH GROUND.									

4.2.8 **Parameter Unit**



The Parameter Unit Is A Tool To Assist Users In The Following Tasks:

- Easy Tuning
- Changing accelerations, decelerations, speeds, torques, and all pertinent parameters of peripheral devices. See the default parameters table for more details.
- Downloading (copying, reading), uploading (writing) to and from the drive.
- Storing all default sets of parameters and a reference working set of parameters.
- Monitoring currents, voltages, inputs, outputs, faults, encoder directions, closing time.
- Resetting the drive if the drive faults.

4.2.9 MONXT Drive

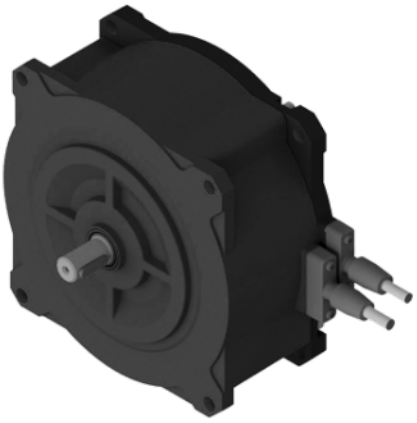
The power connector is featured as follows:

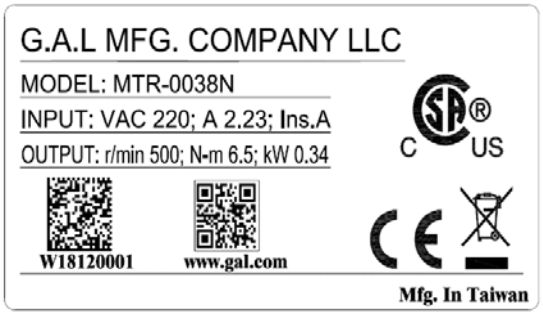
- Single-phase input power supply between L1 & L2 terminals.
- **Note!** 200-230VAC, 50/60Hz, and Apparent Power with minimum 500VA are required.
- Earth ground
- **Note!** A True Earth Ground is required.
- Interlock terminals: GS & GS1.
- **Note!** GS & GS1 are only convenience terminals. They have no internal connection to the MONXT.

3-phase PMSM high torque motor on U, V, W terminals.The connector is a pluggable type to ease the connection and swapping the drive.
The RJ12 mating connector for the parameter unit is located on the MONXT drive.

4.2.10 Motor

340W 3-Phase 230V PMSM is used for MONXT door operators.





4.3 Initial Setup

GAL has done the initial wiring prior to shipping the MONXT to users. However, the following procedure is described here to complete the initial setup process

1. **Connect to mains power:** Wire power into terminals marked L1,L2, and ground.

2. **Motor/Encoder Connecitons:** Check that motor and encoder are connected from GAL. Motor power wires are shown in the picture above. The encoder connection is shown in Figure 26.

3. **Interlock/Edge Detector:** Check that the door interlock is wired into terminals GS and GS1 and the detector edges (if used) are connected\

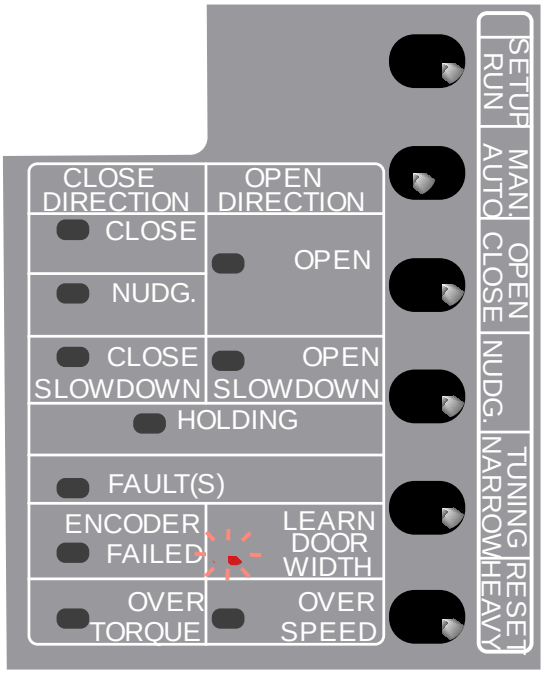
4. **Power on:**

5. **Easy Tuning® Method:**

TUNING FROM DRIVE:

1. Manually Close the Door;
2. Set RUN/SETUP toggle to SETUP
3. Set MAN/AUTO toggle to MAN
4. Hold TUNING/NARROW toggle towards TUNING for 3 seconds
5. Follow prompts on parameter unit

The LEARN DOOR WIDTH should be
Flashing during tuning and turning OFF after the
Tuning is complete



1. **How to change parameter values:**

   Press SET Enter a parameter number

   Press READ Enter a new value. Press WRITE

2. **How to read (copy) a parameter set from a drive:**

   Press SET Press ▲ Press READ

3. **How to write (download) a parameter set to a drive:**

   Press SET Press ▲ Press WRITE

4. **How to choose the operating source:**

   Set Par. 11 = 1 for Parallel discrete operation. Set Par. 11 = 5 for the Serial CAN bus operation.

5. **How to verify can bus operation:**

Press VIEW Press ▲ or ▼ until item #9 Disp. Group is reached
Press READ Press ▲ or ▼ until CAN TX Counter
D30, or CAN RX Counter D31 is reached. If counters are increasing, then
the CAN bus is functioning.

Default parameters:

INSTRUCTION FOR LINEAR MONXT PARAMTER UNIT				
READ (COPY) FROM THE DRIVE: Press SET, Press UP Arrow, Press READ.				
WRITE (DOWNLOAD) TO THE DRIVE: Press SET, Press UP Arrow, Press WRITE.				
CHANGE PARAMETERS: Press SET, Enter Parameter Number, Press READ, Enter New Value, Press WRITE.				
TUNING WITH KEYPAD: Manually Close the Door, Turn the Power SW ON, Set RUN/SETUP SW to SETUP. Set MAN/AUTO SW to MAN, Set Par. 63=1, Press the toggle SW to TUNING, then Release. Wait for the Display shows Tuning Completed				
CLOSING	**Pr#**	**RANGE**	**DEFAULT VALUE**	
			C/P	**S/O**
MAX. CLOSE SPEED	136	0-100%	45%	45%
HOLDING TORQUE	137	0-200%	70%	70%
HOLDING SPEED	138	0-100%	3%	3%
HOLDING BEGINS	139	0-100%	3%	3%
CLOSE TORQUE	140	0-200%	80%	80%
HIGH SPEED CLOSE (HSC)	141	0-100%	37.50%	30%
FINAL SPEED CLOSE (FSC)	142	0-100%	4.50%	4.50%
FSC BEGINS	143	0-100%	5%	5%
NUDGING SPEED	144	0-100%	15%	22.50%
ACCELERATION TIME	145	0-360s	6s	6s
DECELERATION TIME	146	0-360s	15s	20s
STALL REVERSE FORCE	148	0-200%	16%	16%

OPENING	Pr#	RANGE	DEFAULT VALUE	
			C/P	S/O
QUICK STOP ON REVERSE	78	0-100%	22.90%	22.90%
HOLDING TORQUE	79	0-200%	70%	70%
HOLDING SPEED	80	0-100%	3%	3%
HOLDING BEGINS	81	0-100%	99%	99%
SLOW SPEED OPEN (SDO)	82	0-100%	4.50%	7.50%
CLUTCH ENGAGE DISTANCE	83	0-100%	12%	12%
HIGH SPEED OPEN (HSO)	84	0-100%	67.50%	67.50%
FINAL SPEED OPEN (FSO)	85	0-100%	4.50%	7.50%
FSO BEGINS	86	0-100%	98%	98%
ACCELERATION TIME	87	0-360s	6s	4s
DECELERATION TIME	88	0-360s	12s	12s
OPEN TORQUE	120	0-200%	15.40%	15.40%

COMMON	Pr#	RANGE	DEFAULT VALUE	
			C/P & L	S/O
SELECTION OF RIGHT (R)/ LEFT (L)/ CENTER PARTING (C/P) DOOR	42	1-2	1	2
CARRIER FREQUENCY	1	2-15Hz	12Hz	12Hz
SCANNING SPEED	61	0-100%	13.50%	13.50%
TUNING SPEED	62	0-100%	13.50%	13.50%
EDGES DELAY TIME	197	0-180s	15s	15s
EDGES HOLD TIME	206	0-180s	5s	5s
BUZZER DELAY TIME	198	0-180s	10s	10s
OVERLOAD	217	0-100%	0.69%	0.69%
BUZZER MODE	205	0-2	**0: DISABLE** 1: CONTINUOUS 2: PULSATING	
DETECTOR EDGES MODE	202	0-2	**0: DISABLE** 1: NPN 2: PNP	
NARROWER DOOR	199	0-1	**0: DISABLE** 1:ENABLE	
NARROWER DOOR DOL	204	0-1	**0: USE BOTH DOL & AUX** 1:USE DOL	
REOPEN RELAY MODE	207	0-1	**0: MAINTAIN** 1:DISABLE WHEN EDGES RELAY ON	
CLUTCH DISTANCE UNIT	76	0-1	**0: PERCENTAGE** 1: PULSE COUNTS	
CODE DSTANCE REG/HEAVY	69	0-65535	**1" FOR S/O. 2" FOR C/P FROM DCL**	
CODE DSTANCE NARROW	70	0-65535	**1" FOR S/O. 2" FOR C/P FROM DCL**	
CANBUS NODE ID	246	7-8	**7 FOR FRONT DOOR. 8 FOR REAR DOOR**	
EASY TUNING	63	0-1	**0: DISABLE** 1:ENABLE	

Convenience keys:

Press V to display output voltage and pulse count

Press I/O to display input and output signals.

Press FAULT and ▼ or ▲ to view all recent faults.

Press A to display output current.

Press RESET to reset the drive if the drive faults

View key:

The VIEW key helps users navigate through the Parameter Unit.

Press VIEW then press ▼ or ▲ to navigate all items under the VIEW section.

Once the desired item is found, press READ to view an item.

Press ESC at any time to get back to the previous display.

The following items are under the VIEW key:

1. V/I/Hz – Displays Voltage (V), Current(A), Command Frequenct (Hz), Actual Frequency (Hz)
2. I/O – Inputs & Outputs Monitoring
3. Faults – Most recent drive faults
4. Counters – Cycle count of drive
5. User List –
6. Max Clo Speed – Closing speed in Hz
7. Max Clo Force – Closing force in % of maximum
8. GAL Defaults –
9. Disp Group –
10. CLO/OPN Time – Open and close times of doors; total time and code time.
11. CAN Analyzer – Troubleshoot CAN communication

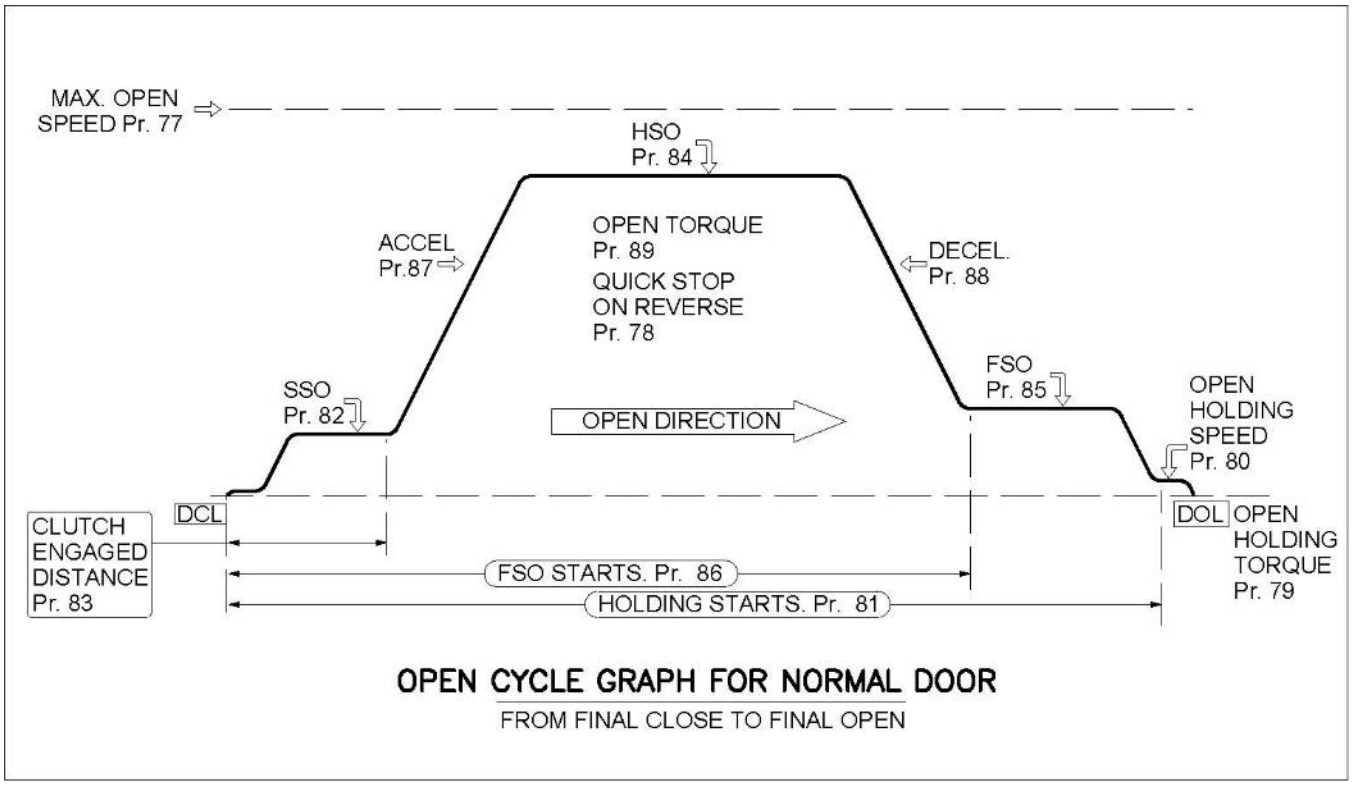
LED INDICATORS

There are 7 LEDs on the Parameter Unit. DO, DC, NUD, HLD, PRG, FLT, and OVT. They have the following meanings:

DO – Door Open
DC – Door Close
NUDG – Nudging
HLD – Holding
PRG – Programming Mode
FLT – Fault
OVT – Over Torque

