TORMAX®
AUTOMATIC

(FW_9.2)

Installation & Service Manual for

TX9430 & TX 9420 SERIES WITH 2301 & 2401 SLIDING DOOR DRIVES
CONCEALED MOUNT
FLUSH MOUNT

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TABLE OF CONTENTS

SECTION	PAGE
SAFETY/WARNINGS	3
INSTALLATION	
HEADER AND JAMB ASSEMBLY PREPARATION	4
HEADER/JAMB ASSEMBLY INSTALLATION	5
TRANSOM ASSEMBLY	6
THRESHOLD/BTM GUIDE INSTALLATION FOR 9430	7
BOTTOM DOOR GUIDE PROFILE INSTALLATION FOR 9420	8
SO-PANEL INSTALLATION FOR TX 9430	9
O - PANEL INSTALLATION FOR TX 9420	10
P - PANEL INSTALLATION FOR TX 9420 FLUSH MOUNT	11
SX-PANEL INSTALLATION/BOTTOM GUIDE ADJUSTMENT	12 - 13
SX-PANEL ALIGNMENT	14- 15
MECHANICAL ADJUSTMENTS	16
ACCESS CONTROL ASSEMBLY	17
BUMPER ADJUSTMENT	18
FUNCTION CONTROL PANEL INST./OPERATION(FCP)	18
POWERING UP THE TX9000	19
PROGRAMMING INSTUCTIONS	
FUNCTIONS OF OPERATING MODES ON FCP	20
EXPLANATION OF FCP AND PROGRAMMING EXAMPLES(T - 1248 e)	21- 23
QUICK START UP	24
PROGRAMMING THE CONTROL SYSTEM (T- 1272 e)(T- 1306 e)	25 - 26
PROGRAMMING TABLE(FW V9.2 and up)	27 - 30
TROUBLE SHOOTING GUIDE	31
TERMINAL DESIGNATION(T- 1263 e)	32
I- ONE SENSOR	33 - 35
FINAL CHECKLIST	36
TECHNICAL SPECIFICATIONS	
TECHNICAL DATA (T- 1258 e)	37
CABLE -PLAN (T- 1277 e)	38
CONTROL UNIT MODULE (T- 1259 e)	39 - 40
MOTOR UNIT MODULE (T-1274 e)	41 - 42
LOCK UNIT MODULE (T- 1265 e)	43 - 44
BATTERY UNIT MODULE (T- 1268 e)	45 - 46
POWER-SUPPLY MODULE (T-1268 e)	47 - 48
BASE MODULE (T - 1261 e)	49 - 50
FUNCTION CONTROL PANEL (T- 1264 e)	51 - 52
INPUT-OUTPUT MODULE (T- 1360 e)	53 - 54

SAFETY/WARNINGS

THIS SYMBOL WILL BE USED THROUGHOUT THIS TEXT TO INDICATE A SHOCK HAZARD. SHOCK HAZARDS CAN RESULT IN SERIOUS INJURY OR DEATH.

THIS SYMBOL WILL BE USED THROUGHOUT THIS TEXT TO INDICATE A POINT OF EXTRA IMPORTANCE.

THIS SYMBOL WILL BE USED THROUGHOUT THIS TEXT TO INDICATE A WARNING FOR ELECTRICAL VOLTAGE

WE HAVE MARKED ALL POSITIONS WHICH CONCERN YOUR SAFETY WITH THIS SYMBOL.

OPERATING FUNCTIONS THAT ARE MARKED BY ACCOMPANYING SYMBOL CORRESPOND TO THE DEFAULT SETTINGS HOWEVER , THE TECHNICIAN CAN REPROGRAM, SEE . PROGRAMMING TABLE FOR OPTIONS

THIS SYMBOL MARKS OPTIONAL COMPONENTS , WHICH ARE NOT INSTALLED IN ALL SYSTEMS.

ANY AND ALL TORMAX EQUIPMENT MUST BE INSTALLED AND SERVICED BY AN AAADM CERTIFIED TECHNICIAN, TO MEET THE CURRENT ANSI A156.10 STANDARD AND ANY LOCAL OR STATE BUILDING CODES.

NOTE:TORMAX AUTOMATIC RECOMMENDS THE USE OF A WATER LEVEL AND A PLUMB BOB TO PROPERLY INSTALL ANY DOOR PACKAGE PROVIDED. AN IMPROPER INSTALLATION COULD LEAD TO PREMATURE WEAR OF MOVING PARTS , AN UNPLEASING APPREANCE , AND /OR SERVICE ISSUES FOR THE CUSTOMER.

NOTE: ALL PRIMARY ELECTICAL CONNECTIONS SHOULD BE COMPLETED BY A LICENSED ELECTRICIAN!

THE HEADER AND JAMBS SHOULD BE ASSEMBLED ON THE FLOOR AND LIFTED INTO PLACE. IT IS ADVISED TO USE A LIFT ON LARGER ASSEMBLIES. CARE SHOULD BE TAKEN TO PROTECT THE FINISH ON THE UNIT AT ALL TIMES.

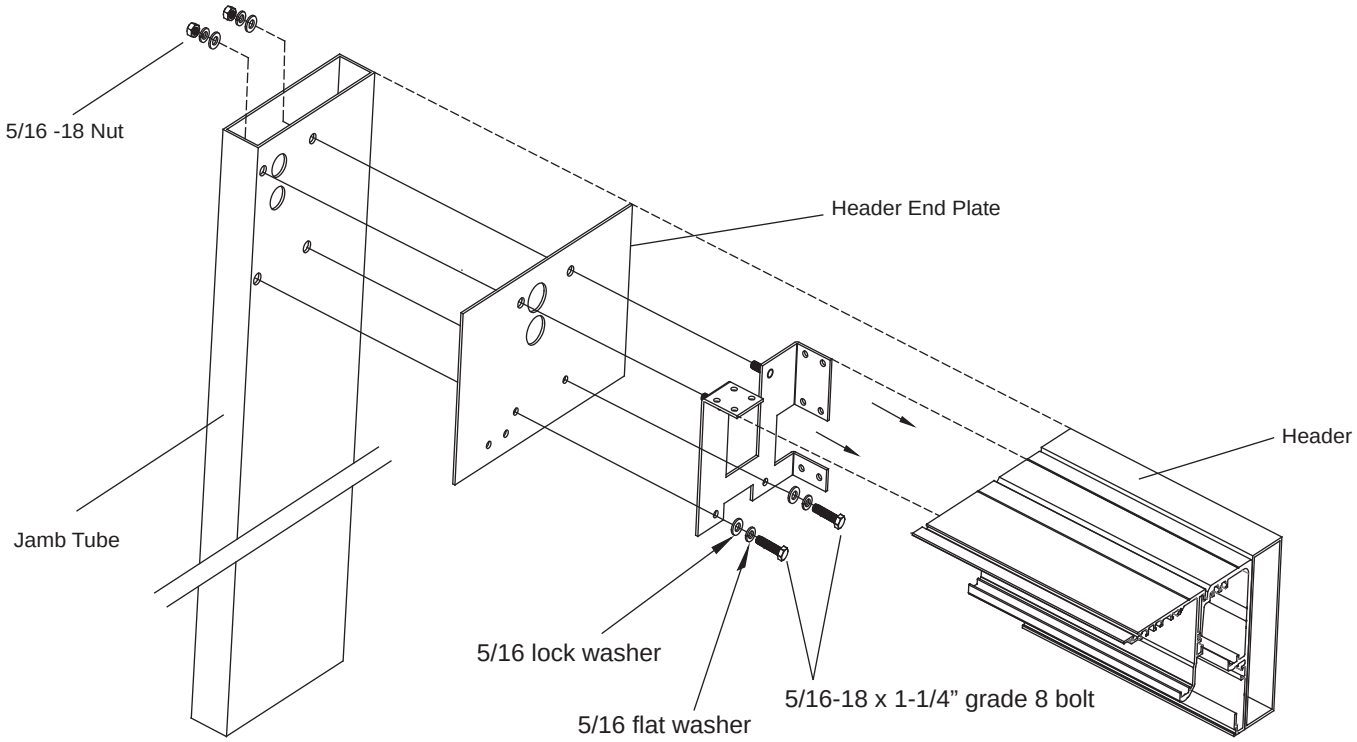
INSTALLATION OF A TX9000 SERIES UNIT SHOULD NEVER BE ATTEMPTED BY ONE INDIVIDUAL.

INSTALLATION

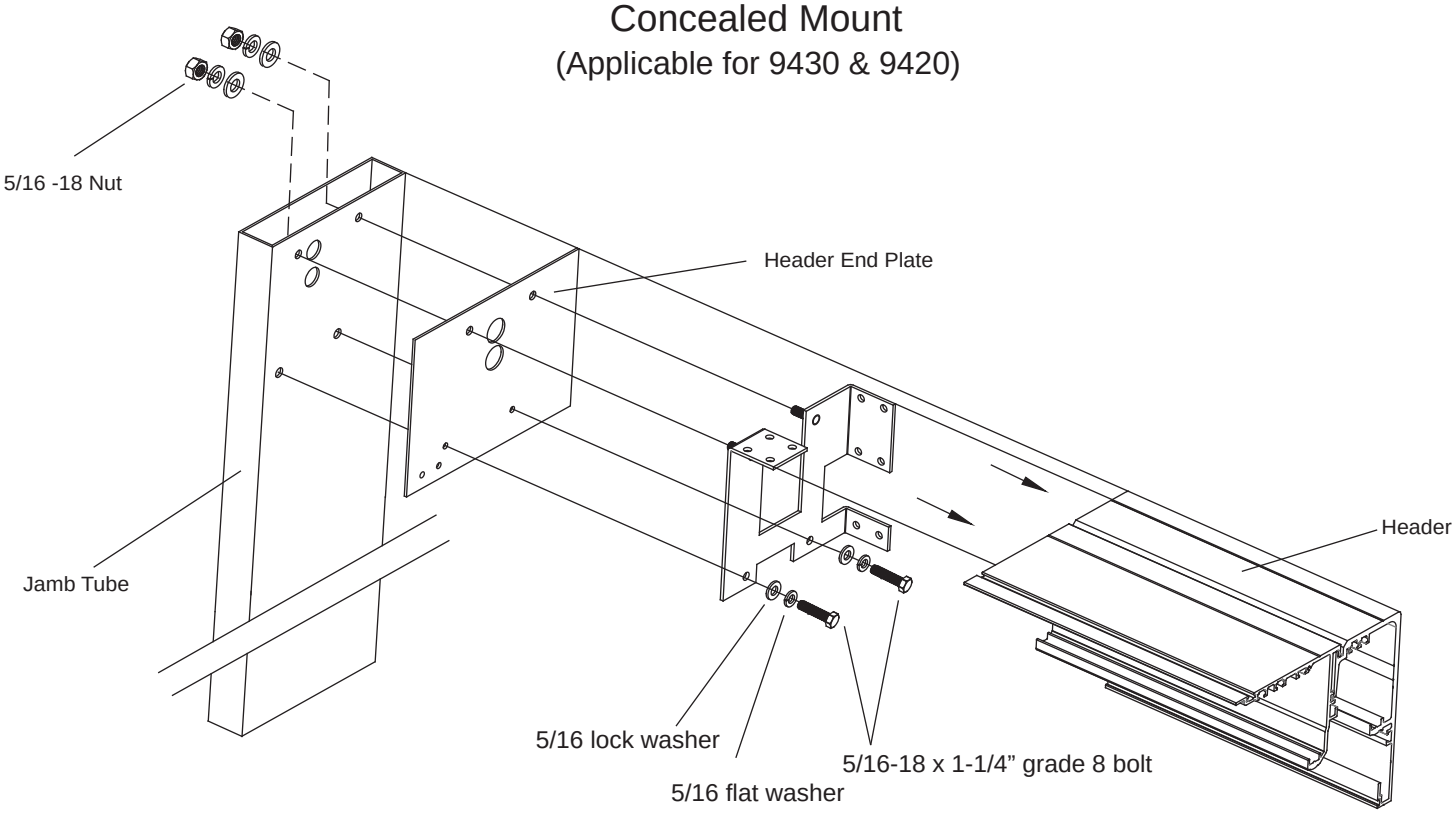
HEADER AND JAMB ASSEMBLY PREPARATION

Align the jamb tubes with the header end plate and make sure that the bolt holes and the electrical feed holes are line up as shown in figure below.

See Page 6 for Transom Assembly



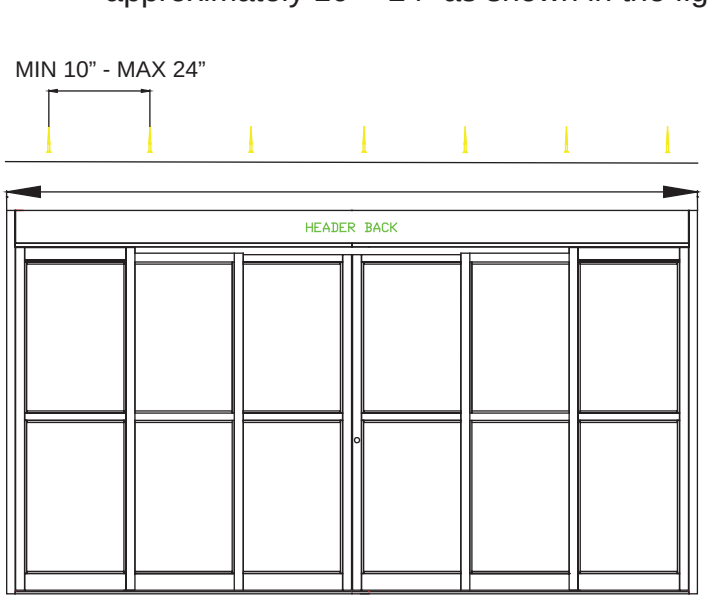
Concealed Mount
(Applicable for 9430 & 9420)

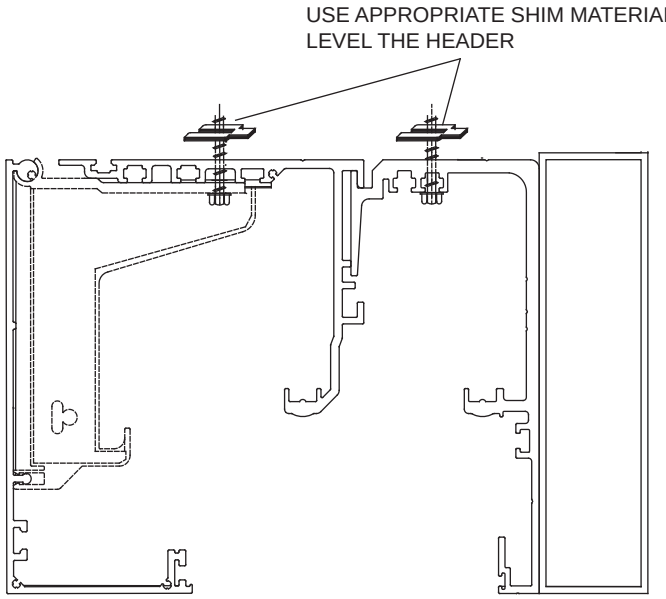


Flush Mount (Applicable for only 9420)

HEADER AND JAMB ASSEMBLY INSTALLATION

Pre- drill the header prior to lifting the unit into place. The distance between the fasteners installed through the header located at both ends and at the center of the unit should be approximately 10” - 24” as shown in the figure below.