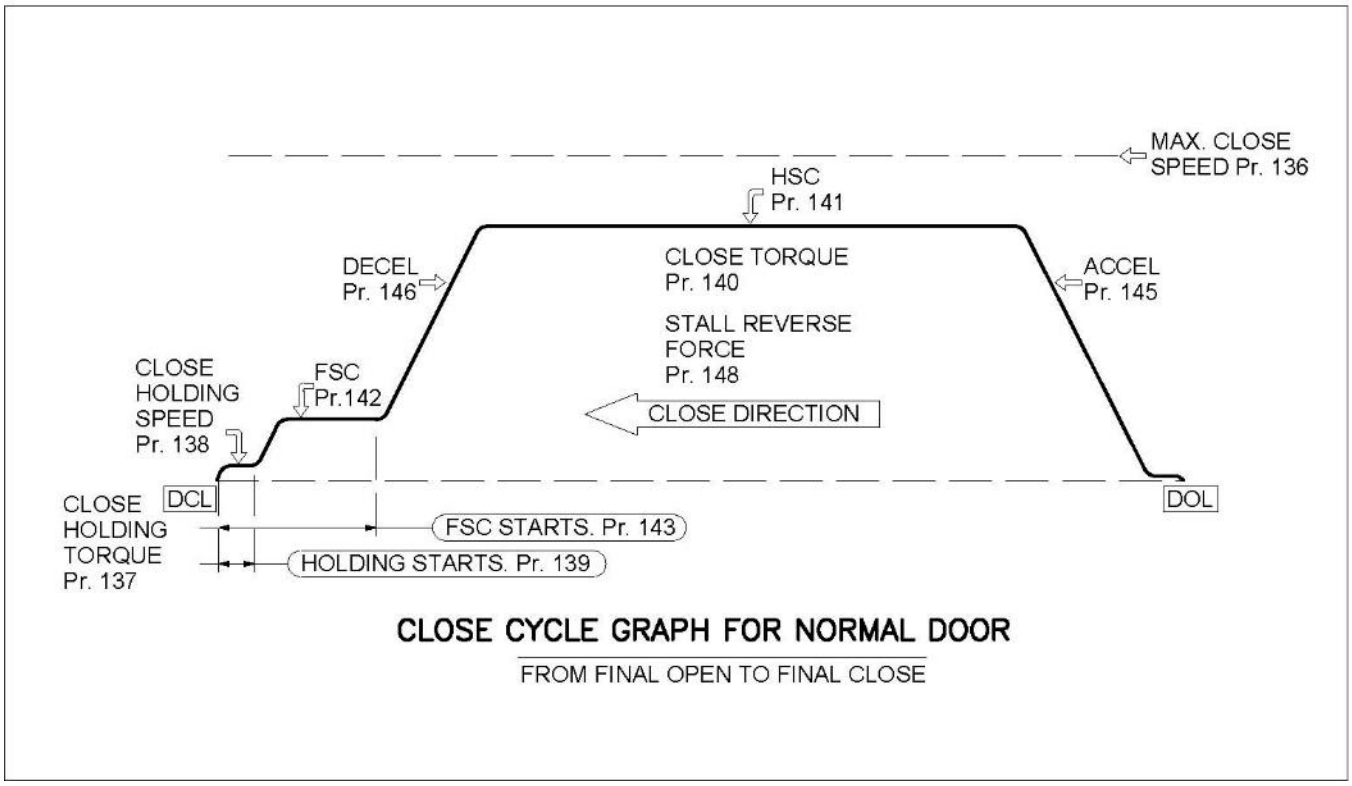
4.5 Speed Profiles of MONXT

4.5.1 Normal Door



OPEN CYCLE GRAPH FOR NORMAL DOOR

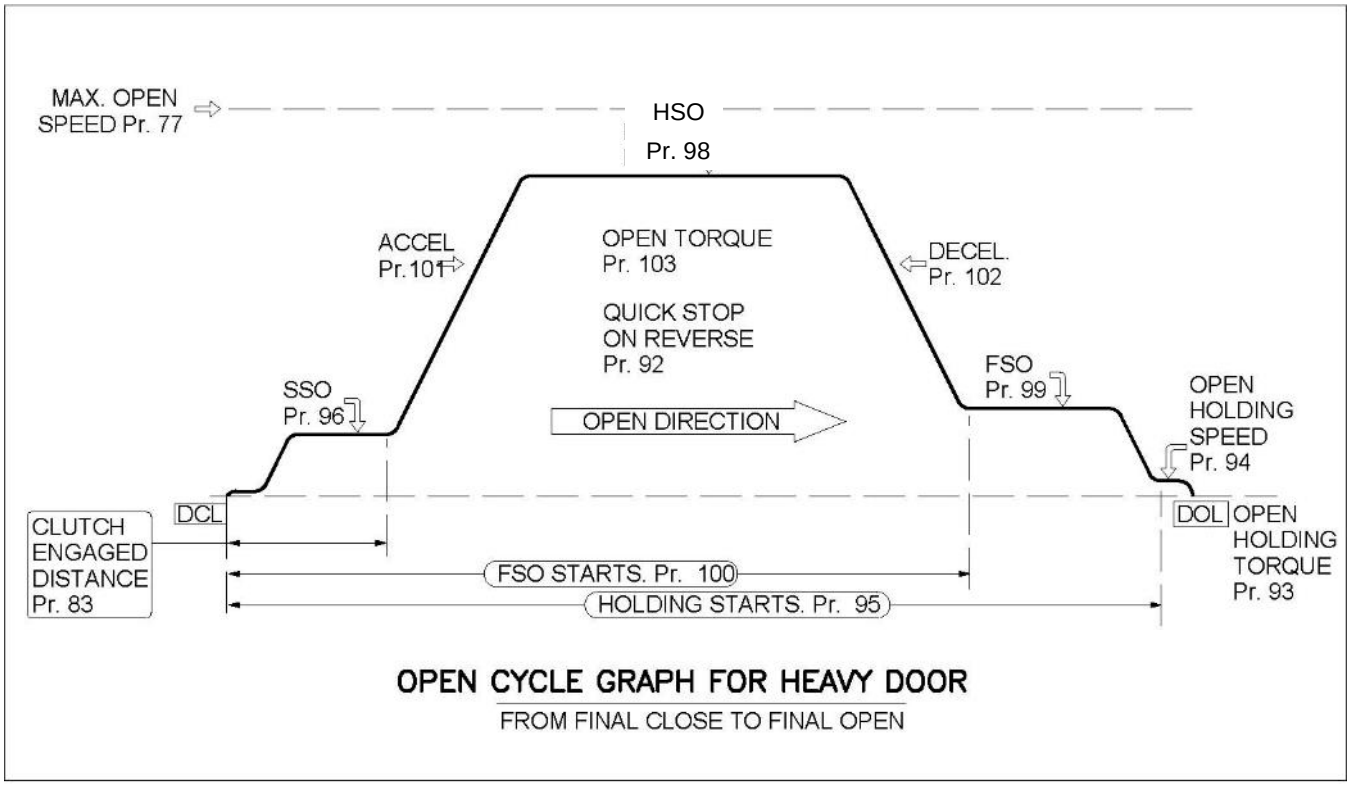
FROM FINAL CLOSE TO FINAL OPEN



CLOSE CYCLE GRAPH FOR NORMAL DOOR

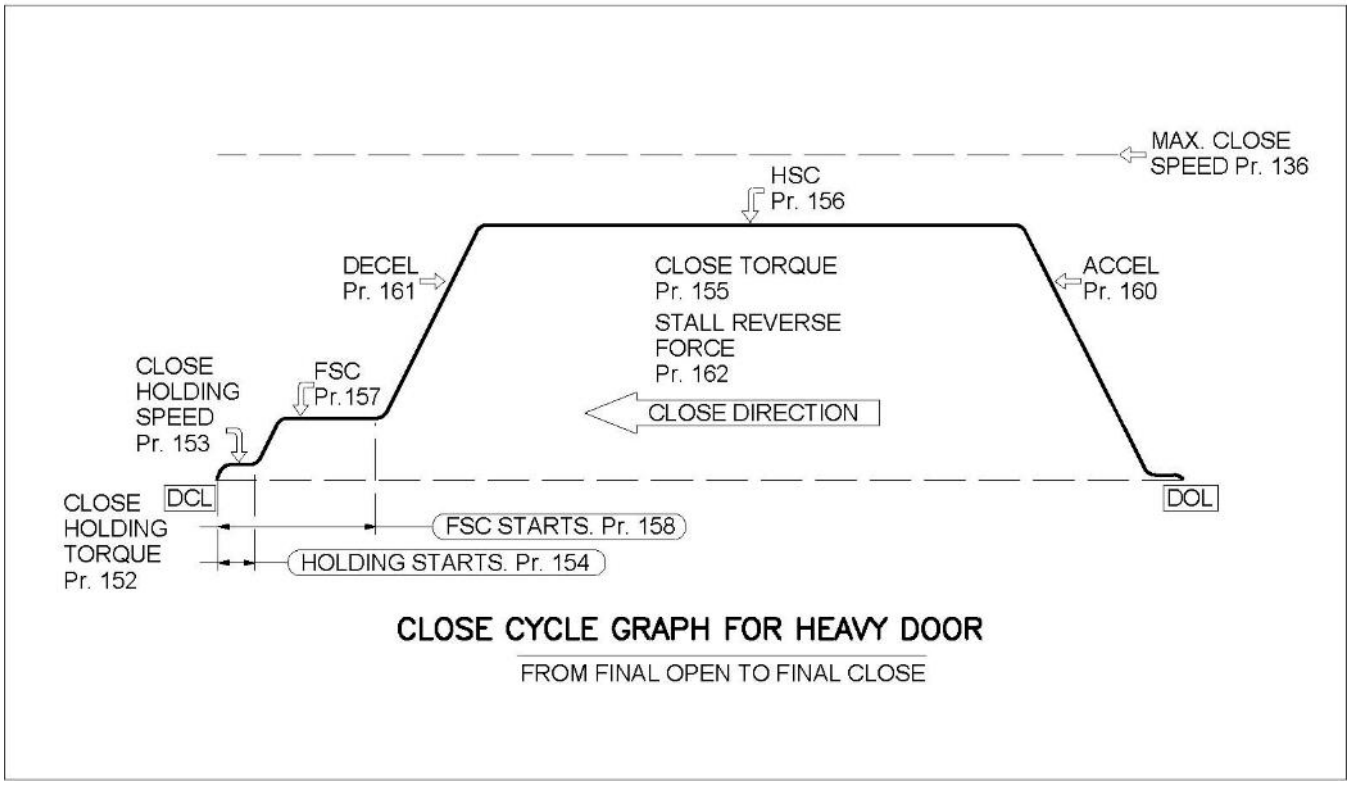
FROM FINAL OPEN TO FINAL CLOSE

4.5.2 Heavy Door



OPEN CYCLE GRAPH FOR HEAVY DOOR

FROM FINAL CLOSE TO FINAL OPEN



CLOSE CYCLE GRAPH FOR HEAVY DOOR

FROM FINAL OPEN TO FINAL CLOSE

4.6 MONXT Parameters

MONXT Pr. No.	Functions ■: Regular ■: Heavy ■: Narrow	Max	Min	Default Linear Straight C/P	Default Linear Straight S/O	Read/Write	1: Available to set when running	Setting	LCD Text Description(16bit)	LCD Text Unit(4 bit)	LCD Text Change to % ?
GROUP 0 : USER PARAMETERS											
0	Stop mode	3	0	3	3	Read & Write	1	0: Free Run 1: 1st Open & Close Decel Time 2: 2nd Open & Close Decel Time 3: The Fast Decel Time	Stop Mode		
1	Carry Frequency	15	2	10	10	Read & Write	1	2~15 kHz	Carrier Freq.	kHz	
2	Parameter Reset	9999	0	0	0	Read & Write	0	06: Clear all fault record 08: Keypad lock 10: Reset all Parameters	Parameter Reset		
10	Auto Voltage Regulation	2	0	0	0	Read & Write	1	0: AVR function enable 1: AVR function disable 2: AVR function disable for decel.	AVR function		
11	Operate Source	6	0	1	1	Read & Write	1	1: External terminals. 3: RS-485 communication. 5. CAN Bus 6. Blue-tooth	Start Source		
15	User Group read selection	65535	0	0	0	Read & Write	1	6301 : for GAL (ALL PARAMETER)	User Gp sel		
GROUP 1: MOTOR & ENCODER PARAMETERS											
26	Maximum output voltage	240.0	0.0	220.0	220.0	Read only	——	0.0V to 240.0V, should be higher than Pr.28	Motor Rated Volt	V	
27	Max Output Freq.	120.00	0.00	66.66	66.66	Read only	——	0.00 to 120.00 Hz, should be higher than Pr.29	Max. Speed	Hz	
28	MIN Output Voltage	100.0	0.0	0.0	0.0	Read only	——	0~100.0% of Pr.26	Min. Voltage	%	
29	Min Output Freq.	120.00	0.00	0.00	0.00	Read only	——	0.00 to 120.00 Hz, should be lower than Pr.27	Min. Output Spd	Hz	
30	Motor Auto-Tuning	2	0	0	0	Read & Write	0	00: Disable 01: Auto-tuning for PM motor parameters 02: Auto-tuning for PG offset angle without load	Auto tuning		
31	Motor rated current	4.20	0.70	2.23	2.23	Read & Write	0	FLA*5% ~ FLA*120% (FLA=3.0A)	Motor Rated Curr	A	
32	Motor rated power	655.35	0.00	0.34	0.34	Read only	——	Read automatically by setting Pr.31	Motor Rated POW	Kw	
33	Motor Rated speed	65535	0	500	500	Read only	——	Read automatically by setting Pr.31	Motor Rated SPE	rpm	
34	Motor pole No.	96	2	16	16	Read only	——	02 to 96	Poles of motor	pol	
35	Motor Rs	655.35	0.00	4.21	4.21	Read only	——	0.00~655.35 Ω	R1 line to line	ohm	
36	Motor Inductance	6553.5	0.0	22.3	22.3	Read only	——	0.0~6553.5mH	Lq line to line	mH	
41	Encoder pulses	25000	0	1024	1024	Read only	——	0 ~ 25000	Pulse per rev.	pls	
42	PG fbk input setting	2	0	1	1	Read & Write	0	00: Disable 01: Forward / Counterclockwise rotation 02: Reverse / Clockwise rotation	Encoder Input		
43	Electrical Gear A	5000	1	100	100	Read & Write	0	1 ~ 5000	Eletric Gear A		
44	Electrical Gear B	5000	1	100	100	Read & Write	0	1 ~ 5000	Eletric Gear B		
46	PG fbk Speed deviation level	79.99	0.00	76.66	76.66	Read & Write	1	0.00 ~ 79.99 Hz	Fbk Deviation	Hz	
47	Spd fbk error detect time	10.0	0.0	1.0	1.0	Read & Write	1	0.0 ~ 10.0 sec	Fbk Error Time	sec	
48	Sensorless Enable (PMHFI_Enable)	2	0	1	1	Read & Write	0	0: Fault and stop 1: Fault and auto-reset for keeping operation 2: Fault amd auto-reset for keeping operation. Auto recover if PG is detected	Sensorless Enable		
49	Door Width(inch)	65535	0	48	48	Read only	——	0~65535 inch	Door Width(inch)	"	
50	Door Weight	1200	200	225	225	Read & Write	0	200 ~ 1200 lbs	Door Weight	lbs	
52	DOOR TYPE	5	1	2	2	Read & Write	0	1 – 1S SO 2 – 2S SO 3 – 3S SO 4 – 1S CO 5 – 2S CO	Door Type		
GROUP 2: DOOR PARAMETERS											
58	Basic Tuning Speed Rate	100.0	50.0	77.0	77.0	Read & Write	0	50.0 ~ 100.0%	Btun Speed Rate	%	
59	Stall Current Level of Learning	200.0	0.0	180.0	180.0	Read & Write	1	0.0~200.0%	Learning Current Lev	A	YES
60	Close average kinetic energy(Smart tuning)	10.00	3.00	6.00	6.00	Read & Write	0	3.00 ~ 10.00 J (For Smart tuning)	Clos ave-kinetic	J	
61	Scan Freq.	8.63	0.10	6.00	6.00	Read & Write	1	0.10 ~ 8.63Hz, should be lower than Par.144 & Par.159	Scan Spd	Hz	
62	Learning Freq.	120.00	0.10	5.00	5.00	Read & Write	1	0.1 ~ 120.00Hz	Learning Spd	Hz	
63	Auto-Learning	1	0	0	0	Read & Write	0	0: disable 1: enable	Learning Mode		
64	Regular Door Width	65535	0	8800	8800	Read & Write	0	0~65535pulse	Regular Width	pls	
65	Narrow Door Width	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Narrow Width	pls	
66	Advance DPM	100.0	0.0	7.5	7.5	Read & Write	1	0 ~ 100.0 %	Advance DPM	%	
67	Advance AUX	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Advance AUX	%	
68	Advance DCL	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Adv. Close Limit	%	
69	CODE DISTANCE REG/HEAVY	65535	0	8488	8488	Read only	TBD.	1" FOR S/O. 2" FOR C/P FROM DCL	Code width reg.		
70	CODE DISTANCE NARROW	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.		
71	Motor direction	2	1	1	1	Read & Write	0	Ensure the direction of the Encoder is in sync with the Motor direction. This parameter can be learned automatically by easy tuning.	Hand Selection		
73	Stall Current Level of Scan	200.0	0.0	180.0	180.0	Read & Write	1	0.0 ~ 200.0%	Scan Current Lev. H	A	YES
GROUP 3: OPEN DIRECTION PARAMETERS											
76	Clutch Distance	576	320	320	320	Read & Write	0	320~576pulse	CLUTCH Distance	pls	
77	ACC. Quick Stop Rev.	250.0	0.0	180.0	180.0	Read & Write	1	0.0 ~ 250.0% of Motor Rated Current	ACC. Quick Stp Rev.	%	YES
78	Quick Stop Rev.	200.0	0.0	180.0	180.0	Read & Write	1	0.0 ~ 200.0% of Motor Rated Current	Quick Stp Rev.	%	YES
79	Holding Torque	100.0	0.0	92.9	92.9	Read & Write	1	0.0~100.0% of 1.2 A	Open HLD Torque	%	YES
80	Holding Speed	180.0	0.0	7.6	7.6	Read & Write	1	0.0 ~ 180.0% of Par.27, should be lower than Par.144	Open HLD Spd	%	YES
81(95)	Holding Start	100.0	0.0	100.0	100.0	Read & Write	1	0 ~ 100.0 % of Door Width	Holding Start	%	
82(96)	Slow Speed Open	180.0	0.0	5.1	5.1	Read & Write	1	0.0 ~ 180.0% of Par.27, should be lower than Par.144	Slow Spd SSO	%	YES
83(97)	High Speed Open Start	100.0	0.0	10.0	5.0	Read & Write	1	0.0~100.0%	HSO Start	%	
84	High Speed Open	180.0	0.0	42.3	42.3	Read & Write	1	0.0 ~ 180.0% of Par.27, should be lower than Par.126, higher than Par.144	High Spd HSO	%	YES
85	Final Speed Open	180.0	0.0	2.5	2.5	Read & Write	1	0.0 ~ 180.0% of Par.27, should be lower than Par.144	Final Spd FSO	%	YES
86(100)	Final Speed Open Start	100.0	0.0	93.0	95.0	Read & Write	1	0 ~ 100.0 % of Door Width	FSO Start	%	
87	Open Acc. Time	100.0	0.1	1.7	1.7	Read & Write	1	0.1 ~ 100.0 sec	Open Acc. TM	sec	
88	Open Dec. Time	100.0	0.1	1.7	1.7	Read & Write	1	0.1 ~ 100.0 sec	Open Dec. TM	sec	
91	ACC. Quick Stop Rev.	250.0	0.0	180.0	180.0	Read & Write	1	0.0 ~ 250.0% of Motor Rated Current	Hvy HSO Start	%	YES

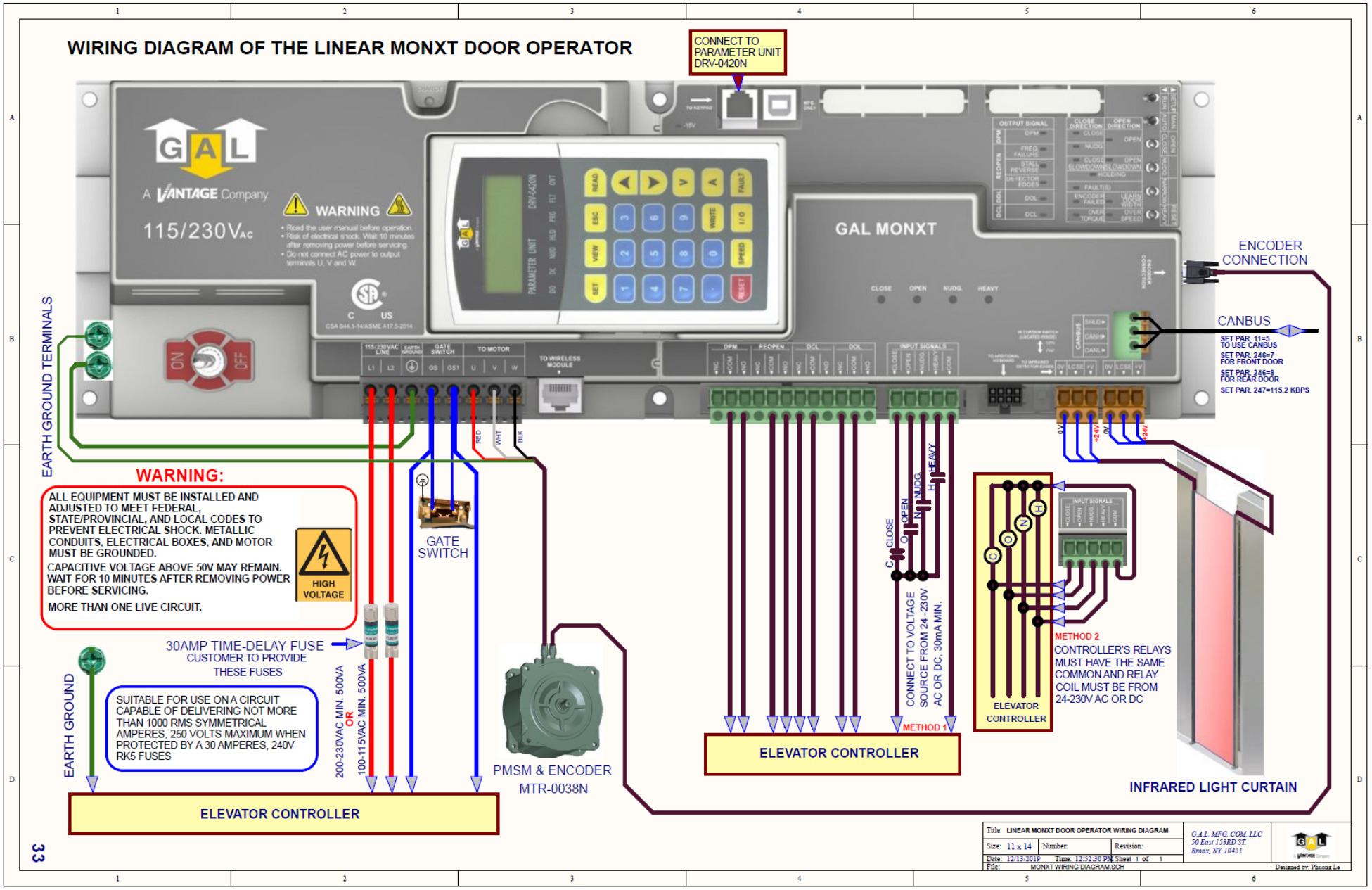
MONXT Pr. No.	Functions ▫ : Regular ▫ : Heavy ▫ : Narrow	Max	Min	Default Linear Straight C/P	Default Linear Straight S/O	Read/Write	1: Available to set when running	Setting	LCD Text Description(16bit)	LCD Text Unit(4 bit)	LCD Text Change to % ?
92	Quick Stop Rev.	200.0	0.0	180.0	180.0	Read & Write	1	0.0 ~ 200.0% of Motor Rated Current	Hvy Quick Rev.	%	YES
93	Holding Torque	100.0	0.0	92.9	92.9	Read & Write	1	0.0~100.0% of 1.2 A	Hvy Open HLD Tor	%	YES
94	Holding Speed	180.0	0.0	7.6	7.6	Read & Write	1	0.0 ~ 180.0% of Par.27, should be lower than Par.159	Hvy Open HLD Spd	%	YES
95(81)	Holding Start	100.0	0.0	100.0	100.0	Read only	——	0 ~ 100.0 % of Door Width	Hvy HLD Start	%	
96(82)	Slow Speed Open	180.0	0.0	5.1	5.1	Read only	——	0.0 ~ 180.0% of Par.27, should be lower than Par.159	Hvy Spd SSO	%	YES
97(83)	High Speed Open Start	100.0	0.0	5.0	5.0	Read only	——	0.0 ~ 100.0%	Hvy HSO Start	%	
98	High Speed Open	180.0	0.0	42.3	42.3	Read & Write	1	0.0 ~ 180.0% of Par.27, should be lower than Par.126, higher than Par.159	Hvy Spd HSO	%	YES
99	Final Speed Open	180.0	0.0	2.5	2.5	Read & Write	1	0.0 ~ 180.0% of Par.27, should be lower than Par.159	Hvy Spd FSO	%	YES
100(86)	Final Speed Open Start	100.0	0.0	95.0	95.0	Read only	——	0 ~ 100.0 % of Door Width	Hvy FSO Start	%	
101	Open Acc. Time	100.0	0.1	1.7	1.7	Read & Write	1	0.1 ~ 100.0 sec	Hvy Open Acc. TM	sec	
102	Open Dec. Time	100.0	0.1	1.7	1.7	Read & Write	1	0.1 ~ 100.0 sec	Hvy Open Dec. TM	sec	
105	ACC. Quick Stop Rev.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar ACC.Qu Rev.	A	YES
106	Quick Stop Rev.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar Quick Rev.	A	YES
107	Holding Torque	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar Open HLD Tor	A	YES
108	Holding Speed	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar Open HLD Spd	Hz	YES
109	Holding Start	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar. Holding Start	%	
110	Slow Speed Open	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar Spd SSO	Hz	YES
111	High Speed Open Start	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	HSO Start	%	
112	High Speed Open	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar Spd HSO	Hz	YES
113	Final Speed Open	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar Spd FSO	Hz	YES
114	Final Speed Open Start	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar FSO Start	%	
115	Open Acc. Time	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar Open Acc. TM	sec	
116	Open Dec. Time	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar Open Dec. TM	sec	
120	DOL Holding Torque	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar HLD Torque	A	YES
126	Max. Open Speed	66.66	0.00	29.00	29.00	Read & Write	1	0.00 ~ 66.66Hz, should be lower than Par.27, higher than Par.84 & Par.98	Max. Open Spd	Hz	
127	Open Timeout	180.0	0.0	50.0	50.0	Read & Write	0	0.0 ~ 180.0 sec (0.0: disable)	Open Timeout	sec	
128	Open Lock Torq. 1	150.00	0.00	80.00	80.00	Read & Write	1	0.0 ~ 150.0% of Motor Rated Current	Open Lock Torq1	A	YES
129	Open Lock Torq. 2	150.00	0.00	80.00	80.00	Read & Write	1	0.0 ~ 150.0% of Motor Rated Current	Open Lock Torq2	A	YES
130	Open Holding Time	999.9	0.0	0.0	0.0	Read & Write	1	0.0 ~ 999.9 sec		sec	
131	Open Acc S-Curve	10.0	0.0	0.2	0.2	Read & Write	1	0 ~ 10.0 sec	Open Acc Scurve	sec	
132	Open Acc S-Curve2	10.0	0.0	0.2	0.2	Read & Write	1	0 ~ 10.0 sec	Open Acc Scurve2	sec	
	GROUP 4: CLOSE DIRECTION PARAMETERS										
136	Close Obstruct limit Force	54.0	0.0	38.0	38.0	Read & Write	1	0.0 ~ 54.0% of Motor Rated Current	Clo Obstruct LIM	%	
137	Holding Torque	100.0	0.0	79.9	79.9	Read & Write	1	0.0~100.0% of 1.2 A	Close HLD Torq.	A	YES
138(153)	Holding Speed	180.0	0.0	7.6	7.6	Read & Write	1	0.0 ~ 180.0% of Par.27, should be lower than Par.144	Close HLD Spd	Hz	YES
139(154)	Holding Start	100.0	0.0	6.0	6.0	Read & Write	1	0 ~ 100.0 % of Door Width	Holding Start	%	
141	High Speed Close	180.0	0.0	21.8	21.8	Read & Write	1	0.0 ~ 180.0% of Par.27, should be lower than Par.185, hgiher than Par.144	High Spd HSC	Hz	YES
142	Final Speed Close	180.0	0.0	2.5	2.5	Read & Write	1	0.0 ~ 180.0% of Par.27, should be lower than Par.144	Final Spd FSC	Hz	YES
143(158)	Final Speed Close Start	100.0	0.0	14.0	6.0	Read & Write	1	0 ~ 100.0 % of Door Width	FSC Start	%	
144	Nudging Speed	180.0	0.0	12.95	12.95	Read & Write	1	0.0 ~ 180.0% of Par.27, should be lower than Par.141, higher than Par.61, Par.80, Par.82, Par.85, Par.138, Par.142 & Par.150	Nudging Spd	Hz	YES
145	Close Acc. Time	100.0	0.1	1.5	1.5	Read & Write	1	0.1 ~ 3600.0 sec	Close Acc. TM	sec	
146	Close Dec. Time	100.0	0.1	8.0	3.0	Read & Write	1	0.1 ~ 3600.0 sec	Close Dec. TM	sec	
147	ACC. Stall Rev. Force	200	100	120	120	Read & Write	1	100 ~ 200% of Motor Rated Current	Stall Rev Acc	A	YES
148	Stall Rev. Force	150.0	0.0	52.0	52.0	Read & Write	0	0.0 ~ 150.0% of Motor Rated Current	Stall Rev Normal	A	YES
149	Low Spd. Stall Rev. Force	150.0	0.0	52.0	52.0	Read & Write	1	0.0 ~ 150.0% of Motor Rated Current	Stall Rev Lo Spd.	A	YES
150	Slow Spd SSC	180.0	0.0	2.5	2.5	Read & Write	1	0.0 ~ 180.0% of Par.27, should be lower than Pr.141	Slow Spd SSC	Hz	YES
151	HSC Start	100.0	0.0	0.0	0.0	Read & Write	1	0.0~100.0%	HSC Start	%	
152	Holding Torque	100.0	0.0	79.9	79.9	Read & Write	1	0.0~100.0% of 1.2 A	Hvy Clo HLD Torq	A	YES
153(138)	Holding Speed	180.0	0.0	7.6	7.6	Read only	——	0.0 ~ 180.0% of Par.27, should be lower than Par.159	Hvy Close HLD	Hz	YES
154(139)	Holding Start	100.0	0.0	6.0	6.0	Read only	——	0 ~ 100.0 % of Door Width	Hvy HLD Start	%	
156	High Speed Close	180.0	0.0	21.8	21.8	Read & Write	1	0.0 ~ 180.0% of Par.27, should be lower than Par.185, hgiher than Par.159	Hvy High HSC	Hz	YES
157	Final Speed Close	180.0	0.0	2.5	2.5	Read & Write	1	0.0 ~ 180.0% of Par.27, should be lower thanPar.159	Hvy FSC	Hz	YES
158(143)	Final Speed Open Start	100.0	0.0	6.0	6.0	Read only	——	0 ~ 100.0 % of Door Width	Hvy FSC Start	%	
159	Nudging Speed	180.0	0.0	12.95	12.95	Read & Write	1	0.0 ~ 180.0% of Par.27, should be lower than Pr.156, higher than Par.61, Par.94, Par.96, Par.99, Par.153, Par.157 & Par.150	Hvy Nudg Spd	Hz	YES
160	Close Acc. Time	100.0	0.1	1.5	1.5	Read & Write	1	0.1 ~ 100.0 sec	Hvy Clo. Acc.	sec	
161	Close Dec. Time	100.0	0.1	3.0	3.0	Read & Write	1	0.1 ~ 100.0 sec	Hvy Clo. Dec.	sec	
162	ACC. Stall Rev. Force	200	100	120	120	Read & Write	1	100 ~ 200% of Motor Rated Current	Hvy Stall Acc	A	YES
163	Stall Rev. Force	150.0	0.0	52.0	52.0	Read & Write	0	0.0 ~ 150.0% of Motor Rated Current	Hvy Stall Normal	A	YES
164	Low Spd. Stall Rev. Force	150.0	0.0	52.0	52.0	Read & Write	1	0.0 ~ 150.0% of Motor Rated Current	Hvy Stall Dec Lo Spd.	A	YES
167	Holding Torque	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar Clo HLD Torq	A	YES
168	Holding Speed	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar Close HLD	Hz	YES
169	Holding Start	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar HLD Start	%	
171	High Speed Close	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar HSC	Hz	YES
172	Final Speed Close	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar FSC	Hz	YES
173	Final Speed Close Start	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar FSC Start	%	
174	Nudging Speed	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar Nudg Spd	Hz	YES
175	Close Acc. Time	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar Close Acc TM	sec	
176	Close Dec. Time	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar Close Dec TM	sec	
177	ACC. Stall Rev. Force	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar Stall Acc	A	YES
178	Stall Rev. Force	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar Stall Normal	A	YES
179	DEC. Stall Rev. Force	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Nar Stall Dec	A	YES
181	Re-open detect time	10.00	0.00	0.05	0.05	Read & Write	1	0.00~10.00sec	Reopen detect T	sec	
182	Fast Dec. Time	10.0	0.1	0.1	0.1	Read & Write	1	0.1 ~ 10.0 sec	Fastest Dec. TM	sec	
185	Max. Close Speed	66.66	0.00	18.00	18.00	Read & Write	1	0.00 ~ 66.66Hz, should be lower than Par.27, higer than Par.141 & Par.156	Max. Close Spd	Hz	
186	Close Timeout	180.0	0.0	50.0	50.0	Read & Write	0	0.0 ~ 180.0 sec (0.0: disable)	Close Timeout	sec	
187	Close Lock Torq. 1	150.00	0.00	60.00	60.00	Read & Write	1	0.0 ~ 150.0% of Motor Rated Current	Close Lock Torq1	A	YES
188	Close Lock Torq. 2	150.00	0.00	60.00	60.00	Read & Write	1	0.0 ~ 150.0% of Motor Rated Current	Close Lock Torq1	A	YES
189	Close Holding Time	999.9	0.0	0.0	0.0	Read & Write	1	0.0 ~ 999.9 sec		sec	
190	Close Acc S-Curve	10.0	0.0	0.2	0.2	Read & Write	1	0 ~ 10.0 sec	Close Acc Scurve	sec	
191	Close Acc S-Curve 2	10.0	0.0	0.2	0.2	Read & Write	1	0 ~ 10.0 sec	Close Acc Scurve2	sec	