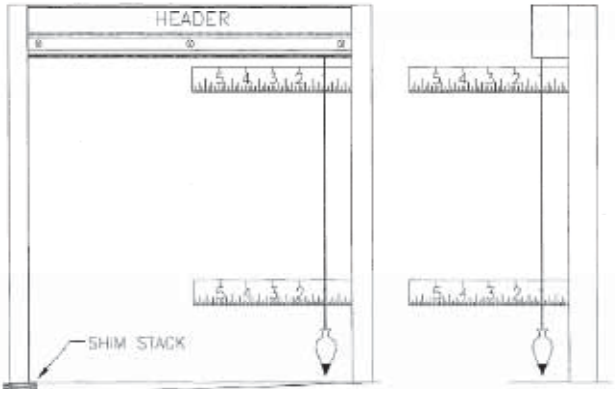


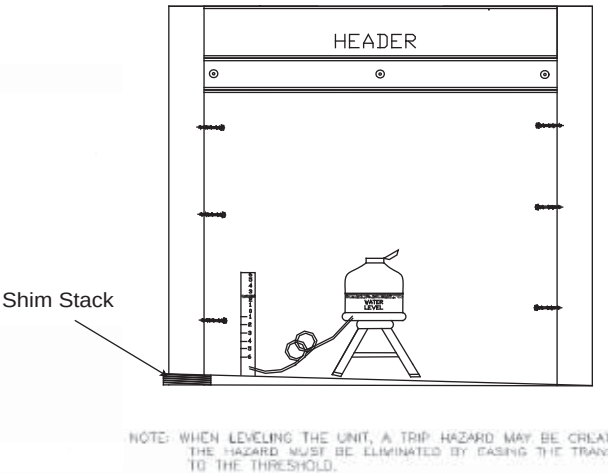
NOTE:
THE HEADER WILL SHAKE IF IT IS NOT SECURED PROPERLY

DETERMINE THE HIGHEST POINT OF YOUR FLOOR BY USING THE WATER LEVEL (SEE EXAMPLE BELOW).

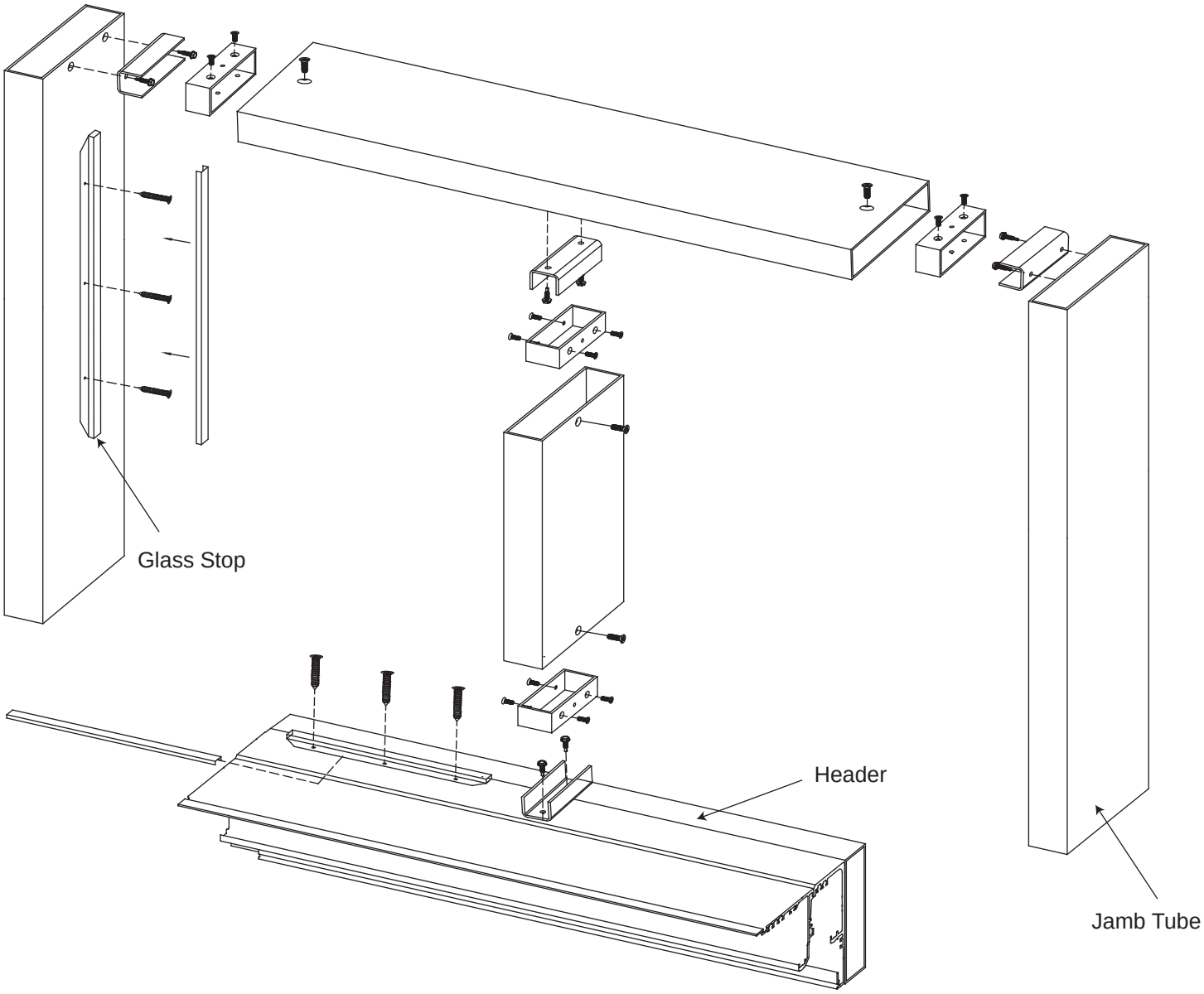
Securing the jambs will depend on the possibilities provided by the work environment. It is suggested that the jambs be secured at both ends and at the center.Also,that fasteners be selected and located to limit the visibility on the final assembly.

In the event there is nothing to mount the jamb to vertically, an L-bracket can be installed at the bottom of the jamb. L- brackets should be installed to provide the most support in the least visible location possible.





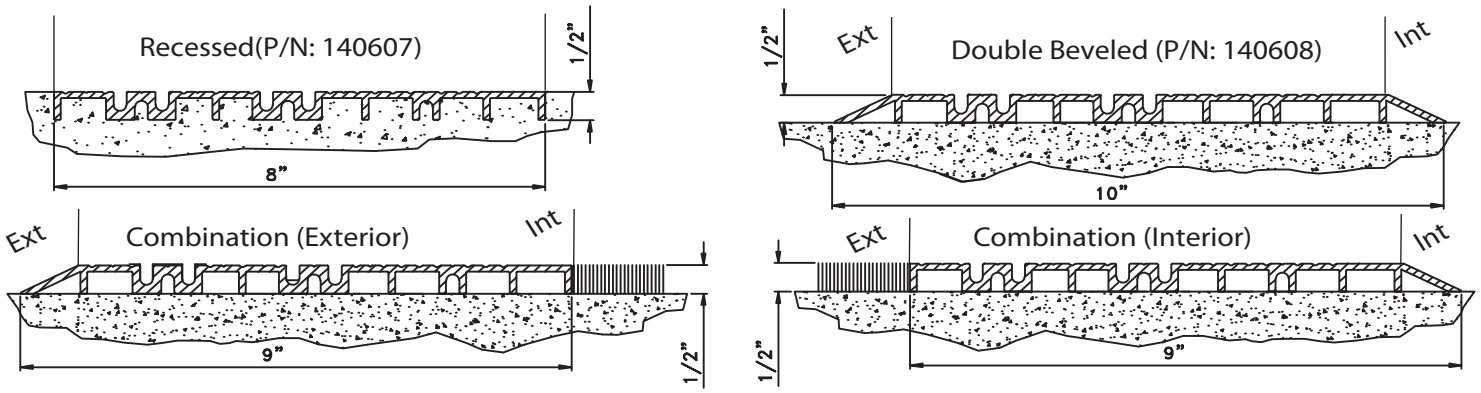
TRANSOM ASSEMBLY

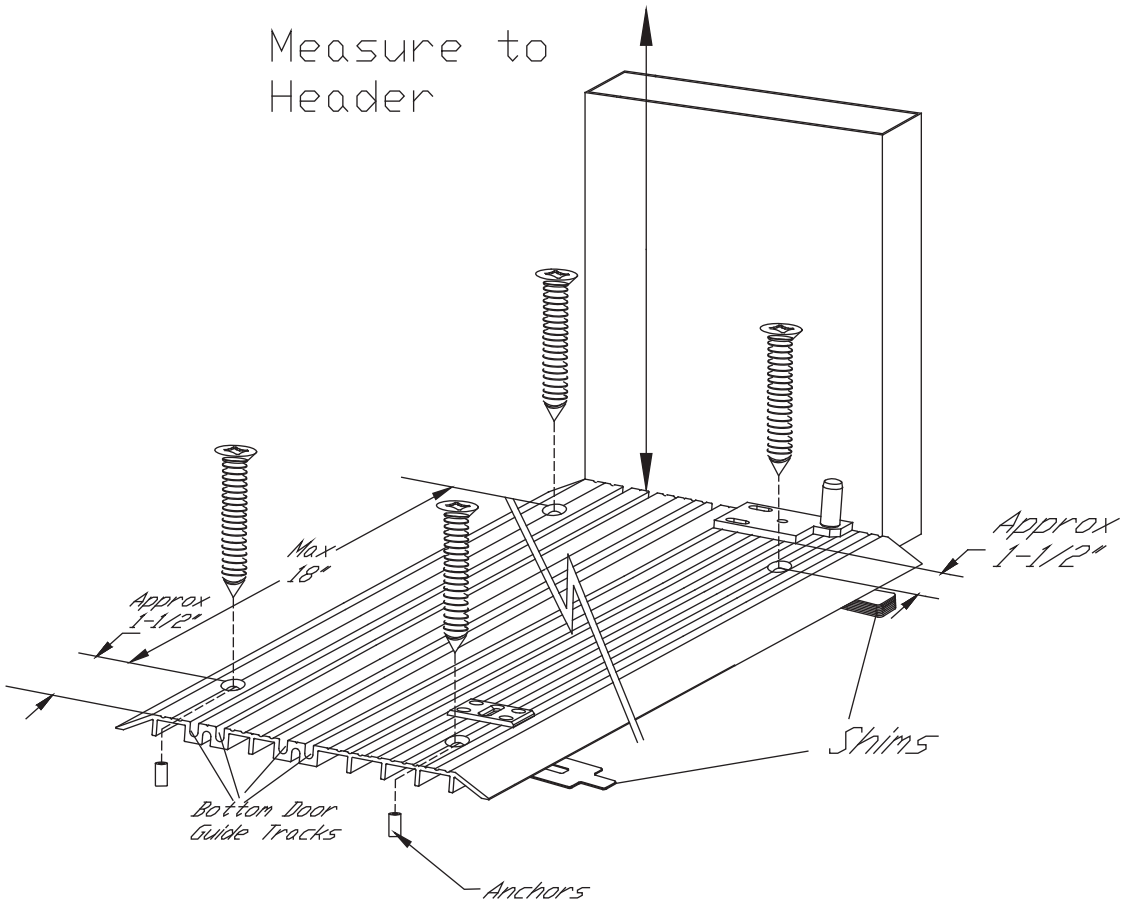


THRESHOLD/BOTTOM GUIDE INSTALLATION FOR TX 9430

The TX 9430 threshold contains the bottom door guide tracks.Verify that the track position in the threshold is on the cover side of the header and in line with jambs. If required use appropriate shim material to level the threshold as shown. Measure from the top of the threshold to the bottom of the header to insure both the header and threshold run parallel to each other.Fasteners should be equally spaced through the length of the threshold, starting approx 1-1/2” from each end and not to exceed 18” from center to center.

Note: In the event a gap is created between the threshold and the finished floor the threshold must be supported through its entire length with mortar, If not supported the threshold could become deformed and interfere with door operation.





BOTTOM DOOR GUIDE PROFILE INSTALLATION FOR TX 9420

The bottom door guide profile should have a 1” spacing from the back side of the jamb as shown in figure A. A straight edge or chalk line should be used to ensure that the guide profile is running parallel to the header, several measurements should be taken from the top of the guide to the bottom of the header. The guide must be supported through its entire length.

NOTE: Bottom Door guide profile is only used to secure 0 - Panel (fixed side lite), The two sliding panels will use bottom guide(shown on page 13) which runs in the bottom door guide tracks in the threshold as shown in fig B.

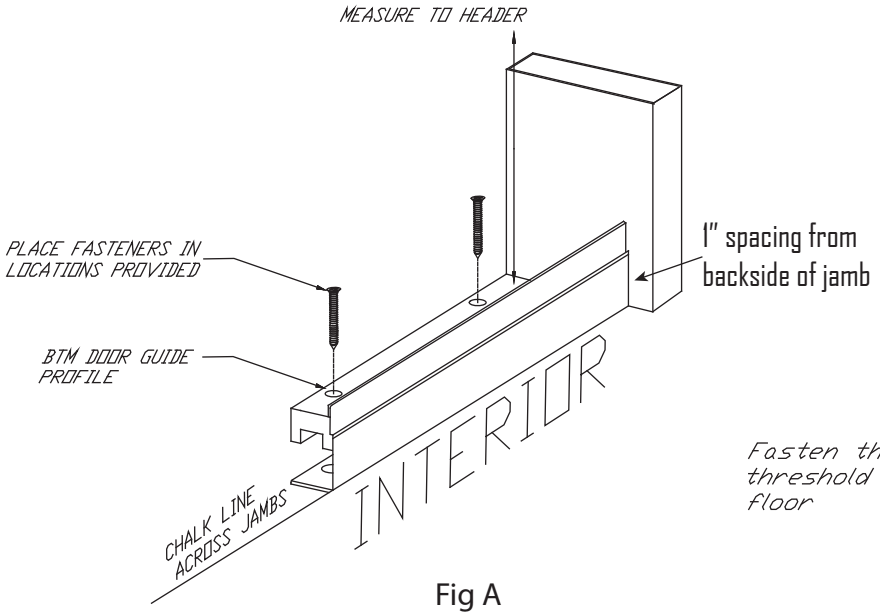


Fig A

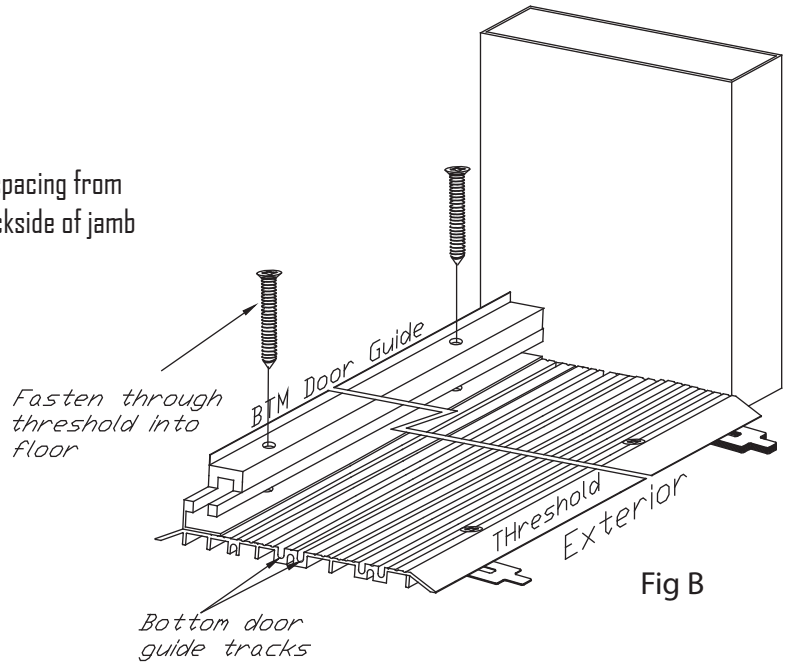
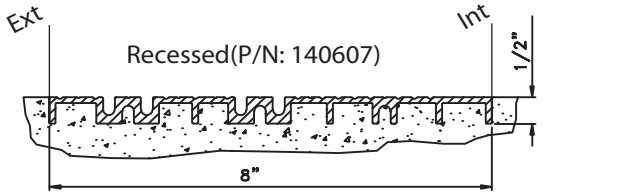
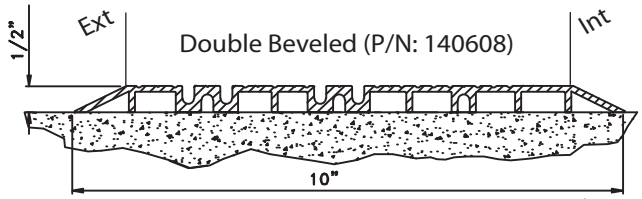
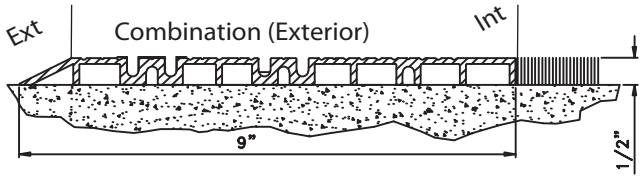
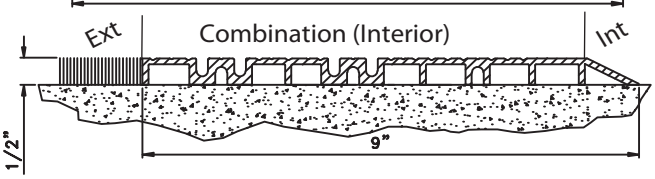


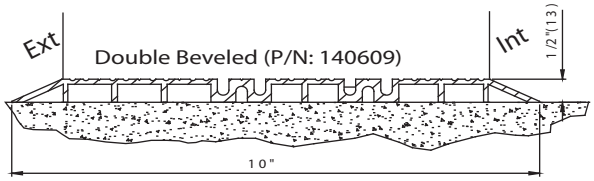
Fig B







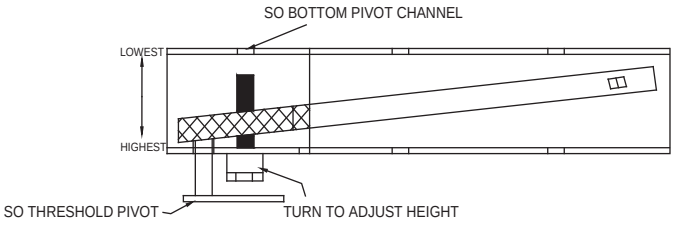


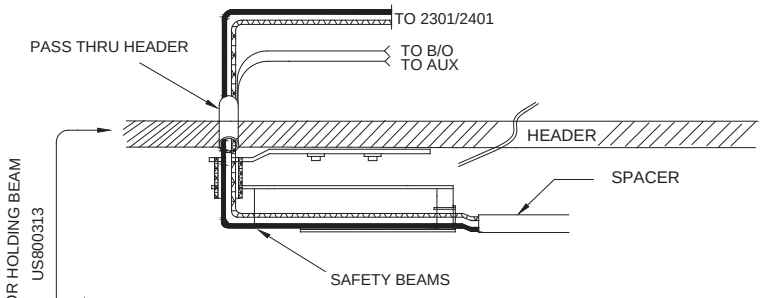


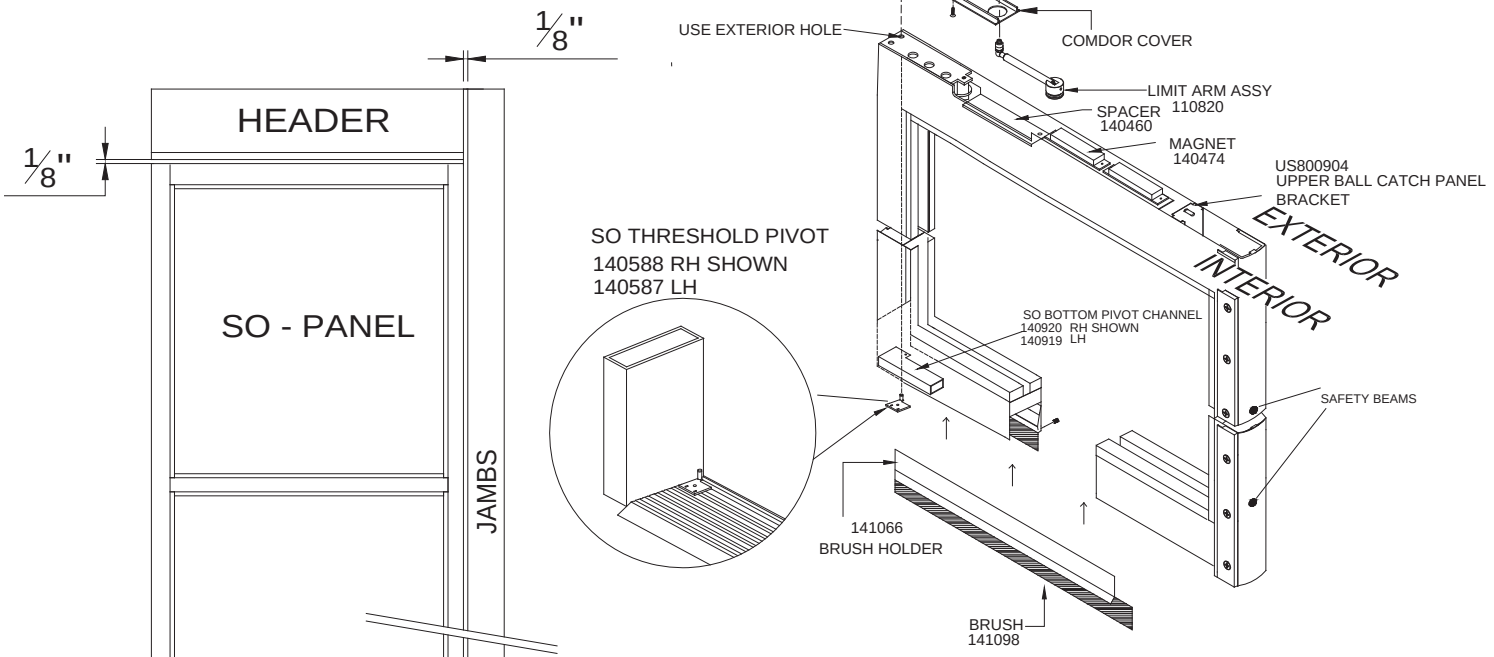
(Applicable only for Flush Mount)

SO PANEL INSTALLATION FOR TX 9430

Install the SO Threshold Pivot using the supplied hardware as shown in illustration at provided locations. Remove the small comdor cover at the end of the header to reveal the SO top pivot.Remove all screws and place the pivot into the exterior hole of the door portion top pivot as shown below. If equipped with the safety beams , route the wires through the pivot and use the access hole in the header to run the wires to drive unit.Now position the SO panel at approximately 90 degrees to the header and lift the SO panel onto the lower pivot. Pull slack from safety beam wires while aligning the top top pivot and reinsert the screws, tighten them enough to keep the panel in closed position.once the SO panel has been aligned, reopen panel and tighten all fasteners.







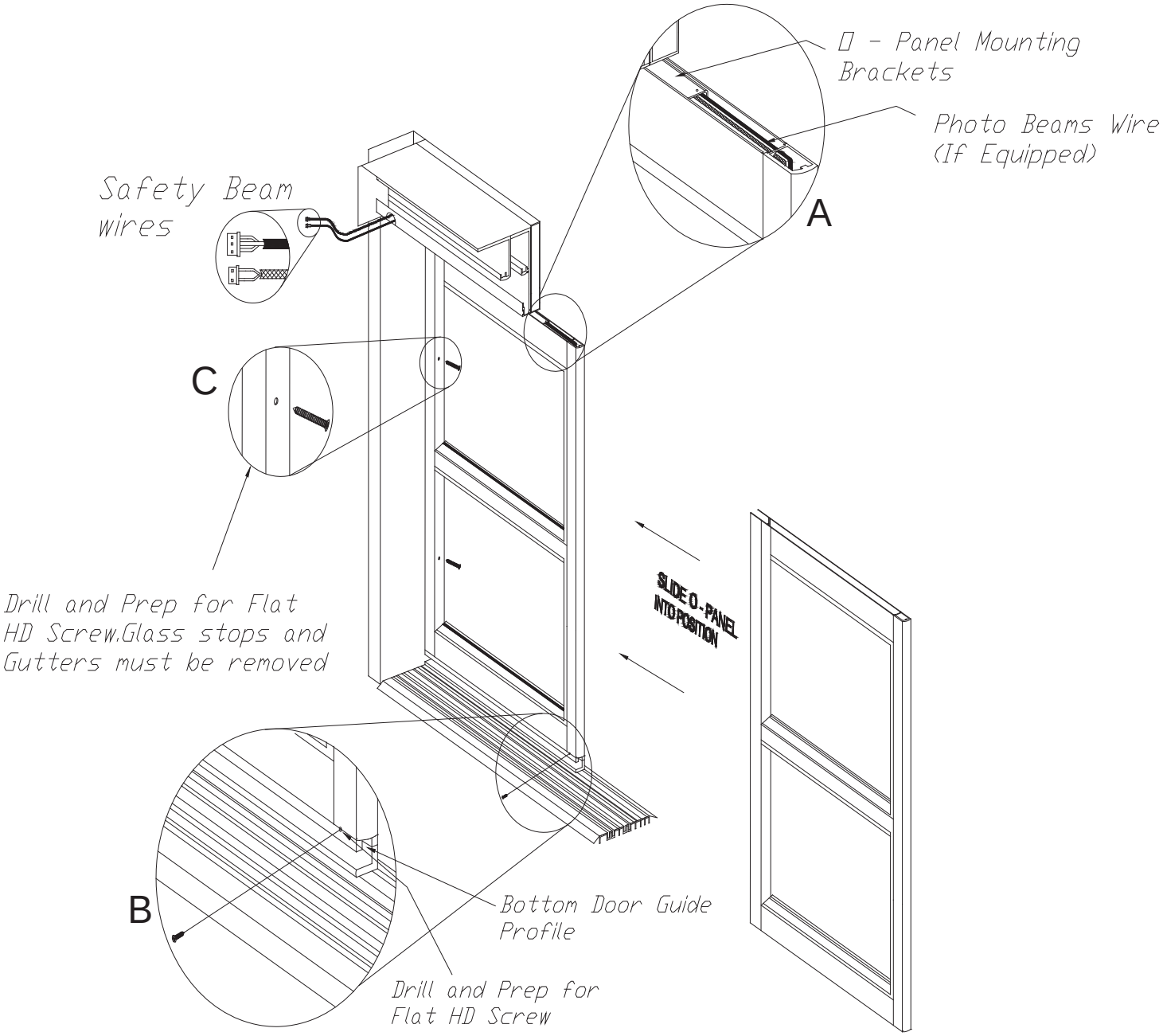
R. H. SHOWN

O - PANEL INSTALLTION FOR TX 9420

Install the mounting brackets in the pre-dilled locations on the header,using the supplied hardware. The clips should be placed, one shown and one opposite as shown in illustration A

If equipped with photo electric beams, the wires should be laid out at this time. Be careful not to pinch or break any of the wires while sliding the panel into place. Now align the O - panel with the bottom door guide profile and mounting brackets, and slide the panel into place.Lubrication can be used while sliding the panel into the place.Now secure the panel by choosing the appropriate fastener location as shown below.

Note:
A fastener must not break through into guide track as it could damage the bottom door guide.



P - PANEL INSTALLATION FOR 9420 FLUSH MOUNT

Lay up the P - Panel in line with the interior of the threshold as shown in fig A, and then secure it to the masonary by choosing the appropriate fastener location as shown below. If equipped with the safety beams route the wires through the jambs and use the access hole on the jamb tube to run the wires to the drive unit as shown below.