MONXT Pr. No.	Functions ▫ : Regular ▫ : Heavy ▫ : Narrow	Max	Min	Default Linear Straight C/P	Default Linear Straight S/O	Read/Write	1: Available to set when running	Setting	LCD Text Description(16bit)	LCD Text Unit(4 bit)	LCD Text Change to % ?
GROUP 5: DIGITAL I/O PARAMETERS											
195	Function Bit (FUNBIT)	——	——	——	——	——	——	Bit0: Reserved	——	——	
		——	——	1	1	Read & Write	0	Bit1 0: Reopen when obstruct	——	——	
		——	——	0	0	Read & Write	0	Bit2 1: No S-Curve when reopen	——	——	
		——	——	0	0	Read & Write	0	Bit3 1: DEMO	——	——	
		——	——	——	——	——	——	Bit4: Reserved	——	——	
		——	——	——	——	——	——	Bit5: Reserved	——	——	
		——	——	——	——	——	——	Bit6: Reserved	——	——	
		——	——	——	——	——	——	Bit7: Reserved	——	——	
		——	——	——	——	——	——	Bit8: Reserved	——	——	
		——	——	——	——	——	——	Bit9: Reserved	——	——	
196	LED Delay Time	10.00	0.00	3.00	3.00	Read & Write	1	0 ~ 10.00 sec	LED Delay Time	sec	
197	Edges Timout Delay Time	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	EdgesTimeout DLY	sec	
198	Buzzer Delay Time	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	Buzzer Time	sec	
202	DETECTOR EDGES MODE	2	0	2	2	Read & Write	1	0: disable 1: NPN 2: PNP	DET. EDGES MODE		
203	DCL Reset	1	0	0	0	Read & Write	0	0: Enable door position reset in DCL 1: Disable door position reset in DCL	DCL Reset		
204	DOL Mode	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	0: DOL is relevant to AUX 1: DOL is irrelevant to AUX	DOL irre. to AUX		
205	Buzzer Mode	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	0: Buzzer Disable 1: Buzzer Enable (Continue) 2: Buzzer Enable (Discontinue)	Buzzer Mode		
206	Edges Timeout Holding Time	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	0 ~ 180.0 sec	EdgesTimeout HLD	sec	
207	Reopen Relay Mode	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	0: EDGES TIMEOUT RELAY is independent from RE-OPEN RELAY 1: EDGES TIMEOUT RELAY is dependent from RE-OPEN RELAY	Reopen Relay MOD		
208	NARROW DOOR DOL	TBD.	TBD.	TBD.	TBD.	TBD.	TBD.	0: USE BOTH DOL & AUX1: USE DOL	Narrow door DOL		
GROUP 6: PROTECTION PARAMETERS											
215	Software Braking Level	430	350	380	380	Read only	——	350 ~ 430 V	Dynamic Brake Lv	V	
216	DC Brake Duty	100	0	50	50	Read only	——	0 ~ 100 %	Dynamic Brake	%	
217	Motor Overload Current	8.7	0.0	5.3	5.3	Read & Write	0	0 ~ 8.7 A	Motor Overload	A	
221	Number of Retries	10	0	10	10	Read & Write	1	0 ~ 10	Auto restart		
222	Retry Waiting Time	120.0	0.1	60.0	60.0	Read & Write	1	0.1 ~ 120.0 sec	Restart time	sec	
228	Electronic Thermal Overload Selection	2	0	2	2	Read & Write	1	00: Standard Motor 01: Special Motor 02: Disabled	Motor OL Sel		
229	Electronic Thermal Characteristic	600	30	60	60	Read & Write	1	30 ~ 600 sec	Motor OL Time	sec	
GROUP 7: COMMUNICATION PARAMETERS											
240	RS485 Node Number (ADDR)	254	1	1	1	Read & Write	0	1 ~ 254	Comm Node Addr		
241	RS485 Baudrate (BPS)	3	0	1	1	Read & Write	1	0: Baud rate 4800bps 1: Baud rate 9600bps 2:Baud rate 19200bps 3: Baud rate 38400bps	Comm Data Rate		
242	RS485 Modbus Protocol (PROTOCOL)	5	0	3	3	Read & Write	1	0: 7,N,2 (Modbus, ASCII) 1: 7,E,1 (Modbus, ASCII) 2: 7,O,1 (Modbus, ASCII) 3: 8,N,1 (Modbus, RTU) 4: 8,E,1 (Modbus, RTU) 5: 8,O,1 (Modbus, RTU)	Comm Format		
243	RS485 Connection Loss	3	0	3	3	Read & Write	1	0: Warn and keep operating 1: Warn and ramp to stop 2: Warn and coast to stop 3: No warning and keep operating	Comm Loss Action		
244	RS485 Connection Loss Time	60.0	0.0	2.0	2.0	Read & Write	1	0.0 ~ 60.0 sec (0.0: Disable)	Comm Loss TM	sec	
246	CAN Node Number (CAN_ADDR)	255	0	7	7	Read & Write	1	0 ~ 255	CAN Node Addr		
247	CAN Baudrate (CAN_BPS)	6553.5	0	115.2	115.2	Read & Write	1	0 ~ 6553.5kbps	CAN Data Rate	kbp	
Group 8 - Factory Parameter											
265	Clutch engage tuning	1	0	1	1	Read & Write	0	0: disable 1: enable	Clutch engage tuning		
266	Easy-tuning method (ETUNMTHD	1	0	0	0	Read & Write	0	0: Basic tuning 1: Smart tuning	Tuning method		
267	The fastest mechanical opening time (MECHOT)	10.0	1.6	2.0	2.0	Read & Write	1	1.6~10.0 sec	Mech Open Time	sec	
268	test mechanical Closing time (ME	10.0	1.6	2.2	2.2	Read & Write	1	1.6~10.0 sec	Mech Close Time	sec	
269	TRQ_P	65535	0	50	50	Read & Write	1	0 ~ 65535	TRQ_P		
270	TRQ_I	65535	0	10	10	Read & Write	1	0 ~ 65535	TRQ_I		
271	FLUX_P	65535	0	10	10	Read & Write	1	0 ~ 65535	FLUX_P		
272	FLUX_I	65535	0	10	10	Read & Write	1	0 ~ 65535	FLUX_I		
275	DBC Leading 2(DBLEAD2)	65535	0	4096	4096	Read & Write	1	0 ~ 65535	DBC Leading 2		
276	DBC Ration 2 (DBRATIO2)	65535	0	10000	10000	Read & Write	1	0 ~ 65535	DBC Ration 2		
277	DBC Coef. (DBC1)	65535	0.0	600	600	Read & Write	1	0 ~ 65535	DBC Coef.		
278	DBC Dcbus Coef.(DBC2)	65535	0	0	0	Read & Write	1	0 ~ 65535	DBC Dcbus Coef.		
279	DBC Leading 1(DBLEAD)	65535	0	512	512	Read & Write	1	0 ~ 65535	DBC Leading 1		
280	DBC Ratio 1 (DBRATIO)	65535	0	2500	2500	Read & Write	1	0 ~ 65535	DBC Ratio 1		
281	(DBC_MODE)	65535	0	0	0	Read & Write	1	0 ~ 65535	DBC_MODE		
282	Operate Time (min.) (RUN_MIN)	1439	0	0	0	Read only	——	0 ~ 1439 min.	Motor run time	min	
283	Operate Time (day) (RUN_DAY)	65535	0	0	0	Read only	——	0 ~ 65535 day	Motor run time	day	
284	Turn ON Time (min.) (PWR_MIN)	1439	0	0	0	Read only	——	0 ~ 1439 min.	Power On time	min	
285	Turn ON Time (day) (PWR_DAY)	65535	0	0	0	Read only	——	0 ~ 65535 day	Power On time	day	
286	Turn ON Times (PWR_CNT)	65535	0	0	0	Read only	——	0 ~ 65535 times	Power On counter		
287	Soft Password (SOFTPWD)	65535	0	0	0	TBD.	TBD.	0 ~ 65535	Password		
288	CC Off Level (CCOFF)	250.00	110.00	180.00	180.00	TBD.	TBD.	FLA*110.00% ~ FLA*250.00%	CC OFF level	%	
289	PWM Mode(PWM_MODE)	2	0	1	1	Read & Write	1	0: SVPWM+DPWM 1: SVPWM 2: SPWM+DPWM	PWM MODE		
290	Dead Band Comp. (DTOC)	160	0	23	23	TBD.	TBD.	0 ~ 160	Dead Time Comp.		
291	OVER_GAIN	2	0	0.8	0.8	Read & Write	1		OVER_GAIN		
292	DCI P Gain (DCI_P)	65535	1	1500	1500	TBD.	TBD.	1 ~ 65535	DCI P Gain		
293	DCI I Gain (DCI_I)	65535	1	150	150	TBD.	TBD.	1 ~ 65535	DCI I Gain		
294	DC Bus Filter (DCB_DLY)	50.000	0.001	0.200	0.200	TBD.	TBD.	0.001 ~ 50.000 sec	DCbus LPF	sec	
295	DCI Decreasing Rate (DCI_DEC)	10.0	0.0	2.0	2.0	TBD.	TBD.	0 ~ 10.0 V	DCI V rate	V	