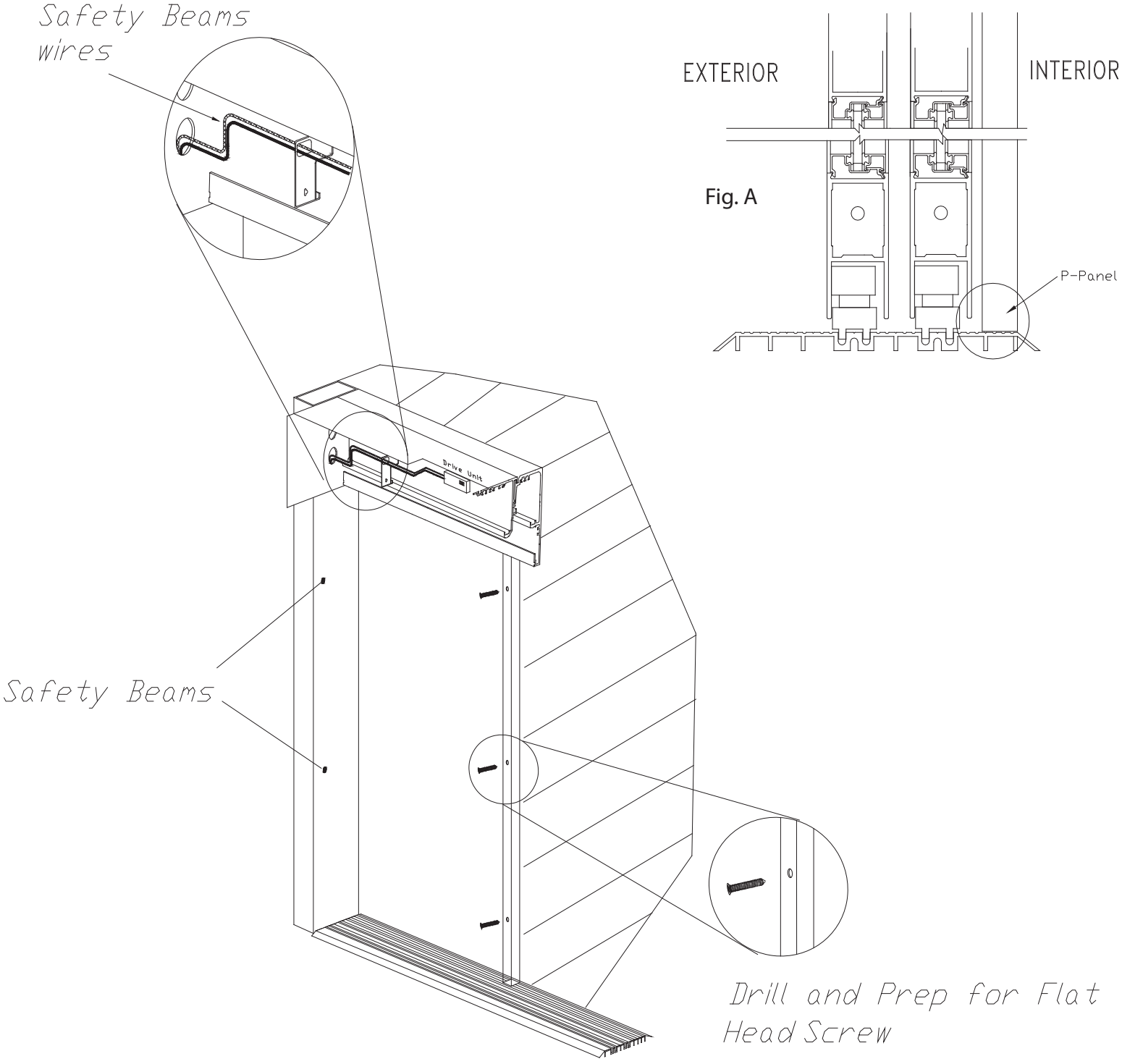


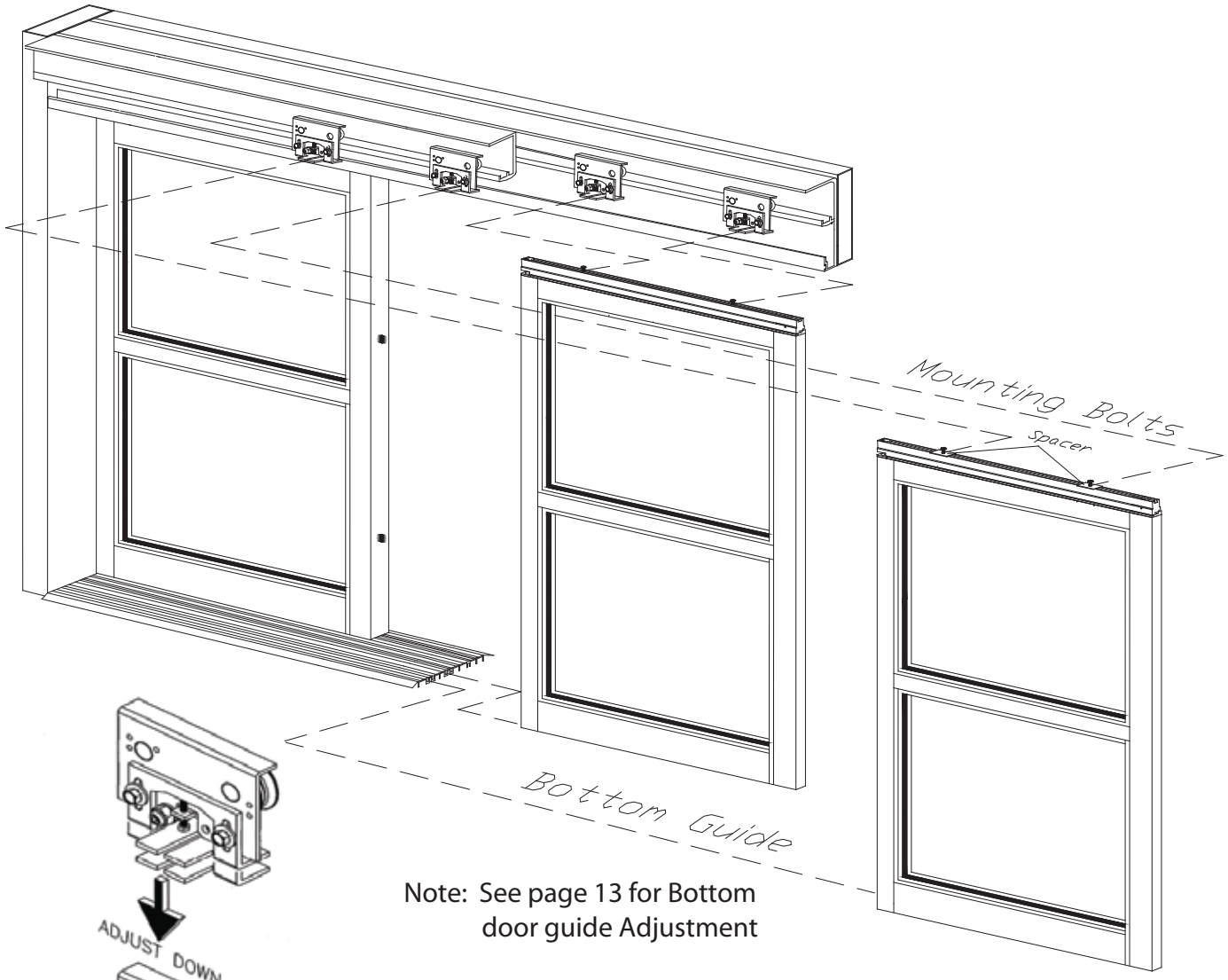
Fig. A

SX PANEL INSTALLATION

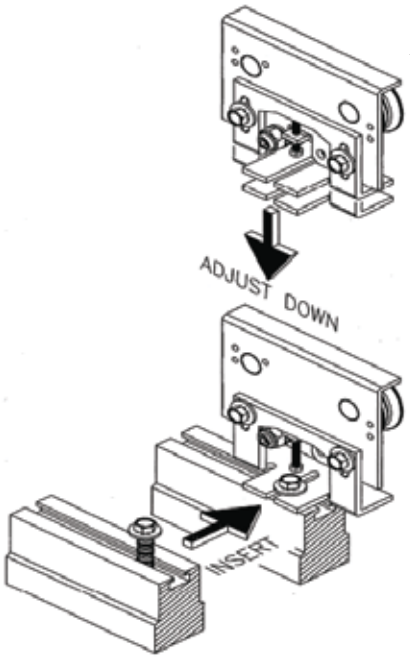
Install the brush on the bottom of the SX - Panel prior to lifting into place as shown on page 9 (SO - Panel Installation) of this manual.

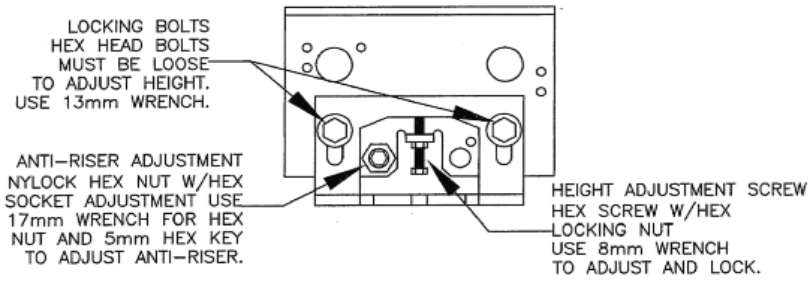
NOTE: The trolleys are shipped with the antirisers tight against the track to prevent damage in shipment. The anti - risers must be loosened to re - position the trolleys.

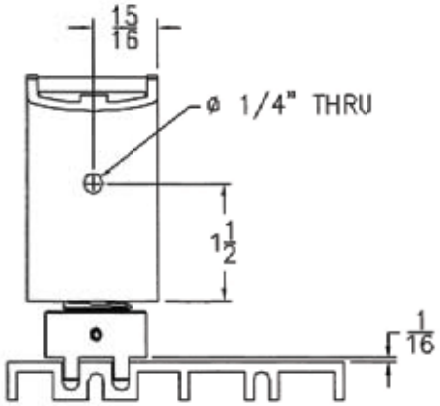
Loosen the two panel mounting bolts (on top of the SX - Panel) until two full threads are engaged. Position the SX - Panel so that it will slide behind the drive unit while aligning the bottom door guide /Pivot and guide channel . Align the trolleys and bolts and slide the two together.



Note: See page 13 for Bottom door guide Adjustment







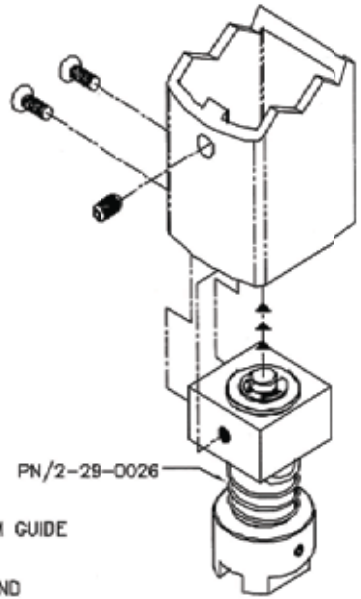
OLDER MODELS SHOULD BE MODIFIED AS SHOWN IN ORDER TO GAIN ACCESS TO THE ADJUSTMENT SET SCREW.

ON MODELS EQUIPPED WITH INTERLOCKS, TEMPORARY REMOVAL MAY BE REQUIRED.

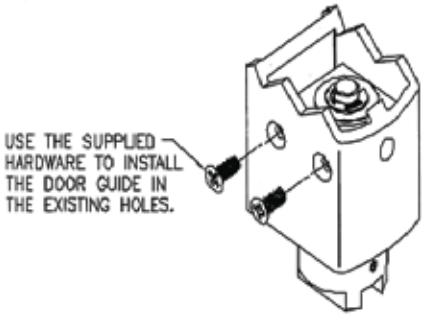
ADJUSTMENT

TO ELIMINATE GUIDE POP OR BINDING, THE BOTTOM GUIDE SHOULD BE ADJUSTED AND SECURED AS FOLLOWS.

1. LOCATE THE HIGHEST POINT OF THE THRESHOLD, AND SLIDE THE PANEL UNTIL THE GUIDE IS DIRECTLY OVER IT. LIFT THE GUIDE APPROX. 1/16" HIGHER TO INSURE CLEARENCE AND SECURE WITH SUPPLIED SET SCREW.
2. SLIDE THE PANEL THRU ITS FULL TRAVEL TO CHECK GUIDE ENGAGEMENT INTO THE THRESHOLD. AT NO POINT SHOULD THE GUIDE COME COMPLETLEY OUT OF THE THRESHOLD. A MINIMUM ENGAGEMENT OF 1/8" IS REQUIRED.



ASSEMBLY



TX 9430 BOTTOM DOOR GUIDE INSTALLATION

SX PANEL ALIGNMENT

The alignment of the SX panel is very important to the functionality of the TX - 9000 series sliding door(s). Adjustments to the panel must be done with the 13 mm bolts slightly loose. After all adjustments are completed the 13 mm bolts can be re - tightened and all the anti - risers must be adjusted to have a gap of .020”(approximately)

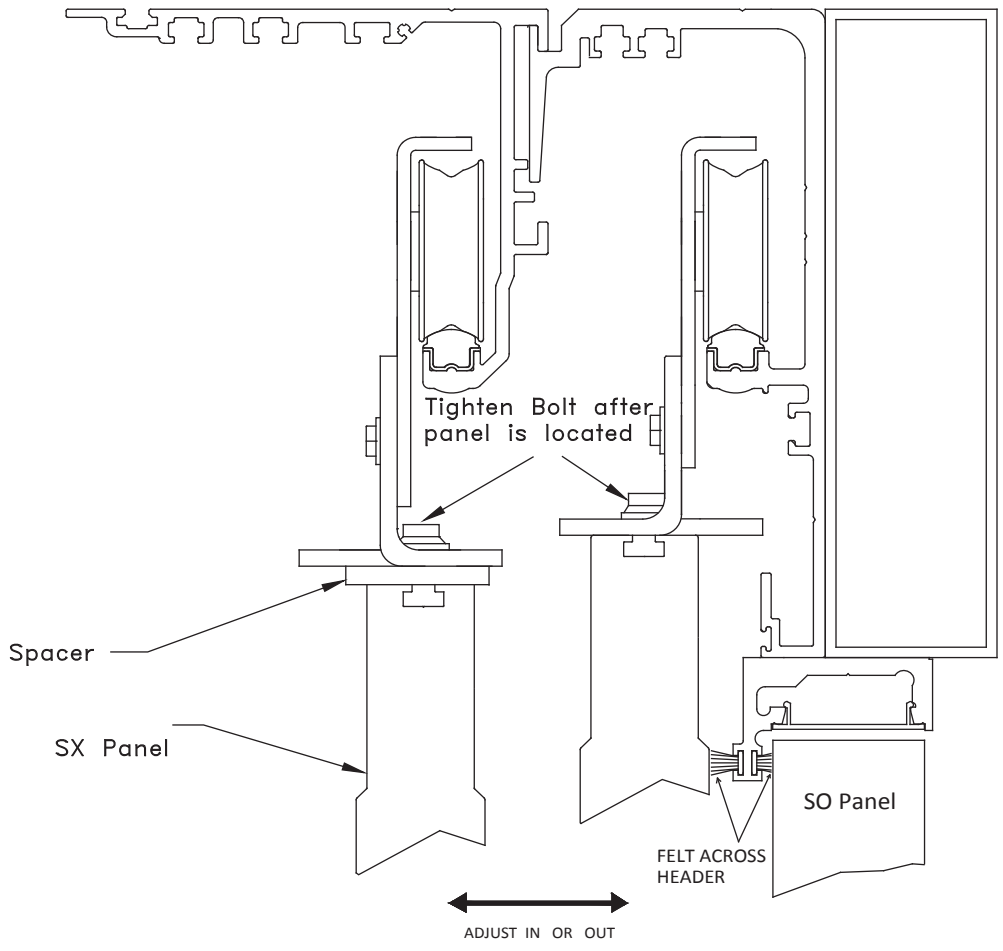
The moving panels should contact the sealsand /or felts only slightly in order to minimize drag.

Use the following steps to align the moving panels.

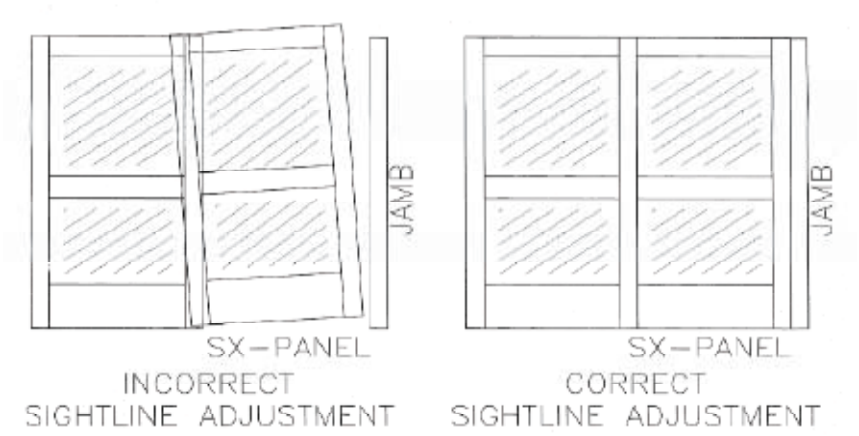
The first adjustment should be to lift the panel to the proper operation height. There should be even contract between the door sweep and threshold or finished floor.

The second adjustment is to position the panel the proper distance away from the header. The panel should contact the felt only slightly and evenly through its length.Adjust this by sliding the panel towards or away from the felt brush on the header.When the panel is correct the panel mounting bolts can be tightened.

CONCEALED MOUNT



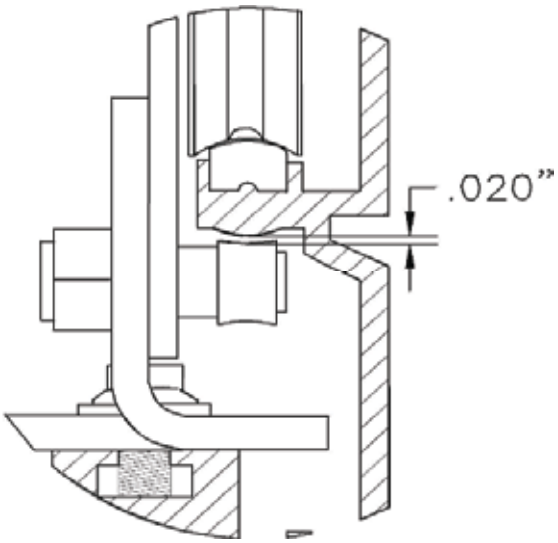
The third adjustment is to line up the sight lines on the panels and jambs. These are fine adjstments and should be done carefully.



Once the panels have been properly adjusted the 13 mm locking bolts can be tightened.

The final adjustment is the anti - riser. There should be a .020” gap between the roller and the track. The roller is mounted to an eccentric cam that uses a nut to secure its location.

Adjustments to the anti - riser require a 5mm hex key and a 17 mm wrench while holding the roller in position with the hex key, loosen the nut.Adjust the anti - riser with the hex key and tighten the nut using a 17 mm wrench.



Alignment/Timing on Middle SX Panel

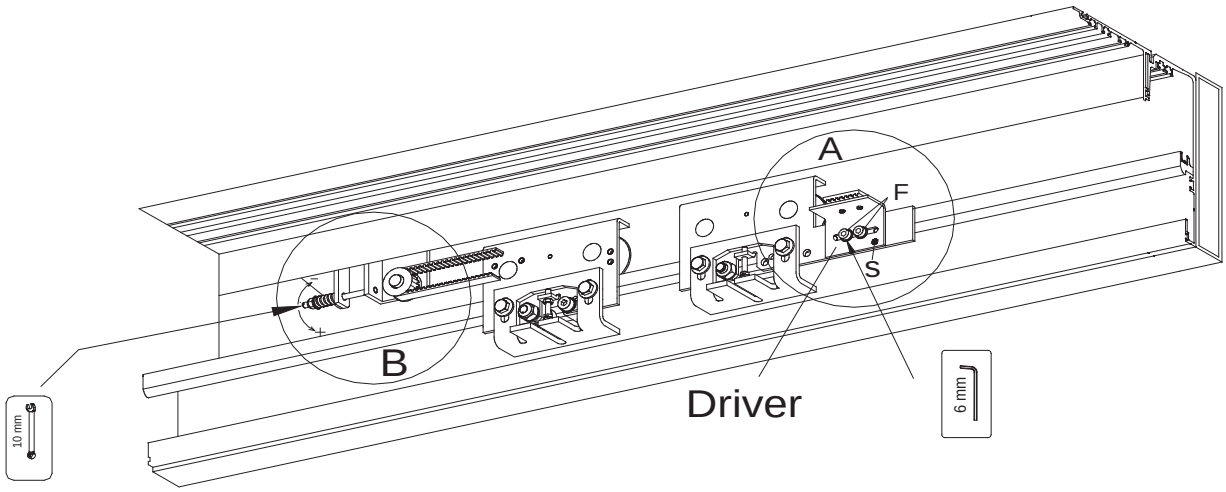
The timing of the middle SX - Panel is very important to the functionality of the TX 9000 sliding door. Timing must be done by aligning the position of 6mm alan screws (shown at position F in illustration A) with the driver while the door is in the full closed position.After all adjustments has been made tighten the alan screws and drill the hole at position (S) of the trolley head plate as shown in illustration A and secure it.