MONXT Pr. No.	Functions : Regular : Heavy : Narrow	Max	Min	Default Linear Straight		Read/Write	1: Available to set when running	Setting	LCD Text		
				C/P	S/O				Description(16bit)	Unit(4 bit)	Change to % ?
296	DEBUG FLAG (DEBUG_F1)	0xFFFF	0	0	0	Read & Write	1	Bit0: Control GFF Check by POE Bit1: Control GFF Check by POE Bit2: Disable Initial Position after PGLOSS Bit3: Enable ICT test Bit4: ICT test status Bit5: Setting "PG_SWITCH" when pr[PG_TYPE]<2 Bit6: UVW position by new method Bit7: Z pulse correct function Bit8: Current displayed by IrmsAD / IrmsRe Bit9: PG Loss doesn't detect by hardware Bit10: Load all parameter to default value Bit11: Torque control mode for PM Bit12: Inertia Calculate by Elevator Parameter or by TABLE Bit13: PWM skip time by Pr.15-11 Bit14: PWM skip time 2us Bit15: VH mode	DEBUG FLAG	hex	
297	DEBUG_F3	0xFFFF	0	0	0	Read & Write	1	bit 1: disable OL bit 15: disable OH1	DEBUG_F3	hex	
298	OH Alarm temp. (OH_ALARM_DT)	30	1	15	15	TBD.	TBD.	1 ~ 30 oC (99 ~ 70 oC)	OH Alarm Temp.	deg	
299	OH Level (OH_IN)	1023	0	829	829	TBD.	TBD.	0 ~ 1023	OH Level, TH in		
300	Slip Comp. Delay Time (T4CTRLSW)	10000	100	500	500	TBD.	TBD.	100 ~ 10000 *2.5msec	Time for change		
301	Vde Decreasing Rate (VdeGAIN)	1.0	0.0	0.5	0.5	TBD.	TBD.	0 ~ 1.0	VdeCmd Dec. Rate		
302	Protect Bit(PROTBIT)	0xFFFF	0	0x2000	0x2000	Read & Write	1	0~0xFFFF Bit0: Over-Modulation Detect disable Bit1: Low Speed at PG-Warn disable Bit2: SW OV disable (405V) HW:410 Bit3: 0/1: PUON2LINE=0/1 Bit4: PWR_ON disable Bit5: PG Error disable Bit6: PGErr Disable Bit7: CC disable Bit8: DEB disable Bit9: Reserve Bit10: SW OC disable SW:236% HW:240% Bit11: Rated Current of Motor Bit12: PUON2LINE control by pr[PROTBIT] Bit13: BF disable Bit14: Reserve	PROTECT BIT	hex	
303	Date Code	65.535	0	DATE	DATE	Read only	——		Software Date		
304	AD for 210Vdc	2441	220	1748	1748	Read & Write	1		AD for *210Vdc		
305	AD for 270Vdc	3081	1389	2590	2590	Read & Write	1		AD for *270Vdc		
306	AD for390Vdc	3800	2326	3279	3279	Read & Write	1		AD for *390Vdc		
307	CLIPOL_RECODHI	65535	0	0	0	Read only	——		OL REC HI		
308	CLIPOL_RECODLO	65535	0	0	0	Read only	——		OL REC LO		
309	CLIPOL_RESET	1	0	0	0	Read & Write	1		OL CSA/UL		
310	OLCurPct_1	500	0	41	41	Read & Write	1		OL Current Pct_1	%	
311	OLTimeMin_1	120.00	0.01	72.00	72.00	Read & Write	1		OL Time Min 1	min	
312	OLCurPct_2	500	0	80	80	Read & Write	1		OL Current Pct_2	%	
313	OLTimeMin_2	120.00	0.01	23.00	23.00	Read & Write	1		OL Time Min 2	min	
314	OLCurPct_3	500	0	100	100	Read & Write	1		OL Current Pct_3	%	
315	OLTimeMin_3	120.00	0.01	14.00	14.00	Read & Write	1		OL Time Min 3	min	
316	OLCurPct_4	500	0	200	200	Read & Write	1		OL Current Pct_4	%	
317	OLTimeMin_4	120.00	0.01	0.05	0.05	Read & Write	1		OL Time Min 4	min	
318	PLL_Jp_Hat	1000	0	40	40	Read & Write	1		PLL_Jp_Hat		
319	Parameter SEL 7 (ParSe07)	0xFFFF	0	0	0	TBD.	TBD.	Par.112 ~ Par.127	Parameter Sel 7	hex	
320	Parameter SEL 8 (ParSe08)	0xFFFF	0	0	0	TBD.	TBD.	Par.128 ~ Par.143	Parameter Sel 8	hex	
321	Parameter SEL 9 (ParSe09)	0xFFFF	0	0	0	TBD.	TBD.	Par.144 ~ Par.159	Parameter Sel 9	hex	
322	Parameter SEL 10 (ParSe10)	0xFFFF	0	0	0	TBD.	TBD.	Par.160 ~ Par.175	Parameter Sel 10	hex	
323	Parameter SEL 11 (ParSe11)	0xFFFF	0	0	0	TBD.	TBD.	Par.176 ~ Par.191	Parameter Sel 11	hex	
324	Parameter SEL 12 (ParSe12)	0xFFFF	0	0	0	TBD.	TBD.	Par.192 ~ Par.207	Parameter Sel 12	hex	
325	Parameter SEL 13 (ParSe13)	0xFFFF	0	0	0	TBD.	TBD.	Par.208 ~ Par.223	Parameter Sel 13	hex	
326	Parameter SEL 14 (ParSe14)	0xFFFF	0	0	0	TBD.	TBD.	Par.224 ~ Par.239	Parameter Sel 14	hex	
327	Parameter SEL 15 (ParSe15)	0xFFFF	0	0	0	TBD.	TBD.	Par.240 ~ Par.255	Parameter Sel 15	hex	
328	Test paameter (Par328)	65535	0	0	0	TBD.	TBD.		Block transfer 2		
329	Limit Switch (LIMITSW)	4	0	3	3	TBD.	TBD.	0: No limit signal 1: Door open limit signal only 2: Door close limit signal only 3: Door open and close limit signal 4: Detect by PG number and also accept external door open/close limit signal	Position Mode		
330	Fault Record Index (ERR_INDEX)	31	0	0	0	TBD.	TBD.	0 ~ 31	Error Code Index		
331	Fault Record 1 (ERR_REC1)	65535	0	0	0	Read only	——	1 Over-current 2 Over voltage 3 Over heat 4 Drive Overload 5 reserve 6 reserve 7 reserve 8 reserve 9 reserve 10 OC at Accel 11 OC at Decel 12 OC at steady 13 Ground fault 14 Under Voltage 15 EEPROM Read Fail 16 reserve 17 reserve 18 reserve 19 reserve 20 reserve 21 reserve 22 reserve	Present fault		
332	Fault Record 2 (ERR_REC2)	65535	0	0	0	Read only	——		2nd fault		
333	Fault Record 3 (ERR_REC3)	65535	0	0	0	Read only	——		3rd fault		
334	Fault Record 4 (ERR_REC4)	65535	0	0	0	Read only	——		4th fault		
335	Fault Record 5 (ERR_REC5)	65535	0	0	0	Read only	——		5th fault		
336	Fault Record 6 (ERR_REC6)	65535	0	0	0	Read only	——		6th fault		
337	Fault Record 7 (ERR_REC7)	65535	0	0	0	Read only	——		7th fault		
338	Fault Record 8 (ERR_REC8)	65535	0	0	0	Read only	——		8th fault		
339	Fault Record 9 (ERR_REC9)	65535	0	0	0	Read only	——		9th fault		
340	Fault Record 10 (ERR_REC10)	65535	0	0	0	Read only	——		10th fault		
341	Fault Record 11 (ERR_REC11)	65535	0	0	0	Read only	——		11th fault		
342	Fault Record 12 (ERR_REC12)	65535	0	0	0	Read only	——		12th fault		
343	Fault Record 13 (ERR_REC13)	65535	0	0	0	Read only	——		13th fault		
344	Fault Record 14 (ERR_REC14)	65535	0	0	0	Read only	——		14th fault		
345	Fault Record 15 (ERR_REC15)	65535	0	0	0	Read only	——		15th fault		
346	Fault Record 16 (ERR_REC16)	65535	0	0	0	Read only	——		16th fault		
347	Fault Record 17 (ERR_REC17)	65535	0	0	0	Read only	——		17th fault		
348	Fault Record 18 (ERR_REC18)	65535	0	0	0	Read only	——		18th fault		
349	Fault Record 19 (ERR_REC19)	65535	0	0	0	Read only	——		19th fault		
350	Fault Record 20 (ERR_REC20)	65535	0	0	0	Read only	——		20th fault		
351	Fault Record 21 (ERR_REC21)	65535	0	0	0	Read only	——		21th fault		
352	Fault Record 22 (ERR_REC22)	65535	0	0	0	Read only	——		22th fault		
353	Fault Record 23 (ERR_REC23)	65535	0	0	0	Read only	——		23th fault		

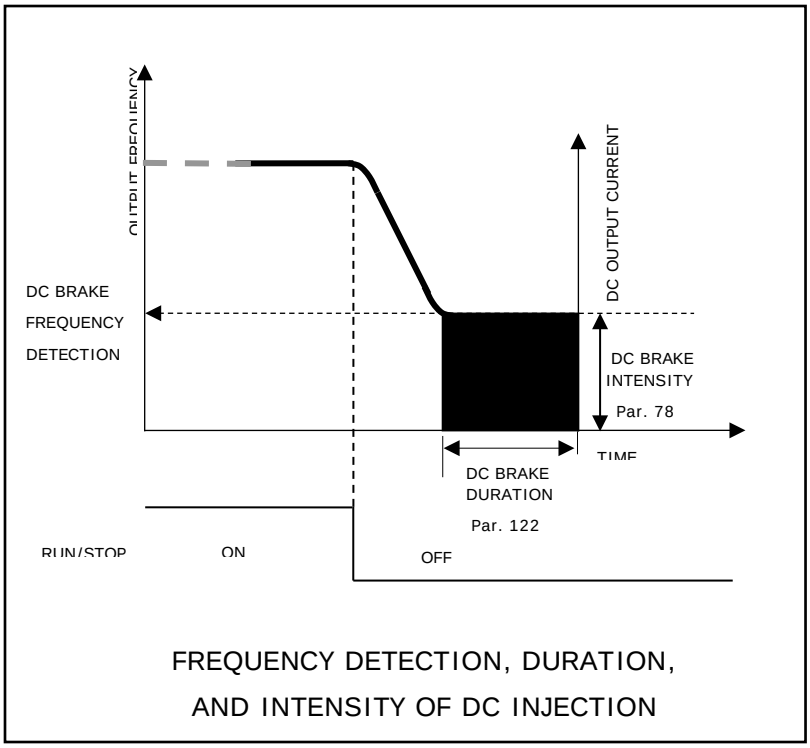
MONXT Pr. No.	Functions ■ : Regular ■ : Heavy ■ : Narrow	Max	Min	Default		Read/Write	1: Available to set when running	Setting	LCD Text		
				Linear Straight					Description(16bit)	Unit(4 bit)	Change to % ?
				C/P	S/O						
354	Fault Record 24 (ERR_REC24)	65535	0	0	0	Read only	——	23 reserve 24 reserve 25 reserve 26 Encoder Loss 27 reserve 28 Open overtime 29 reserve 30 reserve 31 reserve 32 reserve 33 reserve 34 reserve 35 reserve 36 Autotune Failure 37 Speed Fbk Err 38 reserve 39 reserve 40 reserve 41 reserve 42 reserve 43 PG fbk Over spd 44 PG fbk dev. Err 45 reserve 46 reserve 47 DoorDir Error 48 reserve 49 DoorWidth Error 50 Potential Error 51 Kinetic Error 52 Operate Error	24th fault		
355	Fault Record 25 (ERR_REC25)	65535	0	0	0	Read only	——		25th fault		
356	Fault Record 26 (ERR_REC26)	65535	0	0	0	Read only	——		26th fault		
357	Fault Record 27 (ERR_REC27)	65535	0	0	0	Read only	——		27th fault		
358	Fault Record 28 (ERR_REC28)	65535	0	0	0	Read only	——		28th fault		
359	Fault Record 29 (ERR_REC29)	65535	0	0	0	Read only	——		29th fault		
360	Fault Record 30 (ERR_REC30)	65535	0	0	0	Read only	——		30th fault		
361	Fault Record 31 (ERR_REC31)	65535	0	0	0	Read only	——		31th fault		
362	Fault Record 32 (ERR_REC32)	65535	0	0	0	Read only	——		32th fault		
363	Wiring Control(EXTOP)	1	0	0	0	TBD.	TBD.	0: FWD/STOP; REV/STOP 1: FWD/REV; RUN/STOP	2 wire control		
364	DI response time (DIST)	20	1	1	1	TBD.	TBD.	1 ~ 20 * 2.5ms	DI scan time	x2m	
365	Line Start Lockout (PWR_RUN)	1	0	0	0	TBD.	TBD.	0: Disable 1: Enable	Line start lock		
366	PG sample time (PG_TSAMP)	1.00	0.01	0.10	0.10	TBD.	TBD.	0.01 ~ 1.00	PG Sample Time	sec	
Group D - Display parameter											
D0 (0200H)	Bit 0 Reserved								Drive Status 1	hex	
	Bit 1 0：STOP，1：RUN										
	Bit 2 Reserved										
	Bit 3 0：CLOSE，1：OPEN										
	Bit4~5 Reserved										
	Bit 6 1：OVT										
	Bit 7 1：FLT										
	Bit 8~10 Reserved										
	Bit 11 1：Factory Set										
	Bit 12~14 100：NUD 000：HLD										
	Bit 15 Reserved										
D1	Output Frequency								Output Freq	Hz	
D2	Commanded Frequency								Commanded Freq	Hz	
D3	Output Current								Output Current	A	
D4	Output Voltage								Output Voltage	V	
D5	DC Bus Voltage								DC Bus Voltage	V	
D7	Switch Input Status Bit0 0: SETUP 1:RUN Bit1 0:MAN 1:AUTO Bit2 OPEN Bit3 CLOSE Bit4 NUDG Bit5 NARROW Bit6 RESET Bit7 HEAVY								SW IN 87654321		
D8	Digital Input Status Bit0 CLOSE Bit1 OPEN Bit2 NUDG Bit3 NARROW Bit4 HEAVY Bit5 IR Bit6 SPARE-1 Bit7 SPARE-2								MI IN 87654321		
D9	Decoding output Status Bit0 EDGE Timeout Bit1 AUX Bit2 DPM Bit3 REOPEN Bit4 DOL Bit5 DCL Bit6 SPARE-1 Bit7 SPARE-2								Decoding output		
D10 (020AH)	Counter Status 1 (unit: 1)								Counter Status 1		
D11 (020BH)	Counter Status 2 (unit: 10000)								Counter Status 2		
D12 (020CH)	Relay Ouput Status Bit0 EDGE Timeout Bit1 AUX Bit2 DPM Bit3 REOPEN Bit4 DOL Bit5 DCL Bit6 SPARE-1 Bit7 SPARE-2								RelayOUT87654321		