Note:

If the timing is not correct on the middle SX Panel the door will bounce back after coming to the full closed position and the reliable operation of the system is not guaranteed, an encoder error code or ghosting may occur.

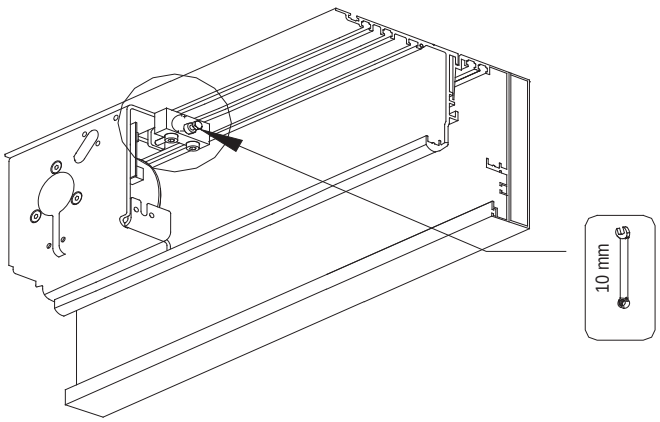
Tensioning the belt on Middle SX Panel

Adjust the tension on the belt by turning the 10 mm bolt as shown below in illustration B.



Tensioning the belt on Lead SX Panel

Adjust the tension on the belt by turning the 10 mm bolt as shown below.



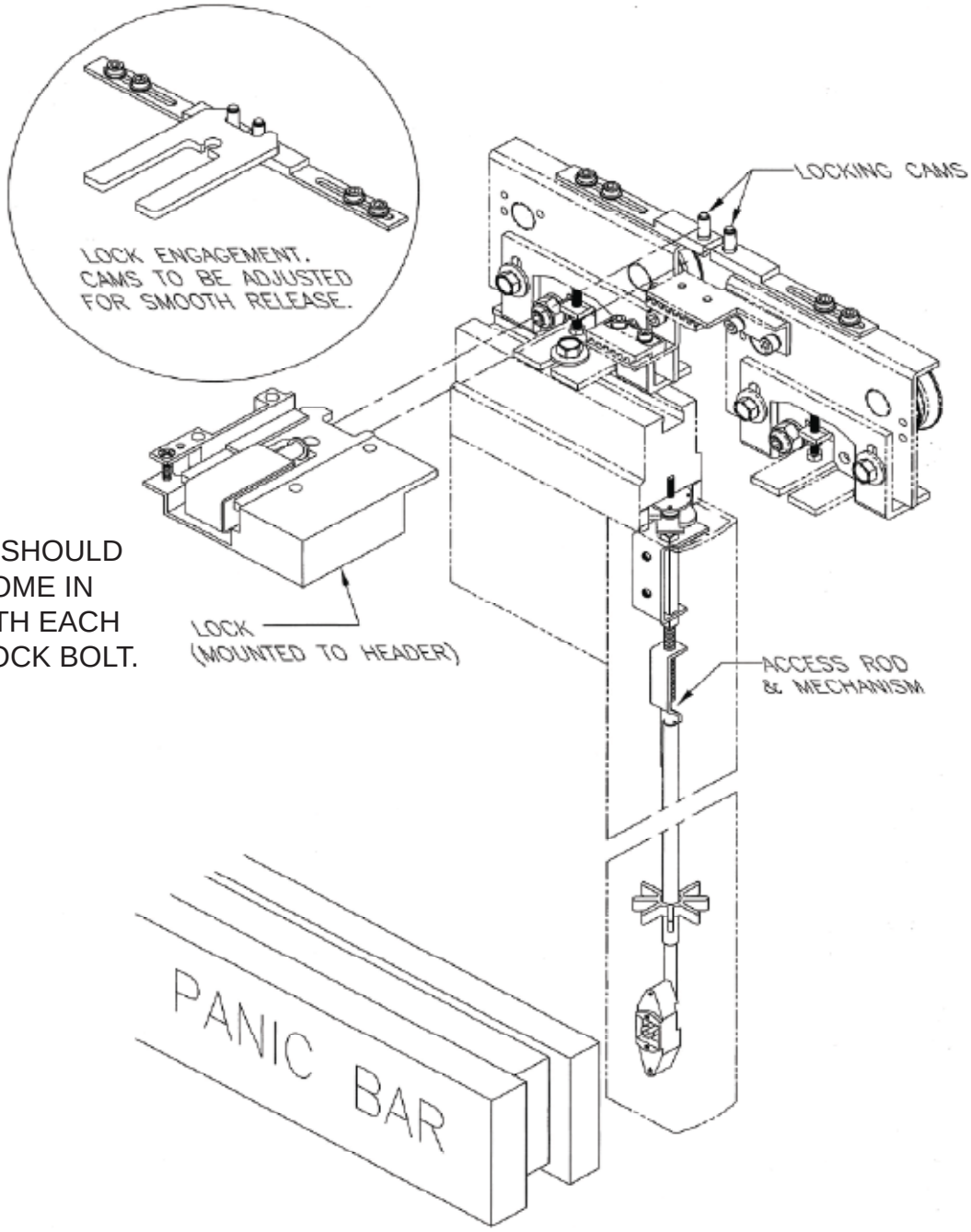
ACCESS CONTROL ASSEMBLY

PANIC DEVICE:

The access control feature will have the major components installed on the SX panel from the factory.

ELECTRIC LOCK :

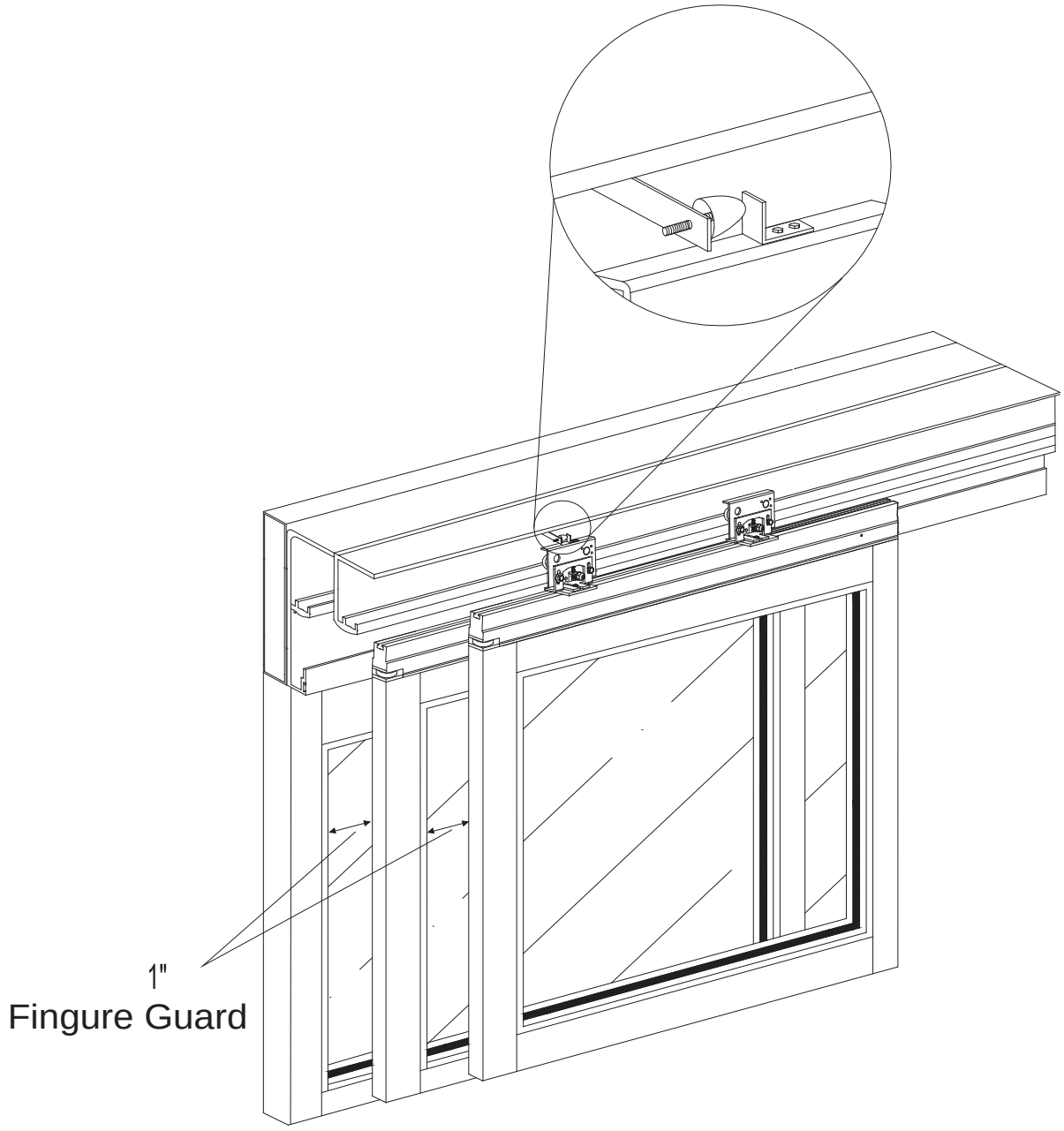
The locking cams will have to be adjusted once the doors are aligned . Both the trolleys and the locking cams must be adjusted as shown.



NOTE:
AT NO POINT SHOULD THE CAMS COME IN CONTACT WITH EACH OTHER OR LOCK BOLT.

BUMPER ADJUSTMENT

Adjust the bumper to provide a 1” gap between the panels for fingure guard as shown below.To increase the fingure guard distance move the bumper towards the door opening, while to decrease the distance move the bumper away from the door opening

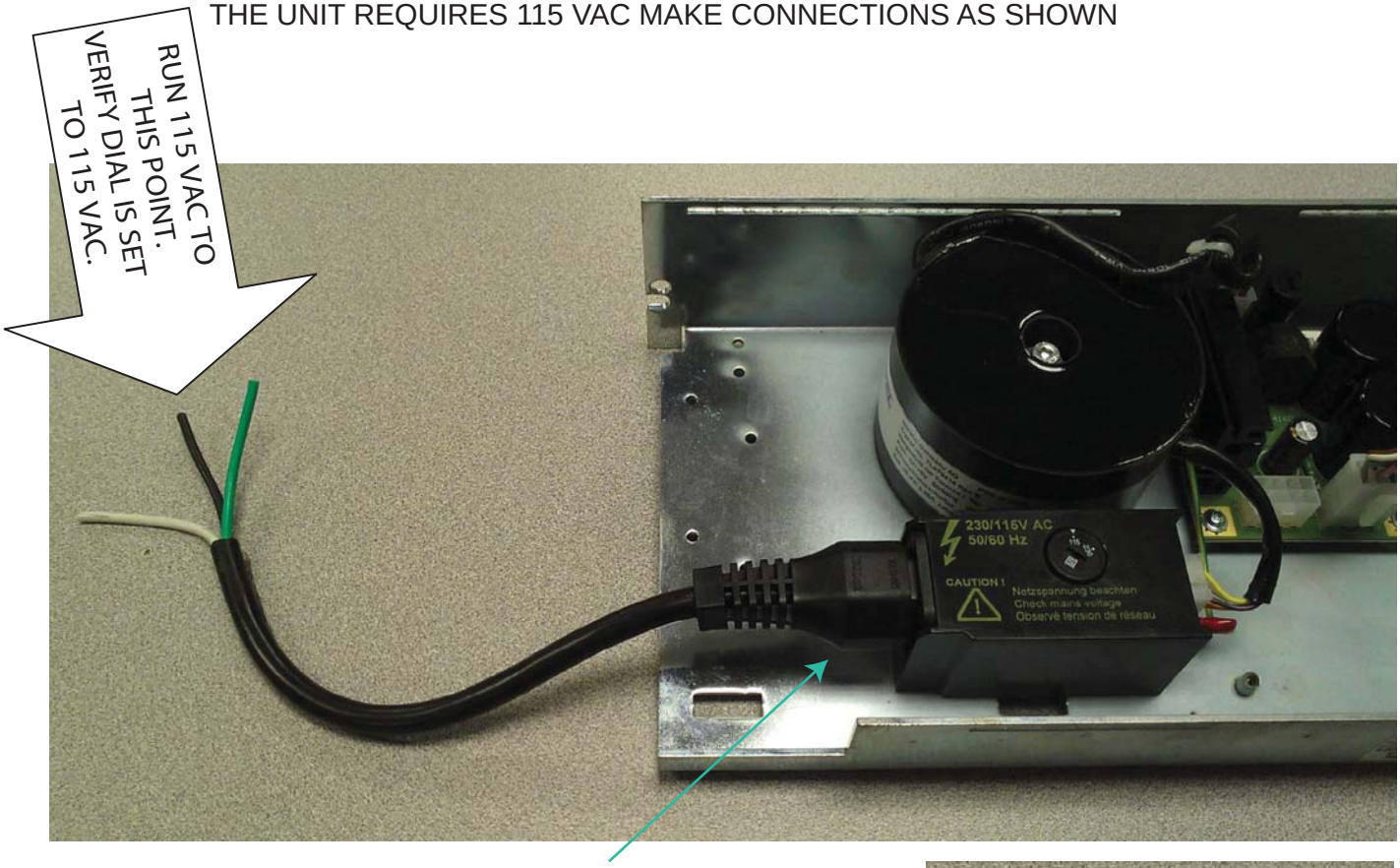


12. POWERING UP THE TX9000

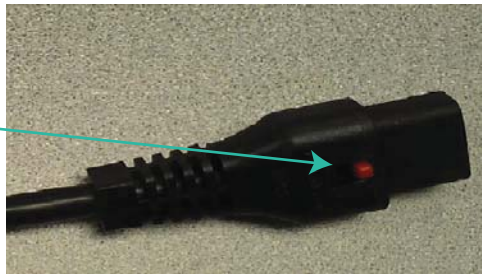
ALL PRIMARY ELECTRICAL CONNECTIONS SHOULD BE COMPLETED BY A LICENSED ELECTRICIAN!

DO NOT INSERT THE POWER PLUG INTO THE UNIT, UNTIL IT IS READY TO BE COMMISSIONED. AN OVERALL CHECK SHOULD BE PERFORMED.

NOTE:
THE UNIT REQUIRES 115 VAC MAKE CONNECTIONS AS SHOWN



Release for power plug located on bottom.



FUNCTIONS OF OPERATING MODES ON FCP

Modes can be selected with the 6 position Function Control Panel(FCP),The technician will review mode switch with the end-user.

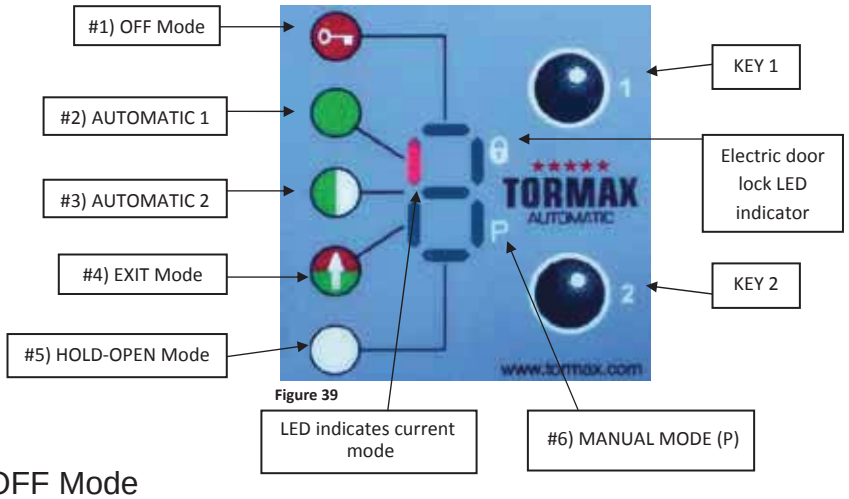


Figure 39

1. OFF Mode

The interior and exterior activators are inhibited after the door reached the fully closed position, if an electric lock has been installed it will be activeted. The operator will cycle if a signal is sent to the key switch input.