MONXT Pr. No.	Functions : Regular : Heavy : Narrow	Max	Min	Default Linear Straight C/P	 S/O	Read/Write	1: Available to set when running	Setting	LCD Text Description(16bit)	 Unit(4 bit)	 Change to % ?
D13 (020DH)	LED Output Status Bit0 CLOSE Bit1 NUDG Bit2 CLOSE SLOWDOWN Bit3 OPEN Bit4 OPEN SLOWDOWN Bit5 HOLDING Bit6 ENCODER FAILED Bit7 Reserved Bit8 STALL REVERSE Bit9 FREQUENCY FALURE Bit10 DETECTOR EDGES Bit11 LEARN DOOR WIDTH								LED LDFS87654321		
D14 (020EH)	Max. Close Frequency								Max. Close Freq	Hz	
D15 (020FH)	Max. Close Force								Max. Close Force	A	
D16 (0210H)	Software Version								Control SW Ver		
D17	Drive Type								Drive Type		
D18	Warning Code								Warn Code		
D24	Heat sink Temperature								Heat Sink Temp.	oC	
D26	Door Position (%)								Door Position	%	
D28	Feedback Freq.								Feedback Freq	Hz	
D32	Encoder Direction								Encoder Dir.		
D33	Encoder Pulse								Encoder Pulses		
D40 (0228H)	Fault 1 Code								Fault 1 Code		
D41	Fault 2 Code								Fault 2 Code		
D42	Fault 3 Code								Fault 3 Code		
D43	Fault 4 Code								Fault 4 Code		
D44	Fault 5 Code								Fault 5 Code		
D45	Fault 6 Code								Fault 6 Code		
D46	Fault 7 Code								Fault 7 Code		
D47	Fault 8 Code								Fault 8 Code		
D48	Fault 9 Code								Fault 9 Code		
D49	Fault 10 Code								Fault 10 Code		
D50	Fault 11 Code								Fault 11 Code		
D51	Fault 12 Code								Fault 12 Code		
D52	Fault 13 Code								Fault 13 Code		
D53	Fault 14 Code								Fault 14 Code		
D54	Fault 15 Code								Fault 15 Code		
D55	Fault 16 Code								Fault 16 Code		
D56	Fault 17 Code								Fault 17 Code		
D57	Fault 18 Code								Fault 18 Code		
D58	Fault 19 Code								Fault 19 Code		
D59	Fault 20 Code								Fault 20 Code		
D60	Fault 21 Code								Fault 21 Code		
D61	Fault 22 Code								Fault 22 Code		
D62	Fault 23 Code								Fault 23 Code		
D63	Fault 24 Code								Fault 24 Code		
D64	Fault 25 Code								Fault 25 Code		
D65	Fault 26 Code								Fault 26 Code		
D66	Fault 27 Code								Fault 27 Code		
D67	Fault 28 Code								Fault 28 Code		
D68	Fault 29 Code								Fault 29 Code		
D69	Fault 30 Code								Fault 30 Code		
D70	Fault 31 Code								Fault 31 Code		
D71	Fault 32 Code								Fault 32 Code		
D72	CAN RX ID Hi								CAN RX IDH		
D73	CAN RX ID Low								CAN TRX IDL		
D74	CAN RX Data 00 01								CAN RX DATA 1-2		
D75	CAN RX Data 02 03								CAN RX DATA 3-4		
D76	CAN RX Data 04 05								CAN RX DATA 5-6		
D77	CAN RX Data 06 07								CAN RX DATA 7-8		
D78	CAN TX ID Hi								CAN TX IDH		
D79	CAN TX ID Low								CAN TX IDL		
D80	CAN TX Data 00 01								CAN TX DATA 1-2		
D81	CAN TX Data 02 03								CAN TX DATA 3-4		
D82	CAN TX Data 04 05								CAN TX DATA 5-6		
D83	CAN TX Data 06 07								CAN TX DATA 7-8		
D84	RX/TX DLC								CAN DATA DLC		
D104	CODE Distance Closing Time								CD Closing Time	sec	
D105	DOL to DCL Closing Time								DOL->DCL Time	sec	
D106	CODE Distance Opening Time								CD Opening Time	sec	
D107	DCL to DOL Opening Time								DCL->DOL Time	sec	


WIRING DIAGRAM OF THE LINEAR MONXT DOOR OPERATOR
CONNECT TO PARAMETER UNIT DRV-0420N
GAL MONXT
ENCODER CONNECTION
CANBUS
SET PAR. 11=5 TO USE CANBUS
SET PAR. 246=7 FOR FRONT DOOR
SET PAR. 246=8 FOR REAR DOOR
SET PAR. 247=115.2 KBPS
EARTH GROUND TERMINALS
WARNING:
ALL EQUIPMENT MUST BE INSTALLED AND ADJUSTED TO MEET FEDERAL, STATE/PROVINCIAL, AND LOCAL CODES TO PREVENT ELECTRICAL SHOCK. METALLIC CONDUITS, ELECTRICAL BOXES, AND MOTOR MUST BE GROUNDED.
CAPACITIVE VOLTAGE ABOVE 50V MAY REMAIN. WAIT FOR 10 MINUTES AFTER REMOVING POWER BEFORE SERVICING.
MORE THAN ONE LIVE CIRCUIT.
HIGH VOLTAGE
GATE SWITCH
30AMP TIME-DELAY FUSE
CUSTOMER TO PROVIDE THESE FUSES
SUITABLE FOR USE ON A CIRCUIT CAPABLE OF DELIVERING NOT MORE THAN 1000 RMS SYMMETRICAL AMPERES, 250 VOLTS MAXIMUM WHEN PROTECTED BY A 30 AMPERES, 240V RK5 FUSES
EARTH GROUND
200-230VAC MIN. 500VA OR 100-115VAC MIN. 500VA
ELEVATOR CONTROLLER
PMSM & ENCODER MTR-0038N
CONNECT TO VOLTAGE SOURCE FROM 24 -230V AC OR DC, 30mA MIN.
METHOD 1
METHOD 2
CONTROLLER'S RELAYS MUST HAVE THE SAME COMMON AND RELAY COIL MUST BE FROM 24-230V AC OR DC
ELEVATOR CONTROLLER
INFRARED LIGHT CURTAIN
Title LINEAR MONXT DOOR OPERATOR WIRING DIAGRAM
Size: 11 x 14
Number:
Revision:
Date: 12/13/2019
Time: 12:52:30 PM
Sheet 1 of 1
File: MONXT WIRING DIAGRAM.SCH
G.A.L. MFG. COM. LLC
50 East 153RD ST.
Bronx, NY. 10451
Designed by: Phuong Le
33

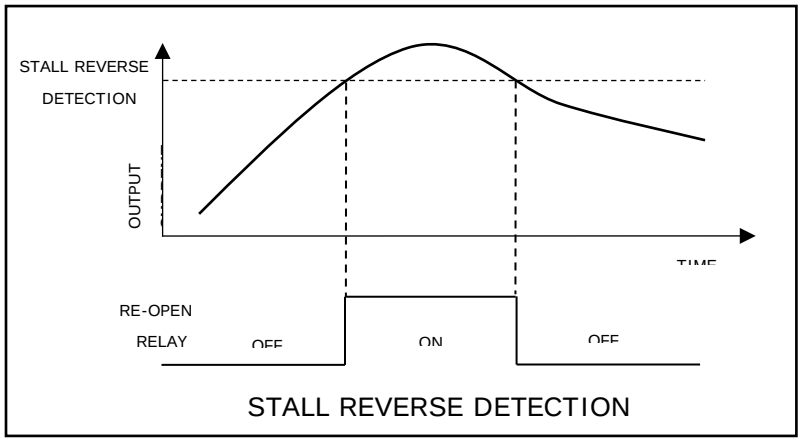
4.8 Supportive Graphs

1. DC Injection



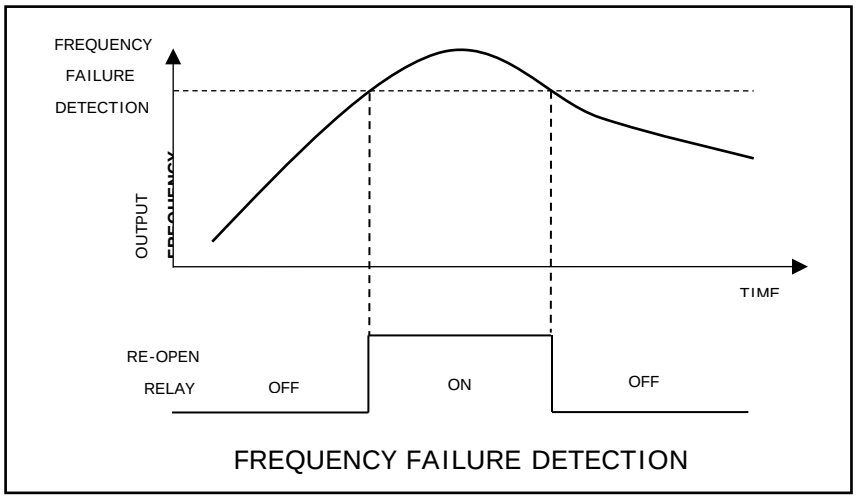
FREQUENCY DETECTION, DURATION,
AND INTENSITY OF DC INJECTION

2. Stall Reverse Detection



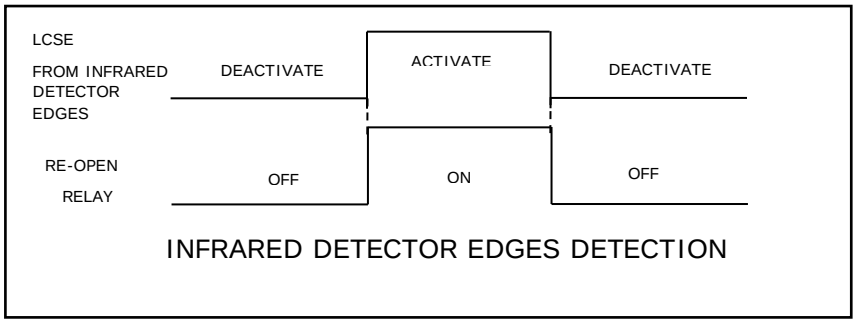
STALL REVERSE DETECTION

3. Frequency Failure Detection



FREQUENCY FAILURE DETECTION

4. Infrared Detector Edges Detection



INFRARED DETECTOR EDGES DETECTION

4.9 Fault List and Error Codes

Code	Error	Reset	Auto Reset	Record	Treatment	troubleshooting	Reset Condition	Display on keypad			Simulation method		remark
								Display text (16)	Reason Text (32)	Remedy Text (64)	Error simulation	recovery	
1	Over-current	ˇ	ˇ	ˇ	Coast to Stop	1. Check the wiring of input power, motor, and ground. 2. Hardware failed, please return to GAL.	Current continues < 50% rated current for 5sec	Over-current	Current>300% Rated Current.	Heavy Load Wrong Accel. Wrong Torque Defective Drive	N/A	N/A	Rated Current =3.5A
2	Over-voltage	ˇ	ˇ	ˇ	Coast to Stop	1. It might be caused by high regenerative voltage when changing run direction or decelerating speed in a short time. Please Increase deceleration time to decrease regenerative voltage. 2.Check if the input voltage spike without the rated drive input voltage range 3. Check for possible voltage transients.	Vbus < 385 volt (230V drive)	Overvoltage	DC Bus Voltage > 405VDC	Fast Decel. Sudden Load DB Res. Open High Transient	1. Couple with loading tool(ex: loading servo drive) 2.Parameter setting: pr00-09 = 4(CC01) pr00-08 = 0(CC01) pr00-13 = 2(CC01) pr00-15 = 66.66(CC01) 3.Set[SETUP/RUN] toggle switch to RUN; Set [AUTO/MAN.] toggle switch to AUTO. 4. Decrease values of Par.88 and 161. 5.Press RUN (CC01) and wait for the operator running at a steady speed. 6. Press stop(CC01).	Press Reset	
3	Overheat	ˇ	ˇ	ˇ	Coast to Stop	1. Ensure that the ambient temperature falls within the specified temperature range. 2. Make sure that the ventilation holes are not obstructed. 3. Remove any foreign objects from the heat sink and check for possible dirty in the heat sink. 4. Provide enough spacing for adequate ventilation.	Temperature < 100℃	Overheat	Heatsink Temp. >100℃	Ambient Temp. Heavy Load Excessive Use Heatsink Fins	N/A	N/A	
4	Drive Over Load	ˇ	ˇ	ˇ	Coast to Stop	1. Check whether the resistance of the door mechanism increases, resulting in larger opening and closing currents.	Current continues < 50% rated current for 5sec	Drive Overload	Drive Current >150% for 60sec	Heavy Load Wrong Accel. Wrong Torque Wrong CED	1. Couple with loading tool(ex: loading servo drive) 2.Parameter setting: pr00-09 = 4(CC01) pr00-08 = 0(CC01) pr00-13 = 2(CC01) pr00-15 = 66.66(CC01) 3.Set[SETUP/RUN] toggle switch to RUN; Set [AUTO/MAN.] toggle switch to AUTO. 4. Keep output current be higher than 150% rated current for 60sec by adjusting the torque of loading tool.	1. Wait for 30.0 sec 2. Press Reset	