2. Automatic 1 Mode

Typical setting for normal operation. This setting allows interior, exterior activators, key switch and safety devices to operate door.

3. Automatic 2 Mode (Reduced Opening)

Allows the door to open with a reduced opening width. If necessary , hold open time can be adjusted different from Automatic 1 mode.

4. EXIT Mode

Allows interior activator and key switch inputs to operate the door system.Exterior activator is inhibited while door is closed but becomes active when the door is operated by the interior activator or key switch inputs.

5. HOLD - OPEN Mode

Hold the door system open.

6. MANUAL OPERATION (P) Mode

Allows the door to be used manualy without the use of sensors /push and pull activation.

The technician will clearly explain and demonstrate the modes of Operation to Enduser

T-1248 e	Programming with Function Control Panel (FCP)	★★★★★ TORMAX AUTOMATIC 11803 Starcrest Drive SanAntonio, TX 78247 1-888-685-3707 www.tormaxusa.com
Area of application	iMotion 1301, 1401 Operators and 2301, 2401 Drives	
Release	July 2008	
Use	FCP operation and function	

Contents

Function of FCP 1
Programming with FCP 2
Programming Example 3

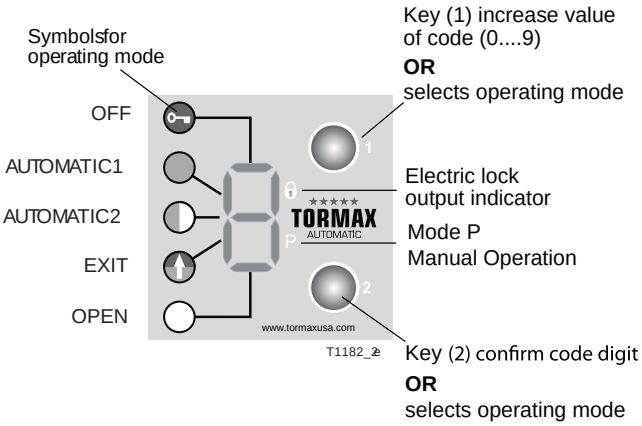
Function of (FCP) MCU32 User Interface

The FCP has 2 function levels

– Select operateing modes by end user

– Programming module for the AAADM certified technician

Programming can only be accessed by a technician who knows the access code.
Unauthorized programming is practically eliminated.



Control Level end user

Functions: Choice of the operating mode
Reset

Displays: Current operating mode

Two-digit fault numbers

Access protection: Panellock

Programming Level for the AAADM certified technician

Functions: Input of access code "C"
Programming of max. 100 parameters in 10 steps

Displays: Currently set parameter

Access protection: Access code (111)

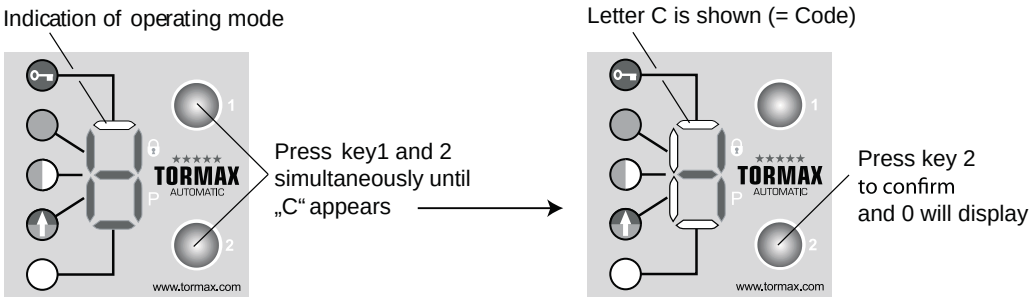
Time out: 10 min. after the last programming entry is made the FCP will time out and technician will be required to enter the access code (111) again to make further adjustments.

Programming with the FCP

With key 1 the value of the number is always increased (0 to 9 and back to 0)

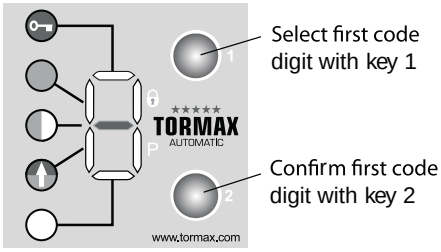
With key 2 the displayed number is always confirmed.

1. Start Access Code



2. Entering Access Code 111

Zero appears, ready for code entry



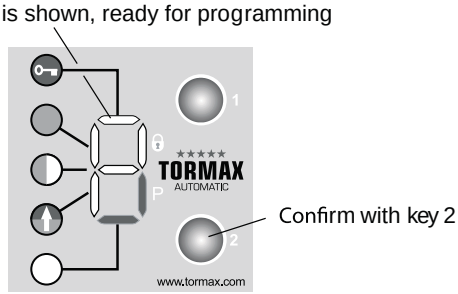
T1185_3e

Select the number “1” with key 1 and confirm by pressing key 2, repeat this step two more times entering the code 1-1-1

Time out: Occurs if no input is made during 10 s, then the user interface goes back to indicating the operating mode.

3. Start Programming Level

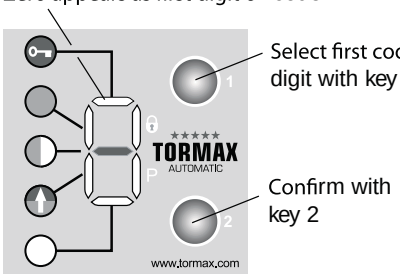
P is shown, ready for programming



T1185_4e

4. Entering Parameter Code

Zero appears as first digit of code



T1185_5e

- Select and confirm the 2nd and 3rd code digit using the same sequence as shown in step 2

Note:

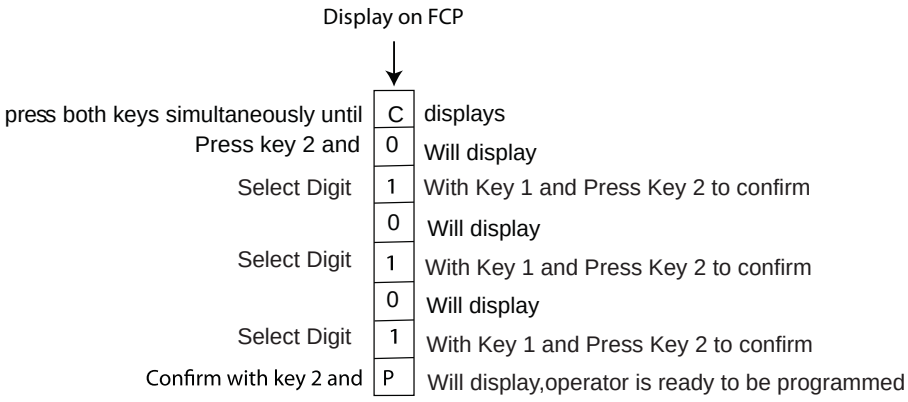
- After the 2nd code digit has been confirmed, the flashing digit shows the set value of the parameter (=third digit of the parameter code).If the value is confirmed the FCP will rapidly flash for 1 sec then display p again.
- By quickly pressing and releasing both keys simultaneously the FCP will return to the set mode.

Time-Out

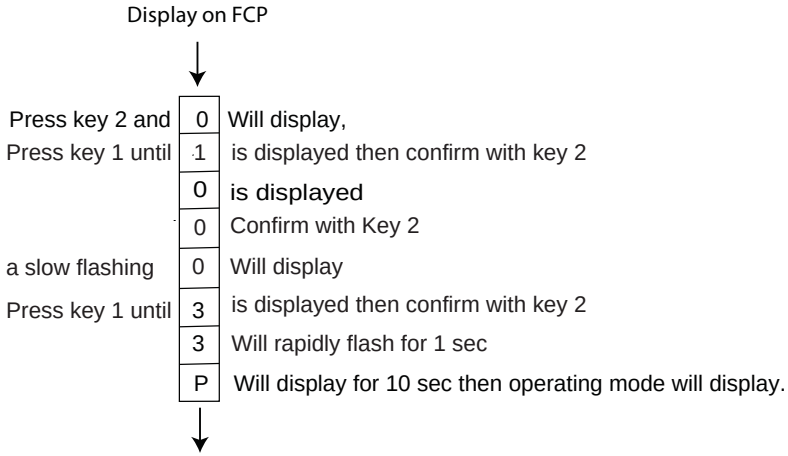
- If no entry is made during 10 s, P is shown again.
- If P is not confirmed during the next 10 s with the key 2, the FCP returns to the operating mode. During the next 10 minutes, pressing both keys simultaneously will cause a direct change to programming level P

Programming Example

Example 1: Begin by entering the access code 111



Example 2: Enter code 103 to adjust the Hold - open time for 2 sec



Hold Open time for Automatic 1 is now set for 2 sec

Within 10 minutes you can enter the programming mode by pressing both keys simultaneously and P will display
If no further adjustments are made after 10 minutes the FCP will be protected with the access code, Repeat Example 1.

QUICK START UP

At this point a complete check of all fasteners, wire connections/routing, LIN - BUS connections, mechanical operation of both SX-panels and breakout panels, signage, and overall appearance should be performed.

The control will be factory programmed to the functions you specified on your order form, follow the steps below for the door caliburation run

1) Change the Operating mode to AUTOMATIC 1MODE (solid green circle on FCP) using Key 1 or Key 2.

(Applicable to doors having clockwise motor rotation direction upon opening)

2a) Press and Hold SW2 switch(Blue button on control) until you hear 1 beep initiating Automatic Configuration,the door opens slowly up to the opening stop displaying H63 for reference run open and closes again displaying H 62 for calibration run close.

(Applicable to doors having counter clockwise motor rotation direction upon opening)

2b) Press and Hold SW2 switch(Blue button on control) until you hear 2 beep initiating Automatic Configuration,the door opens slowly up to the opening stop displaying H63 for reference run open and closes again displaying H 62 for calibration run close.

3) Complete several opening cycles with SW2 switch until H 65 is no longer displayed on FCP. The learning process lasts for a maximum of 14 cycles .

If a battery back up is supplied , be sure to connect the eight pin connector from the batteries to the module. This connector is disconnected during shipment to prevent the damage to the unit . The batteries will require time to charge fully . The unit will automatically charge the batteries while 110 v is being supplied .

If an electro- mechanical lock is supplied make sure to adjust the locking cams located on the top of the trolley head (s). Removing power and manually engaging the lock may assit in this process.

* SW2 Switch is a small blue button on the control used to activate the door for learning procedure

Programming the Control System

Follow the programming steps in the same sequence as shown below or damage to the system may result.

1. Factory Reset

   Enter Code 041 for Factory Reset

2. Operator Type (H11 = not yet programmed)

   Code 011 for iMotion 2301 Slide Door Drive Code 012 for iMotion 2401 Slide Door Drive

3. Enter Code 631 for IN4 to be the Breakout function, make sure all SO panels are closed and the LED on IN4 is illuminated then enter Code 038 for a NC circuit recognition.

4. Enter Codes 652, 66C and 67C to program SF2 as safety with reversing 1, SF3 and SF4 as safety with reversing 2 Make sure the Holding Beams are installed before performing setp 5.

5. Automatic Configuration H14 = automatic configuration not yet completed

Recognition of Safety Sensors contact type NO and NC (***MAKE SURE THE SENSORS ARE NOT IN DETECTION DRUING THIS PROCESS)***

Note: Manually Open the door to the full open position and then enter the appropriate code.

Type	Code 021 or press SW2 until the first signal sounds Motor Rotation Clockwise Opening	Code 022 or press SW2 until the second signal sounds Motor Rotation Counter Clockwise Opening
9200, 9430	Right Handed Single Slide or Bi- Part	Left Handed Single Slide
9300, 9420	Left Handed Single Slide or Bi- Part	Right Handed Single Slide

Programming continued on next page

6. Place the FCP to Auto Mode and allow the door to fully close, H64 will display.
Activate the door by momentarily pressing the SW2 button located on the control.
Continue to cycle the door with the SW2 buton until the “H” learn codes clear and the control sounds a audible (beep) tone, this can take up to 14 cycles.

7. AAADM Inspection, Functionality Test and Review

Always inspect and adjust the installtion to be in accordance with the ANSI A156.10 standard.

Test all FCP functions and modules for proper operation.

Review the FCP functions and the daily safety check procedure with the authorized personnel.

Automatic Configuration consists of the following -

SF1 - SF4	The contact type (NO or NC) and monitoring if applicable will be automatically detected. Make sure the sensor zones are clear and not in detection.
Lock unit MCU32-LOCU	The lock is automatically detected and set to default operation. See programming table for options.
Battery unit MCU32-BATU	It provides battery back- up at the time of power failure.
MCU32-INOU I/O modules	The functioning module is recognized and saved via the LIN Bus if the module is connected and coded as module 1 or module 2.
Function Control Panel	The F.C.P is recognized and saved via the LIN Bus if the module is connected and coded as shown on page 51. The F.C.P is detected immediately when - connected to the LIN BUS input of control as seen on page 51.
Power supply module MCU32-PSUP-40-36-A	The functioning module is recognized and saved via the LIN Bus (plugconnection power supply)
Reference travelling path	The door looks for the end stops, starting with an automatic closing command . After detection of both end stops the reference travelling path is saved. The display shows H63 for the opening motion and H64 for closing motion
Door dimensions	The door dimensions are detected in the initial opening cycles for the purpose of calculating the deceleration ramps and the controller setting.The learning process lasts for a maximum of 14 cycles and the display goes out on F.C.P.