10	Over-current during accel	ˇ	ˇ	ˇ	Coast to Stop	1. Increase acceleration time 2. Check for possible poor insulation or shooting of UVW.	Current continues < 50% rated current for 5sec	OC at Accel	Accel. Current >300% Rated Current.	Heavy Load Wrong Accel. Wrong Torque Defective Drive	Short wires of UVW with Electromagnetic contactor(**NECESSARY!**) in acceleration status.	1. Recover wiring of UVW. 2. Press Reset.	
11	Over-current during decel.	ˇ	ˇ	ˇ	Coast to Stop	1. Increase deceleration time 2. Check for possible poor insulation or shooting of UVW.	Current continues < 50% rated current for 5sec	OC at Decel	Decel. Current >300% Rated Current.	Heavy Load Wrong Torque Sudden Load Defective Drive	Short wires of UVW with Electromagnetic contactor(**NECESSARY!**) in deceleration status.	1. Recover wiring of UVW. 2. Press Reset.	
12	Over-current during steady-state operation	ˇ	ˇ	ˇ	Coast to Stop	1. Increase acceleration time 2. Check for possible poor insulation or shooting of UVW.	Current continues < 50% rated current for 5sec	OC at steady	Steady Current >300% Rated Current.	Heavy Load Wrong Torque Sudden Load Defective Drive	Short wires of UVW with Electromagnetic contactor(**NECESSARY!**) in steady-speed status.	1. Recover wiring of UVW. 2. Press Reset.	
13	Ground fault	ˇ	ˇ	ˇ	Coast to Stop	1. Check the wiring connections between the drive and motor for possible short circuits, also to ground 2. Check whether the IGBT power module is damaged. 3. Check for possible poor insulation at the output	Current continues < 50% rated current for 5sec	Ground fault	Current>150% for 5sec.	Defective IGBT Poor Insulation See Manual Defective Drive	N/A	N/A	
14	Under-voltage	ˇ			Coast to Stop	1. Check if input voltage is normal 2.Check for a possible sudden load.	Vbus > 228 volt(230V drive)	Under Voltage	DC Bus Voltage <197.5VDC (230Vac)	L1&L2 Volt. Low Defect. DB Res. Abnormal Load See Manual	For 110VAC, change input power to 56VAC. For 220VAC, change input power to 139VAVC.	Recover input power.	
15	CPU READ failure	ˇ		ˇ	Coast to Stop	1. Power up again 2. Return to GAL	Immediately	EEPROM Read Fail	Return to GAL		1. Remove EEPROM from PCB board 2. Power ON	1.CPU Read EEPROM correctly	
26	Encoder loss error	ˇ	ˇ	ˇ	Par.48 = 0: Coast to Stop Par.48 = 1: Warning & Scan mode (default) Par.48 = 2: Warning & Scan mode & Auto Recovery	Check the wiring of the PG feedback	PG detect pin recover	Encoder Loss	Encoder Loss	Encoder Cable Encoder Board See Manual Defective Drive	1.Par.48 = 0; 2.Set[SETUP/RUN] toggle switch to RUN; 3.Set[OPEN/CLOSE] toggle switch to OPEN; 2.Remove the PG line when running. *In most cases, PG Ref Loss will be triggered first.	1.Press Reset 2.Par.48 = 1 or 2 3.Power OFF 4.Connect the PG line	
28	Door open time-out	ˇ	ˇ	ˇ	Coast to Stop	1. Check that the Par.127 setting value is correct. 2. Check whether the door is stuck	Immediately	Open overtime	Open Overtime	Machine Binding See Manual Defective Drive	1.Power ON 2.Open the door 3.door open time > Par.127 setting value	1. Press Reset 2. change Par.127 setting value	

36	Auto-learning Error	ˇ		ˇ	Coast to Stop	1. Check the wiring of the PG feedback 2.Check if motor capacity and parameters are correct or not 3. Try again	Immediately	Autotune Failure	Autotune Failure	Cable to Motor See Manual Defective Drive	1. Power ON 2. Set [SETUP/RUN] toggle switch to RUN; Set [AUTO/MAN.] toggle switch to MAN. 3.Par.30 = 1 4. Set[OPEN/CLOSE] toggle switch to OPEN; 5. From RUN to SETUP during Auto-learning（Generate Stop command ）	Press Reset	
37	Encoder fbk error	ˇ		ˇ	Coast to Stop	1. Check the wiring of the PG feedback	Recover in the door boundary	Speed Fbk Err	Encoder Feedback Error	Check Par.42 Correct Wiring Defect. Encoder See Manual	1. Power ON 2. Set[SETUP/RUN] toggle switch to RUN; Set [AUTO/MAN.] toggle switch to MAN. 3.Par.42 = 0 4. Set[OPEN/CLOSE] toggle switch to OPEN;	1.Press Reset 2.Par.42 = 1	
43	PG fbk Over speed	ˇ		ˇ	Coast to Stop	1. Check the wiring of the PG feedback 2.Power up again	Immediately	PG fbk Over spd	Encoder Feedback Error	Encoder Cable Correct Wiring See Manual Defective Drive	1. Power ON 2. Set[SETUP/RUN] toggle switch to RUN; Set [AUTO/MAN.] toggle switch to MAN. 3.Set Par.46 = 1Hz 4. Set[OPEN/CLOSE] toggle switch to OPEN;	Press Reset	
44	PG fbk deviation Error	ˇ		ˇ	Coast to Stop	1. Check the wiring of the PG feedback 2.Power up again	Immediately	PG fbk dev. Err	Encoder Feedback Error	Encoder Cable Correct Wiring See Manual Defective Drive	1. Power ON 2. Set[SETUP/RUN] toggle switch to RUN; Set [AUTO/MAN.] toggle switch to MAN. 3.Set Par.48 = 0, Use CC01 Set Pr03-08=0.01 4. Set[OPEN/CLOSE] toggle switch to OPEN;	1.Press Reset 2.Set Par.48 = 1	
47	Door Direction tune Failed	ˇ		ˇ	Coast to Stop	1. Check whether the door is stuck 2.Parameter reset, and try again	Immediately	DoorDir Error	Door Direction tune Failed	Learn again See Manual	1. Enter Easy-Tuning Procedures 2. From RUN to SETUP during Door Direction Auto-learning（Generate Stop command ）	Press Reset	
49	Door width tune Failed	ˇ		ˇ	Coast to Stop	1. Check whether the door is stuck 2.Parameter reset, and try again	Immediately	DoorWidth Error	Door width tune Failed	Learn again See Manual	1. Enter Easy-Tuning Procedures 2. From RUN to SETUP during Door width Auto-learning（Generate Stop command ）	Press Reset	
50	Potential Auto-learning Failure	ˇ		ˇ	Coast to Stop	1. Check whether the door is stuck 2.Parameter reset, and try again	Immediately	Potential Error	Potential Auto-learning Failure	Learn again See Manual	1. Enter Easy-Tuning Procedures 2. From RUN to SETUP during Potential Auto-learning（Generate Stop command ）	Press Reset	
51	Kinetic Auto-learning Failure	ˇ		ˇ	Coast to Stop	1. Check whether the door is stuck 2.Parameter reset, and try again	Immediately	Kinetic Error	Kinetic Auto-learning Failure	Learn again See Manual	1. Enter Easy-Tuning Procedures 2. From RUN to SETUP during Kinetic Auto-learning（Generate Stop command ）	Press Reset	
52	Door Auto-learning interruption	ˇ		ˇ	Coast to Stop	1. Check whether the door is stuck 2.Parameter reset, and try again	Immediately	Operate Error	Door Auto-learning interruption	Learn again See Manual	1. Enter Easy-Tuning Procedures 2. Press ESC during Easy tuning（Generate Stop command ）	Press Reset	
53	Encoder loss error	ˇ	ˇ	ˇ	Par.48 = 0: Coast to Stop Par.48 = 1: Warning & Scan mode (default) Par.48 = 2: Warning & Scan mode & Auto Recovery	Check the wiring of the PG feedback	PG detect pin recover	PG Ref Loss	Encoder Wiring Error	Correct Wiring Defect. Encoder See Manual	1. Par.48 = 0 2. Remove the PG line 3. Set[SETUP/RUN] toggle switch to RUN; Set [AUTO/MAN.] toggle switch to MAN.	1.Press Reset 2.Par.48 = 1 or 2 3.Power OFF 4.Connect the PG line	

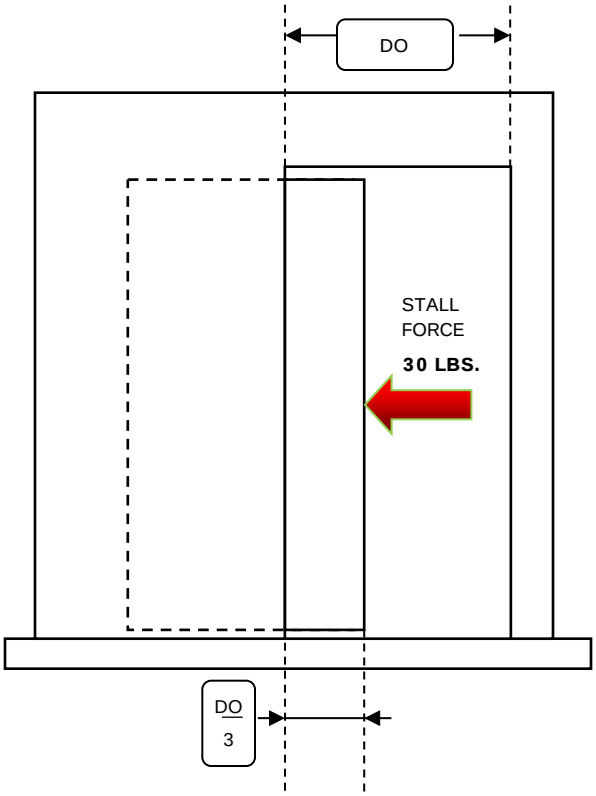
4.10 Door Stall Force Measurement

The most practical way to measure the stall force of the door is to use a spring gauge as shown in the picture below.

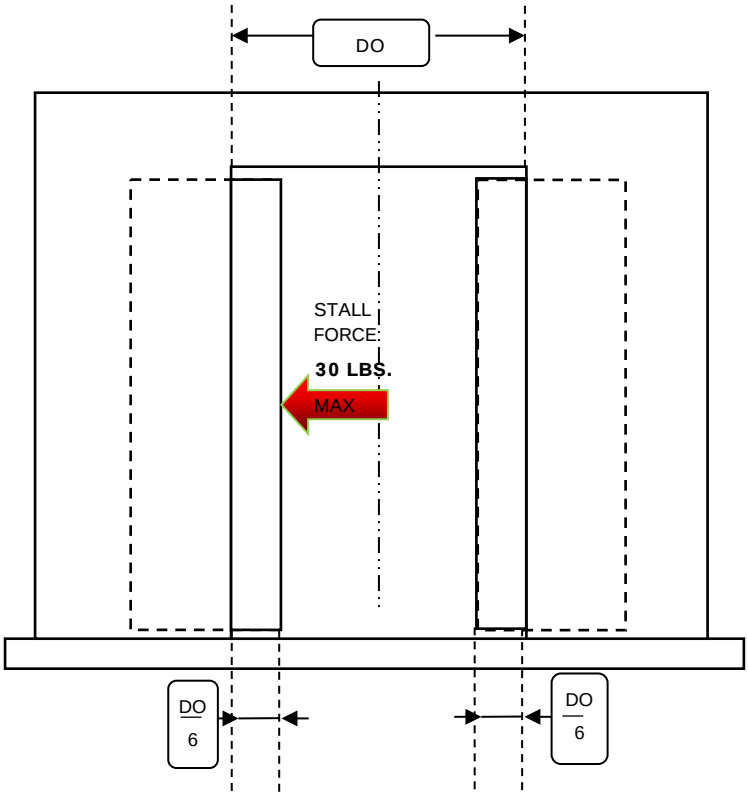
Stall force is the static force to prevent the door from further moving.

Stop the door anywhere from one-third to two-thirds of the door travel. Press the spring gauge against the door, remove the stop. Hold the spring gauge until the door stands still, and take the reading. The stall force must be less than **30** Lbs to comply with ASME, A17.1, Rule 112.4/5, and CSA/B44, Rule 2.13.4/5.

SPRING GAUGE



SIDE



CENTER

4.11 Interfacing Between GAL Certified Infared Light Curtain and MONXT (Optional)

Understanding the RE-OPEN relay:

The RE-OPEN relay can be activated by any of the following detections:

1st. Over Torque - Controlled by Par. 148

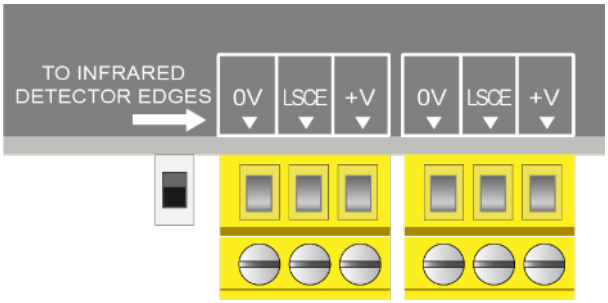
2nd. Over Speed - Controlled by Par. 136

3rd. Obstruction of the Infrared Detector Edges - Controlled by Par. 202, and SW8

Over Torque and Over Speed Detections are the standard features of the MONXT. Therefore, GAL recommends that customers connect the Infrared Detector Edges directly to the MONXT instead of connecting the Infrared Detector Edges to their own power supplies. By doing this, if the detector edges failed, the Over Torque detection will provide a reopen signal so that the main controller can send an OPEN command signal to open the door as a safety redundancy.

GAL Certified Infrared Detector Edges will always come with the matching connectors CN4 & CN5 to fit the MONXT, and work with the 24VDC power supply. To ensure a seamless interface, customers need to order the Infrared Detector Edges via GAL. Different infrared detector edges may also the to the MONXT. However, users have to match connectors CN4 & CN5 electrically, and physically.

How to interface between the Infrared Detector Edges and MONXT:

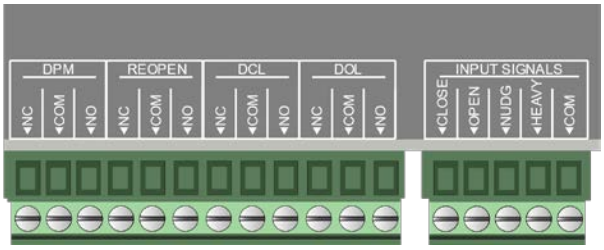


1. Read the label on the packaging or the manual of the detector edges to find out the output type. It is either NPN or PNP. Set the selector switch NPN/PNP accordingly. If the info of NPN or PNP is unavailable, then use a trial and error method.

   Assume that the output of the edges is NPN for the 1st trial. Set Par. 202 =1 for NPN, Set Par. 202 = 2 for PNP. Set Par. 202 = 0 to disable or not used.