	Programming Table	TORMAX AUTOMATIC
Area of application	**iMotion 2301 & 2401 Slide Door Drive | FW-Version V09.xx**	12859 Wetmore Road San Antonio,Tx 78247 1-888-685-3707 www.tormaxusa.com
Download	16 April 2012	
Use	Programming and Set up	

Code		Function	Note
01	1	iMotion 2301 drive system	
01	2	iMotion 2401 drive system	
02	1	Automatic configuration Bi - Part, Right Handed (See Page 25)	Performs codes: 030...7, 07x
02	2	Automatic configuration Left Handed (See Page 25)	Performs codes: 030...7, 07x
03	0	--Calibration run for full open and full close position	
03	1	--NO, NC or monitoring detection of SF1 - SF4 or (SW2: for 3 beeps)	
03	2	--Detecting and storing MCU Lock Module 1	Only with code 572. Check coding on module.
03	3	--Detecting and storing of MCU Battery Module	
03	4	--Detecting and storing of MCU I/O- Module 1+2	Check coding on module
03	5	--Detecting and storing of MCU Power supply Module	
03	6	--Detecting and storing of Door mass	Display H65
03	7	--Detecting 2nd FCP	Check coding on module
03	8	--NO or NC signal detection on IN1 - IN4	
03	9	I/O Module 1: Detecting, storing of "in 1-4" (NO, NC)	
04	0	Reset	Starts program with calibration run
04	1	Factory Reset	All adjustments back to default values (see *)
04	2	Firmware version	Example: r06_00 = V06.00
04	3	Number of cycles	Example: c10_302 = 10'302 cycles (max. 99?999?999)
04	4	Number of operating hours	Example: h4_002 = 4002 hours (max.99'999'999)
04	5	Delete fault protocol	
04	6	Adress of control unit for network	Example: A1 = adress no. 1
06	0 *	Control without FRW	FRW = Equipment for rescue and escape routes
06	1...8	Functions with FRW	
07	0...9	--Door mass	Automatic detection contained in 021 / 022
10	0...F	Hold-open time of activator in mode of op. Automatic 1	
		0 | 1 | 2 * | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | b | C | d | E | F	code
		0 | 0.5 | 1 | 2 | 3 | 5 | 7.5 | 10 | 12.5 | 15 | 17.5 | 20 | 25 | 30 | 45 | 60	sec.
11	0...F	Hold-open time of activator in mode of op. Automatic 2 (Reduced Opening)	
		0 | 1 | 2 * | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | b | C | d | E | F	code
		0 | 0.5 | 1 | 2 | 3 | 5 | 7.5 | 10 | 12.5 | 15 | 17.5 | 20 | 25 | 30 | 45 | 60	sec.
12	0...F	Hold-open time of key switch	
		0 | 1 | 2 | 3 | 4 * | 5 | 6 | 7 | 8 | 9 | A | b | C | d | E | F	code
		0 | 0.5 | 1 | 2 | 3 | 5 | 7.5 | 10 | 12.5 | 15 | 17.5 | 20 | 25 | 30 | 45 | 60	sec.
13	0...9	Delay time for mode OFF to become active	
		0 | 1 | 2 * | 3 | 4 | 5 | 6 | 7 | 8 | 9	code
		1 | 3 | 5 | 7.5 | 10 | 15 | 20 | 30 | 45 | 60	sec.
14	0...9	Bell active time	0 = Duration identical to trigger duration
		0 | 1 | 2 * | 3 | 4 | 5 | 6 | 7 | 8 | 9	code
		=imp | 0.5 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10	sec.
15	0...9	Bell intermission	
		0 | 1 | 2 | 3 | 4 | 5 | 6 * | 7 | 8 | 9	code
		0 | 0.5 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10	sec.
16	0...9	Hold-open time of safety	
		0 | 1 | 2 * | 3 | 4 | 5 | 6 | 7 | 8 | 9	code
		0 | 0.5 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10	sec.
17	0...9	Runtime Battery in mode of op. 2-6	Door opens after switch-off battery
		0 | 1 | 2 | 3 * | 4 | 5 | 6 | 7 | 8 | 9	code
		10s | 1 | 5 | 10 | 30 | 60 | 120 | 240 | 360 | 480	sec / min.
18	0...9	Runtime Battery in mode of op. OFF	
		0 * | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9	code
		10s | 1 | 5 | 10 | 30 | 60 | 120 | 240 | 360 | 480	sec / min.

* = Default value

	Programming Table	
Area of application	**iMotion 2301 & 2401 Slide Door Drive**	
Download	16 April 2012	

★★★★★
TORMAX
AUTOMATIC
12859 Wetmore Road
San Antonio,Tx 78247
1-888-685-3707
www.tormaxusa.com

Code		Function	Note
20	1...9	Opening speed	
		0 = 3.93 Inch/s; 1 = 7.87; 2 = 11.8; 3 = 15.75; 4 = 19.69; 5 = 23.62; 6 * = 27.56; 7 = 31.5; 8 = 35.43; 9 = 39.37	Code / Inch / s
21	0...9	Closing speed	
		0 = 3.15 Inch/s; 1 = 6.3; 2 = 9.45; 3 = 12.6; 4 * = 15.75; 5 = 18.9; 6 = 22.05; 7 = 25.2; 8 = 28.35; 9 = 31.5	Code / Inch/s
22	0...9	Close check speed	
		0 * = .56 Inch/s; 1 = .62; 2 = .68; 3 = .81; 4 = 1; 5 = 1.18; 6 = 1.43; 7 = 1.68; 8 = 2; 9 = 2.36	Code / Inch/s
26	0...9 2*	Braking distance opening	9 = max
28	0...9 4*	Braking distance closing	9 = max
30	0...9	Motor force opening	Net force on door edge
		0 = 5; 1 = 11; 2 = 22; 3 = 33; 4 = 44; 5 * = 55; 6 = 66; 7 = 77; 8 = 88; 9 = 100	code / %
31	0...9	Motor force closing	Net force on door edge
		0 = 5; 1 = 11; 2 = 22; 3 = 33; 4 = 44; 5 * = 55; 6 = 66; 7 = 77; 8 = 88; 9 = 100	code / %
33	0...9	Force closed position	Net force on door edge > reduce if H73 after 10s!
		0 = 0; 1 = 20; 2 = 30; 3 = 40; 4 * = 50; 5 = 60; 6 = 70; 7 = 80; 8 = 90; 9 = 100	code / N
35	0...9 5*	Reversing sensitivity opening	9 = max
36	0...9 5*	Reversing sensitivity closing	9 = max
39	0...9 5*	Travel distance tolerances (60...300%)	
41	0...9	Reduced opening width	
		0 = 10; 1 = 20; 2 = 30; 3 = 40; 4 = 50; 5 = 60; 6 * = 70; 7 = 80; 8 = 90; 9 = 100	code / %
51	0 *	Operating mode return to last setting on FCP	after terminal operating mode
51	1...6	Operating mode return to mode of.....	after terminal operating mode
		1 = OFF; 2 = AUT1; 3 = AUT2; 4 = EXIT; 5 = OPEN; 6 = MAN.	code / Mode of Operation
51	7	No operating mode return	after terminal operating mode
55	0 *	Locks in operating mode OFF	
55	1	Locks in operating mode OFF, EXIT	
55	2	Locks in operating mode OFF, AUTO 1+2, EXIT	
56	0 *	Never unlocks in case of power failure	
56	1	Unlocks in AUTO1, AUTO2, EXIT in case of power failure	
56	2	Unlocks in every operating mode in case of power failure	
57	0	Electric strike: current-free locked	
57	1	Electric strike: current-free unlocked	Only for electric strike with 100% duty ratio
57	2 *	Lock type "Lock unit 2301/2401", with autom. configuration	
57	3	Electric strike switch-on range 100%, until door is closed	Only for electric strike with 100% duty ratio
57	4	Lock type "STARLOCK", with autom. detection	With Lock Module LOCK-200-A
57	5	Lock type "89 TCP", with autom. detection	With Lock Module LOCK-200-A
58	0...9	Delay time to open	Only valid if electric strike has to unlock
		0 * = 0; 1 = 0.2; 2 = 0.4; 3 = 0.8; 4 = 1.2; 5 = 1.6; 6 = 2; 7 = 2.5; 8 = 3; 9 = 4	code / sec.
59	0...6	Voltage output (E1 - E2)	** With connection between "pwm" and "24V"
		0 = 6; 1 = 9; 2 = 12; 3 = 15; 4 * = 24; 5 = 12**; 6 = 24**	code / V DC
60	0	in1: Operation mode OFF	Contact NO. NC detect with code 038.
60	1	in1: Operation mode MANUAL	Contact NO. NC detect with code 038.
60	2	in1: Operation mode OPEN	Contact NO. NC detect with code 038.
60	3 *	in1: Activator inside	Contact NO. NC detect with code 038
60	4	in1: Activator outside	Contact NO. NC detect with code 038
60	5	in1: Key switch	Contact NO. NC detect with code 038
60	6	in1: Emergency opening except in OFF	Contact NO. NC detect with code 038
60	7	in1: Emergency opening in all modes of op.	Contact NO. NC detect with code 038
60	8	in1: Emergency closing (with locking)	Contact NO. NC detect with code 038
60	9	in1: Operation mode EXIT	Contact NO. NC detect with code 038

* = Default value

Code	Function	Note
61 0...9 4*	in2: Same choice of functions as on "in1"	Contact NO. NC detect with code 038.
62 0...9 5*	in3: Same choice of functions as on "in1"	Contact NO. NC detect with code 038.
63 0...9 0*	in4: Same choice of functions as on "in1"	Contact NO. NC detect with code 038.
64 0	sf1: Safety opening 1 with stop function	Type of connection detect with code 031
64 1	sf1: Safety opening 1 with creeping function	Type of connection detect with code 031
64 2 *	sf1: Safety closing 1 with reversing function	Type of connection detect with code 031
64 3	sf1: Safety closing 1 with creeping function	Type of connection detect with code 031
64 4	sf1: Safety swing area	Type of connection detect with code 031
64 5	sf1: Safety stop	Type of connection detect with code 031
64 6	sf1: Emergency opening exept in OFF	Type of connection detect with code 031
64 7	sf1: Emergency opening in all modes of op.	Type of connection detect with code 031
64 8	sf1: Emergency closing (with locking)	Type of connection detect with code 031
64 9	sf1: Mode of op. MANUAL / Break Out	Type of connection detect with code 031
64 A	sf1: Safety opening 2 with stop function	Type of connection detect with code 031
64 b	sf1: Safety opening 2 with creeping function	Type of connection detect with code 031
64 C	sf1: Safety closing 2 with reverse function	Type of connection detect with code 031
64 d	sf1: Safety closing 2 with creeping function	Type of connection detect with code 031
65 0...d C*	sf2: Same choise of functions as on "sf1"	Type of connection detect with code 031
66 0...d 0*	sf3: Same choise of functions as on "sf1"	Type of connection detect with code 031
67 0...d A*	sf4: Same choise of functions as on "sf1"	Type of connection detect with code 031
68 0	out1: Message "door closed"	
68 1	out1: Message “door closed and locked”	
68 2	out1: Message “door open”	
68 3	out1: Message “General error”	
68 4 *	out1: Bell	
68 5	out1: Message “Mode of operation OFF”	
68 7	out1: Battery in service	
68 9	out1: Message “door opening or open”	Function visible after 1 door-opening cycle
69 0...9 0*	out2: Same choice of functions as on "out1"	
70 0 *	I/O Module 1: in1: No function	Contact NO. NC detect with code 039.
70 1	I/O Module 1: in1: Operation mode OFF	Contact NO. NC detect with code 039.
70 2	I/O Module 1: in1: Operation mode AUTOMATIC 1	Contact NO. NC detect with code 039.
70 3	I/O Module 1: in1: Operation mode AUTOMATIC 2	Contact NO. NC detect with code 039.
70 4	I/O Module 1: in1: Operation mode EXIT	Contact NO. NC detect with code 039.
70 5	I/O Module 1: in1: Operation mode OPEN	Contact NO. NC detect with code 039.
70 6	I/O Module 1: in1: Operation mode MANUAL	Contact NO. NC detect with code 039.
70 7	I/O Module 1: in1: Inhibit switch	Contact NO. NC detect with code 039.
71 0...7 0*	I/O Module 1: in2: Same choice of functions as on I/O Module 1: in1	Contact NO. NC detect with code 039.
72 0...7 0*	I/O Module 1: in3: Same choice of functions as on I/O Module 1: in1	Contact NO. NC detect with code 039.
73 0...7 0*	I/O Module 1: in4: Same choice of functions as on I/O Module 1: in1	Contact NO. NC detect with code 039.
74 0 *	I/O Module 1: out1: No function	
74 1	I/O Module 1: out1: Mode of op. OFF	
74 2	I/O Module 1: out1: Mode of op. AUTOMATIC 1	
74 3	I/O Module 1: out1: Mode of op. AUTOMATIC 2	
74 4	I/O Module 1: out1: Mode of op. EXIT	
74 5	I/O Module 1: out1: Mode of op. OPEN	
74 6	I/O Module 1: out1: Mode of op. MANUAL	
74 7	I/O Module 1: out1: "Door opens"	
74 8	I/O Module 1: out1: “door is opening or open”	
74 9	I/O Module 1: out1: "Door closes"	
75 0...9 0*	I/O Module 1: out2: Same choice of functions as on I/O Module 1: out1	
76 0...9 0*	I/O Module 1: out3: Same choice of functions as on I/O Module 1: out1	
77 0...9 0*	I/O Module 1: out4: Same choice of functions as on I/O Module 1: out1	
78 0	Function Control Panel: in1: No function	
78 1 *	Function Control Panel: in1: Panel lock	Contact NO

* = Default value

Code	Function	Note
78 2	Funtion Control Panel : in1: Mode of op. OFF	Contact NO
78 3	Funtion Control Panel : in1: Mode of op. AUTOMATIC 2	Contact NO
78 4	Funtion Control Panel : in1: Mode of op. EXIT	Contact NO
78 5	Funtion Control Panel : in1: Mode of op. OPEN	Contact NO
78 6	Funtion Control Panel : in1: Mode of op. MANUAL	Contact NO
78 7	Funtion Control Panel : in1:Emergency closing	Contact NO
78 8	Funtion Control Panel : in1: Emergency opening in all op. modes	Contact NO
78 9	Funtion Control Panel : in1: Key switch	Contact NO
79 0...9 0*	Funtion Control Panel : in1: in 2: Same choice as on FCP : in1	
80 0 *	Bell trigger: Safety closing 1	
80 1	Bell trigger: Safety closing 2	
80 2	Bell trigger: Activator inside	
80 3	Bell trigger: Activator outside	
80 4	Bell trigger: Key switch	
82 0 *	No step by step control	
82 1	Step by step control only for key switch	
82 2	Step by step control only for actvator inside and outside	
82 3	Step by step control for actvator inside, outside and key switch	
85 0 *	No airlock function	