2. Connect the *GAL Certified Infrared Detector Edges* to connectors CN4 and/or CN5.

Note! *Connectors CN4 and CN5 are interchangeable*



3. Make sure the RE-OPEN circuit is connected to the RE-OPEN contacts.

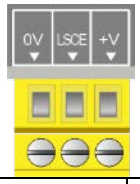
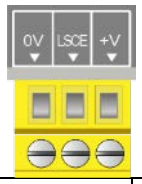
Test the Infrared Detector Edges:

- Obstruct the Infrared Detector Edges. The DETECTOR EDGES LED should be **ON**.
- The RE-OPEN relay should be **activated** to send the RE-OPEN signal to the elevator controller.
- The elevator controller will send the Door Open command signal back to the MONXT to OPEN the door.

  The LED of the Open Input module should be **ON**.

If the Infrared Detector Edges function does not work:

- Check the table below for correct connections between edges and the MONXT.

GAL CERTIFIED INFRARED DETECTOR EDGES WIRE COLORS							
MFG.	TX (CN5) 			RX (CN4) 			CONNECTION BETWEEN TX & RX
	V+	LCSE	0V	V+	LCSE	0V	
JANUS	RED	BLUE	ORG (♦)			ORG (♦)	WHT - WHT
TRITRONICS	RED	WHT	ORG				NONE
FORMULA SYSTEMS	BLU 1	BRN 1	GRN YEL	BLU 1	BRN 1	GRN YEL	NONE

(♦) Connect an additional wire from 0V to a true EARTH GROUND.

- Check for 24VDC between 0V and +V on either CN4 & CN5.
- Test the Infrared Detector Edges again

If it still does not work. Then,

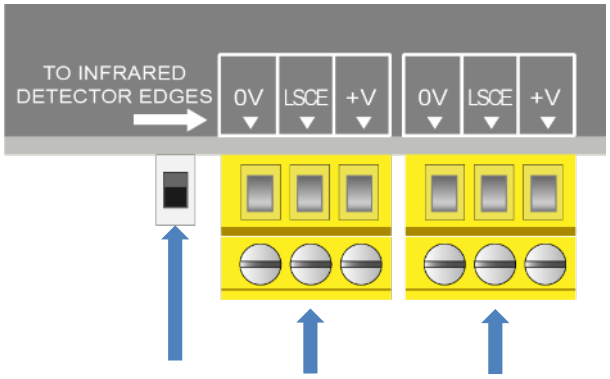
- Jump 0V to LCSE on either CN4 or CN5 connector for NPN type.
- Jump +V to LCSE on either CN4 or CN5 connector for PNP type
- The DETECTOR EDGES LED should be **ON**.
- The RE-OPEN Relay should be **activated.**

If the above tests work as described, turning ON the detector edges LED, then the problem is in the Infrared Detector Edges. Otherwise, the problem is in the MONXT.

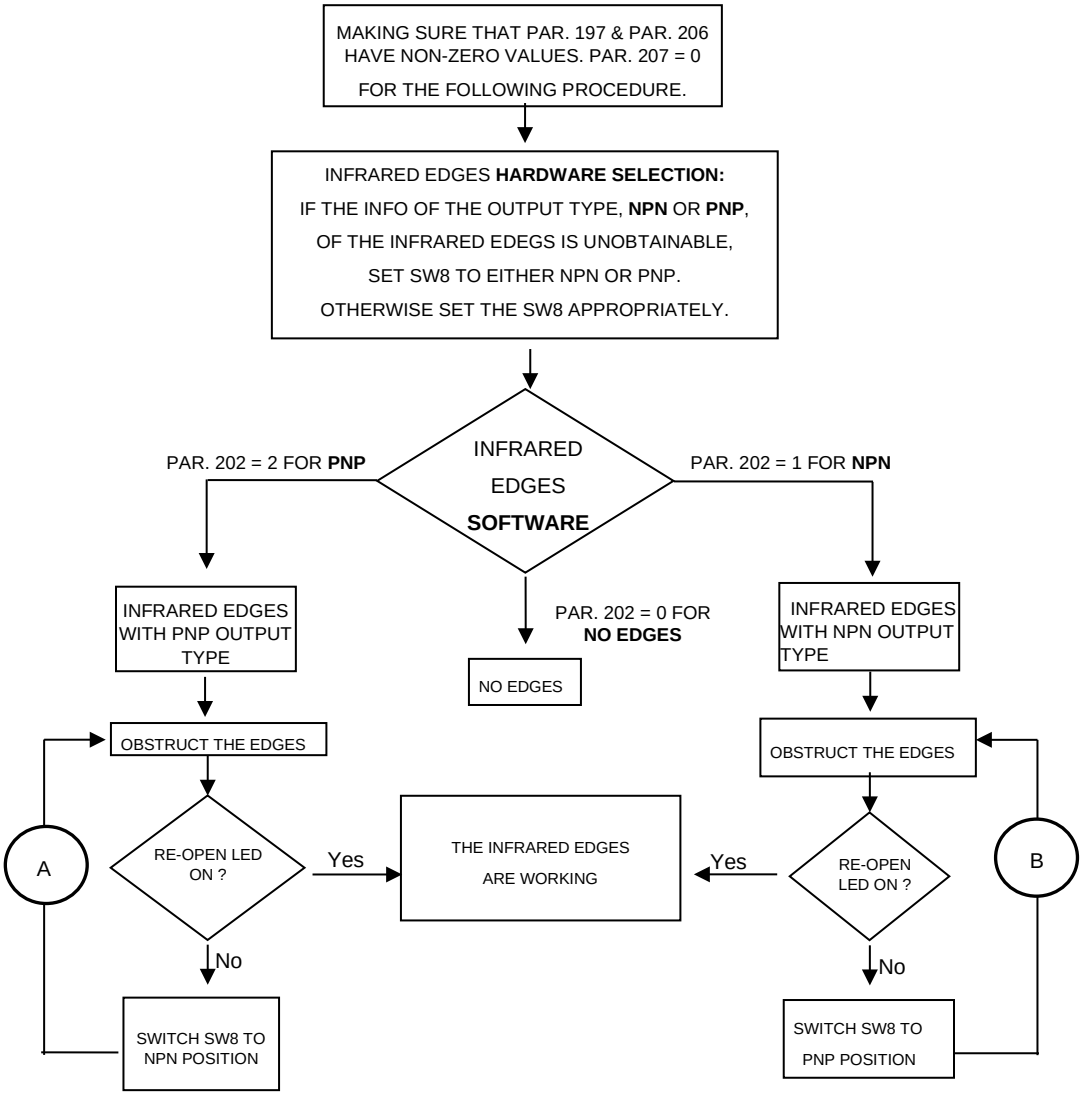
If the Infrared Detector Edges have intermittent problems:

- Check continuity of the TX and RX cables of the detector edges.
- If the cables are good, but the problem still exists, then check the **Earth Ground** connection to the edges.
- Lower the Carrier Frequency in Par. 1 gradually until problems are resolved.

Note! *The lower carrier frequency will create more audible noise from the motor.*



INFRARED DETECTOR EDGES APPLICATION FLOWCHART



NOTE! IF LOOP A OR B IS REPEATED THREE TIMES BUT THE RE-OPEN LED IS NOT TURNED ON WHEN THE EDGES ARE OBSTRUCTED.
THEN PROBLEM COULD BE EITHER THE DETECTOR EDGES OR THE DRIVE.

4.12 Heavy Door Application (Optional)

The same elevator may have two different hoist-way doors with one set being heavier than the others. Another scenario is the door may be under the high pressure of the ambient environment, i.e. wind pressure. As a result, the settings of Torque and Speed of one door may not be applicable for the other. More importantly, it may be a code violation issue due to the constraint of Kinetic energy and the Torque allowance.

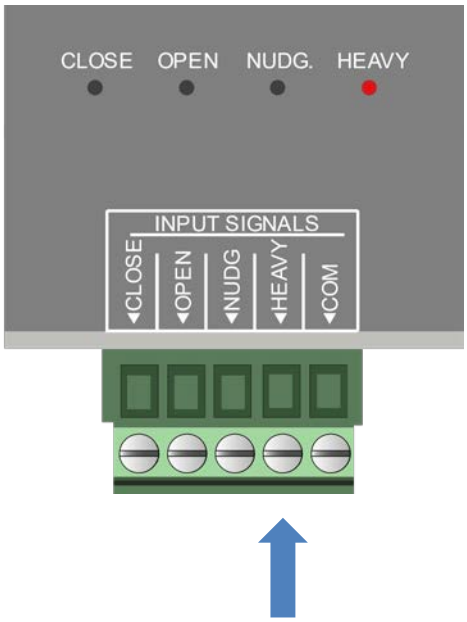
The HEAVY input of the MONXT will resolve this issue. When the HEAVY input is activated, the MONXT will operate with a different set of parameters to accommodate the heavier weight.

In order to gain access to the parameters of the HEAVY door, users need to provide a command signal to the HEAVY input as indicated below. The HEAVY input is a *universal input* module that accepts the control signal either in the form of contacts or voltages, 24 - 230V AC or DC. The LED of the input module draws current from the elevator controller, not from the MONXT. Therefore, the LED needs to light up to indicate that the elevator controller has sent the HEAVY command.

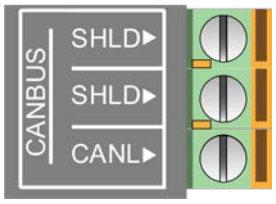
In order to learn a “Heavy Door” floor follow the procedure below:

1. Bring the car to the Heavy Door floor to be learned and align with hoistway roller release.
2. Manually Close the Door; Turn the Power SW ON if it is not already
3. Set RUN/SETUP toggle to SETUP
4. Set MAN/AUTO toggle to MAN
5. Momentarily pressy the the HEAVY/RESET toggle towards HEAVY.
6. Hold TUNING/NARROW toggle towards TUNING for 3 seconds
7. Follow prompts on parameter unit

When the drive is given a Heavy Door input it will now use information learned at this floor. Heavy floors use their own parameter set which are Par. 92-105, and Par. 152-163.

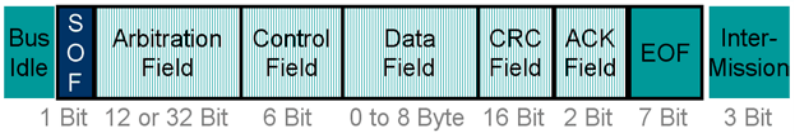


GAL-CAN protocol is currently used to communicate between the elevator controller and the MONXT door operator.
To setup CAN bus communication,
Set the (RUN/SETUP) switch to SETUP.
Set the (AUTO/MAN) switch to MAN.
Set Par. 11 = 5 to use the CAN bus. Otherwise, set Par. 11 = 1.
Set Par. 246 = 7 for Front Door. Set Par. 246 = 8 for Rear Door.
Return to Automatic Operation by setting the (AUTO/MAN) switch To AUTO. The Baudrate, max. 1Mbit, for CANbus, can be set by Par. 247. The default value for Par. 247 is 115.2kbps.



CANbus Connector

Following are the communication packets:

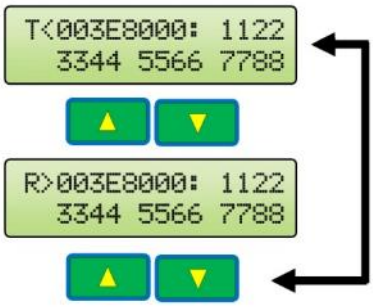


The mapping below shows the communication on the Keypad LCD display where “I” represents for Arbitration Field and “D” represents for Data Field. The DLC, Data Length Code, is decided by the Control Field.

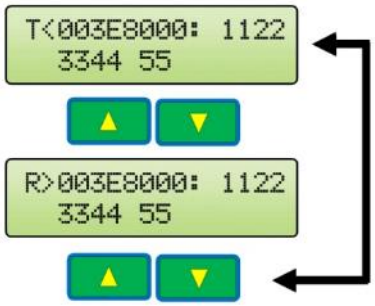
R	»	I_{31-28}	I_{27-24}	I_{23-20}	I_{19-16}	I_{15-12}	I_{11-8}	I_{7-4}	I_{3-0}	:		D_{1H}	D_{1L}	D_{2H}	D_{2L}
		D_{3H}	D_{3L}	D_{4H}	D_{4L}		D_{5H}	D_{5L}	D_{6H}	D_{6L}		D_{7H}	D_{7L}	D_{8H}	D_{8L}
T	«	I_{31-28}	I_{27-24}	I_{23-20}	I_{19-16}	I_{15-12}	I_{11-8}	I_{7-4}	I_{3-0}	:		D_{1H}	D_{1L}	D_{2H}	D_{2L}
		D_{3H}	D_{3L}	D_{4H}	D_{4L}		D_{5H}	D_{5L}	D_{6H}	D_{6L}		D_{7H}	D_{7L}	D_{8H}	D_{8L}

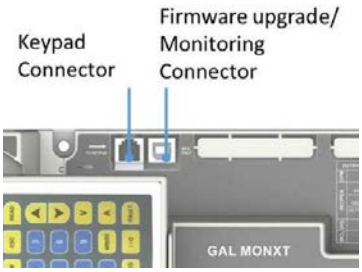
Examples:

DLC = 8



DLC=5





RJ-11 Connector

The RJ-11 connector for the Keypad can also be used for
RS-485 serial interfacing. MODBUS protocol is available for this port.

Other communication protocols are available upon request. An agreement between GAL and the requesting party must be made prior to the implementation.

Section 5 MAINTENANCE

5.1 Mechanical

Regular preventive maintenance is recommended depending on usage and environment. The following should be periodically checked for proper adjustment and operation.

5.1.1 Hanger Sheave Rollers and Oilers

Make sure that hanger sheave rollers and their respective oilers are free of debris, allowing the sheave rollers to run the doors smoothly. You should inspect the G.A.L. type "A" oiler annually and replace it if worn or dry. A properly installed oiler will keep the hanger sheave roller clean to prevent debris buildup, reduce noise, and extend useful life.

5.1.2 G.A.L. Track

The hanger roller sheaves, including its rollers, are designed to keep the riding surface of the G.A.L. tracks clean. If you do not maintain the oilers, however, the tracks could become cluttered with debris. If you find debris, clean the tracks and replace any worn or dry oilers, as necessary.

5.1.3 Drive Belt

Improper belt tension may result in belt slippage, erratic door operation, or accelerated component wear. You can check for proper belt tension by trying to touch the upper and lower belt to eachother at the center of the opening. The two halves should touch easily but there should not be slack in the belt. When the door opens or closes, the belt should not have a large amount of sag on the low tension side. However, the chevron style belt does not require a lot of tension in order to remain in place. Too much tension will accelerate component wear.

5.1.4 Fasteners

Although applying proper torque to fasteners during setup should prevent loosening over time, the fasteners might become loose under special circumstances. If this happens, tighten the fasteners per “Bolts and Torque” section *(Page 6).*

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