* = Default value

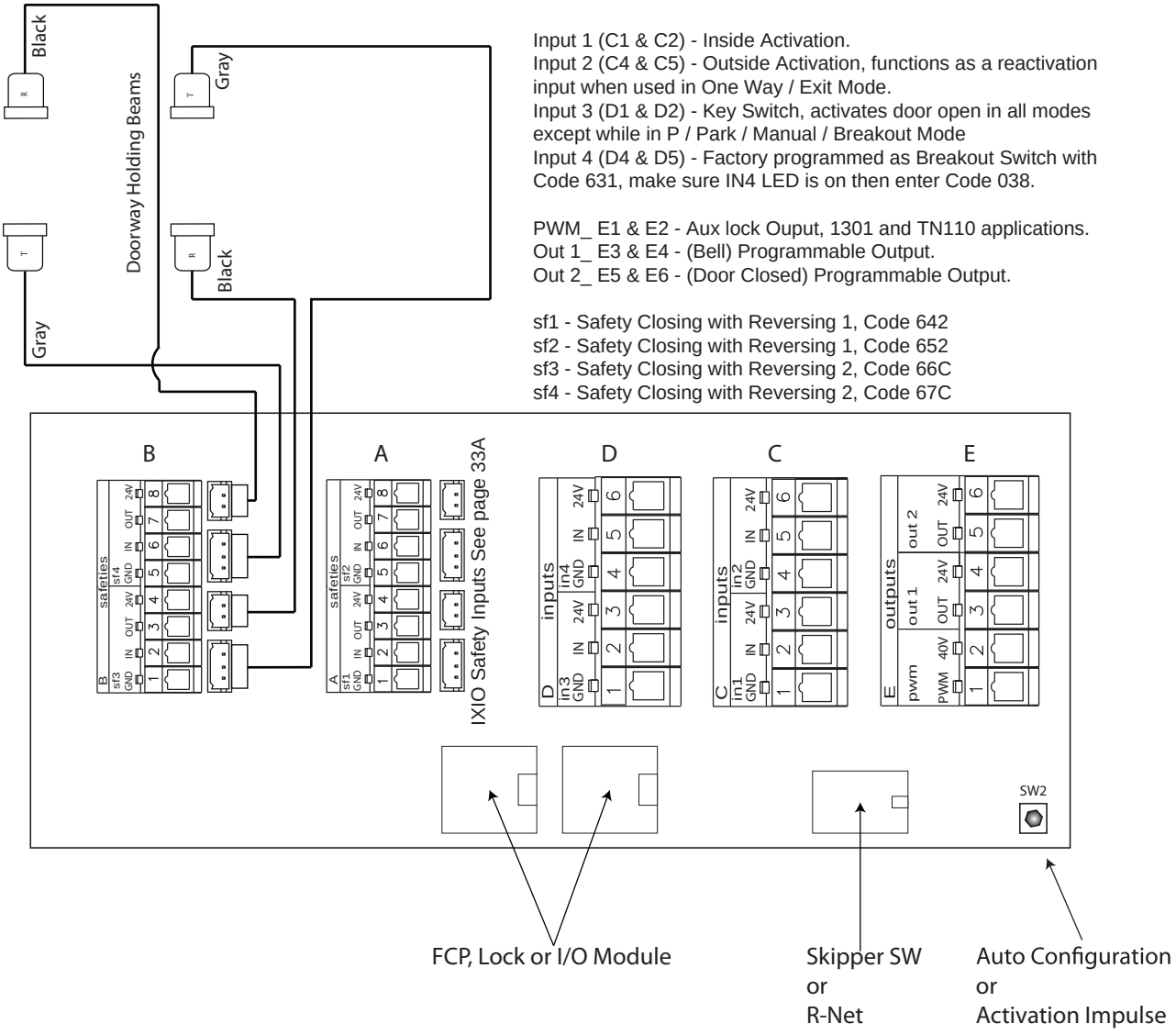
Trouble shooting

* E = Error | H = Hint

* No.	Fault	Reaction System	Reset
E00	Firmware incompatible to MCU version /D	Safety operating mode or only display	Reset, new version MCU32-BASE
E0x	Internal test negative	Safety operating mode or only display	Reset
E11	MCU Lock 1, wrong position	Door cannot open	Automatically if OK
E20	LIN to Monit. battery mod. MBAT interrupted	-	Reset
E21	LIN to FCP 1 interrupted	Last mode of operation remains	Automatically if OK
E22	LIN to FCP 2 interrupted	Last mode of operation remains	Automatically if OK
E23	LIN to s I/O-Modul 1 INOU interrupted	Programmed function will be inactive	Automatically if OK
E24	LIN to s I/O-Modul 2 INOU interrupted	Programmed function will be inactive	Automatically if OK
E25	LIN to Lock Unit 1 LOCU interrupted	Last status remains	Automatically if OK
E26	LIN to Lock Unit 2 LOCU interrupted	Last status remains	Automatically if OK
E29	LIN to Power Supply PSUP-40-36 interrupted	Last status remains	Automatically if OK
E30	Safety clos. creep 2 >1min. active,test neg.	According safety function	Automatically if OK
E31	Safety open 1 >1min. active, test neg.	According safety function	Automatically if OK
E32	Safety op. creep 1 >1min. active, test neg.	According safety function	Automatically if OK
E33	Safety closing 1 >1min. active, test neg.	According safety function	Automatically if OK
E34	Safety clos. creep 1 >1min. active,test neg.	According safety function	Automatically if OK
E35	Safety swing area >1min. active, test neg.	According safety function	Automatically if OK
E36	Safety stop >1min. active, test neg.	According safety function	Automatically if OK
E37	Safety open 2 >1min. active, test neg.	According safety function	Automatically if OK
E38	Safety op. creep 2 >1min. active, test neg.	According safety function	Automatically if OK
E39	Safety closing 2 >1min. active, test neg.	According safety function	Automatically if OK
E41	Activator inside > 1min. active	Door remains open	Automatically if OK
E42	Activator outside > 1min. active	Door remains open	Automatically if OK
E43	Key switch > 1min. active	Door remains open	Automatically if OK
E46	Emergency open >10min. active	Door remains open	Automatically if OK
E47	Emergency close >10min. active	Door closes and remains closed	Automatically if OK.
E48	Wake up or Push button SW2 > 1min. active	Door remains open	Automatically if OK.
E49	Inhibit switch> 1min. active	Door stand still	Automatically if OK.
E51	Encoder not working	Safety operating mode	Automatic Reset / Reset
E53	Calibration run different from stored value	Safety operating mode	Reset with code 030
E54	Door traveling farther than stored value	Safety operating mode	Reset >automatic configuration
E55	Position different by >5/16”, tooth belt jumping	Only display, auto-correction stops	Automatically if OK / Reset
E61	Voltage 40V outside of admissible range	Safety operating mode	Automatically if OK
E62	Power Supply 24V (Limit U/I)	Safety op. mode	Automatically if OK
E63	Current in power supply 40V to high	Safety operating mode	Automatically if OK
E64	Motor temp. > 90 ° C, cable interrupted	Safety operating mode	Automatically after cooling down
E65	Control end stage > 100 ° C	Safety operating mode	Automatically after cooling down
E66	Motor control faulty in MCU32-BASE	Safety operating mode	Reset
E67	Motor current to high in long-term	Normal operation	Automatically if OK
E72	Battery Unit MBTU: Charge < 15%		Automatically if OK
E73	Battery module MBAT or accu faulty		Disconnect power supply
E8x	Memory or processor test negative	Safety operating mode	Reset
H11	Operator type not defined	Safety operating mode	Program operator type
H14	Automatic configuration not executed	Safety operating mode	Program 021 or 022
H61	Calibration run in opening direction	Searches open position	At the end of movement
H62	Calibration run in closing direction	Searches closed position	At the end of movement
H63	Reference run opening	Measures reference run length	At the end of movement
H64	Reference run closing	Searches closed position	At the end of movement
H65	Learn mode (Weight detection)	Normal operation	After 3-12 opening cycles
H71	Battery mode	Door moves slowly	Power supply return
H73	Motor current in closed position to high	Normal operation	Reset, reduce 33x
H91	Obstacle detection at opening	Door reverses	Automatically, Display 20s.
H92	Obstacle detected at closing	Door reverses	Automatically, Display 20s.
H93	Permanent obstacle at opening	Reset after 5 reversings	Automatically, Display 20s.
H94	Permanent obstacle at closing	Reset after 5 reversings	Automatically, Display 20s

T-1263 e	Connection Diagram Terminal Module MCU32-TERM-B	★★★★★ TORMAX AUTOMATIC 12859 Wetmore Road SanAntonio,Tx 78247 1-888-685-3707 wwwtormaxusa.com
Area of application	iMotion 2301& 2401 Slide Door Drives	
Release	January 2013	
Use	Input and Output terminal designations	

Inputs and Outputs are programmable, see porgramming table for options.



Input 1 (C1 & C2) - Inside Activation.
Input 2 (C4 & C5) - Outside Activation, functions as a reactivation input when used in One Way / Exit Mode.
Input 3 (D1 & D2) - Key Switch, activates door open in all modes except while in P / Park / Manual / Breakout Mode
Input 4 (D4 & D5) - Factory programmed as Breakout Switch with Code 631, make sure IN4 LED is on then enter Code 038.

PWM_ E1 & E2 - Aux lock Ouput, 1301 and TN110 applications.
Out 1_ E3 & E4 - (Bell) Programmable Output.
Out 2_ E5 & E6 - (Door Closed) Programmable Output.

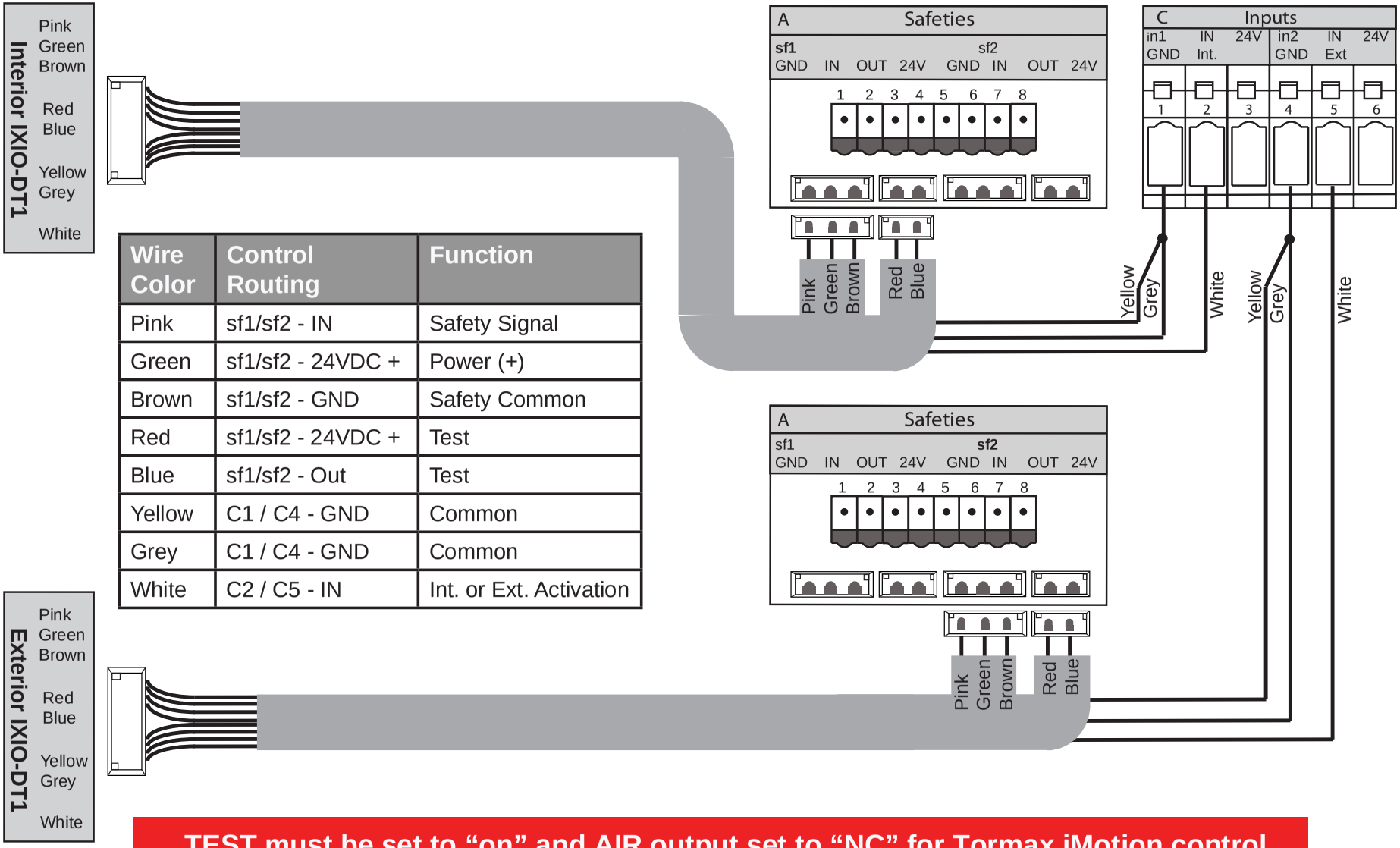
sf1 - Safety Closing with Reversing 1, Code 642
sf2 - Safety Closing with Reversing 1, Code 652
sf3 - Safety Closing with Reversing 2, Code 66C
sf4 - Safety Closing with Reversing 2, Code 67C

Power Output to sensors is .75 A max (For 2301 Standard Door Drive.)

Power Output to Sensors is 1.5 A max(For 2401 Heavy Duty Door Drive.)

Wiring (Tormax iMotion 2301 / 2401 sliding door control)

TEST must be set to “on” for Tormax iMotion sliding door control



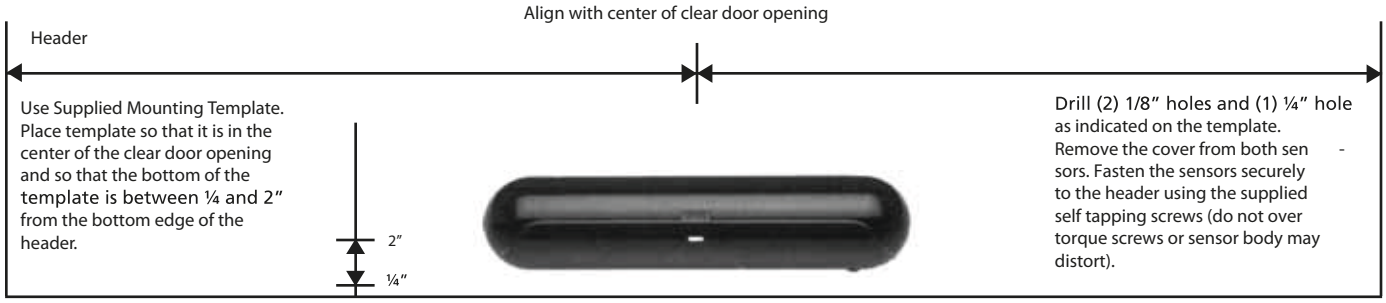
Wire Color	Control Routing	Function
Pink	sf1/sf2 - IN	Safety Signal
Green	sf1/sf2 - 24VDC +	Power (+)
Brown	sf1/sf2 - GND	Safety Common
Red	sf1/sf2 - 24VDC +	Test
Blue	sf1/sf2 - Out	Test
Yellow	C1 / C4 - GND	Common
Grey	C1 / C4 - GND	Common
White	C2 / C5 - IN	Int. or Ext. Activation

TEST must be set to “on” and AIR output set to “NC” for Tormax iMotion control

i-Sensor Quick Setup Guide for Tormax Automatic Door Installation

The following sheet is a simplified quick reference guide for installing the Optex i-One Sensor on the Tormax Automatic Sliding Door Package. Please reference the installation manual supplied with each sensor for complete details.

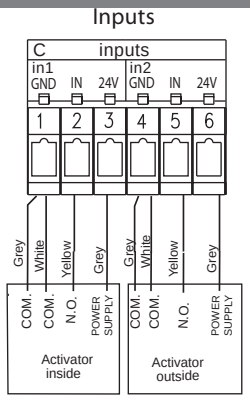
Standard sensor mounting location for Tormax Automatic Sliding Doors



Wiring Connections

1. Feed wiring harness thru ¼" pass thru hole. Securely fasten wiring out of the path of moving parts. Manually slide doors open and closed to verify no binding from wiring. Use 26 gauge wire strippers to strip the necessary wire ends. The green wire is not used. Connect the wires to the Tormax control unit as illustrated.

2. Do not connect sensor to wiring at this time. Con nect the plug once you have selected all of your initial settings.



2301 & 2401 Drive Control Unit

Initial Settings

Dip Switch and Sensitivity Settings Adjust as per diagram at right

Start with adjustment as per diagram at right. When performing walk test, adjust if necessary for deeper or shallower detection pattern.

Dipswitch Settings

Approach Sensitivity Potentiometer Leave at Factory Default Setting (Mid Point)

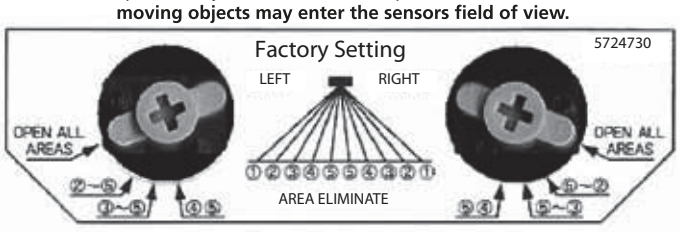
Presence/Motion Sensitivity Potentiometer Leave at Factory Default Setting (Mid Point)

Presence/Motion Area Adjustment

Left and Right Shutters - Open All Areas

Open all areas = approximately 15.5 feet wide Presence/Motion detection area (8 feet left and right of center). This offers the greatest protection to the users. Some environments may dictate decreasing the width (example: merchandise stacked in front of side lights, single slides with perpendicular walls in close proximity to the clear door opening.

Keep Width Adjustment as below except in cases where **moving objects may enter the sensors field of view.**



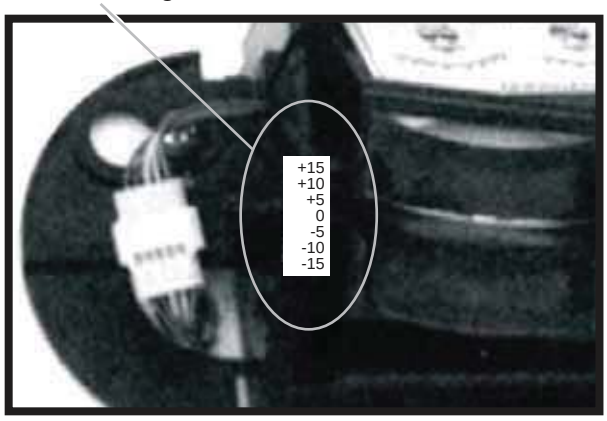
PRESENCE/MOTION AREA ADJUSTMENT

Approach Area Angle Adjustment

Start with adjustment as per diagram at right. When performing walk test, adjust if necessary for deeper or shallower detection pattern.

Keep the default setting of "0"

Approach Area
Angle Adjustment



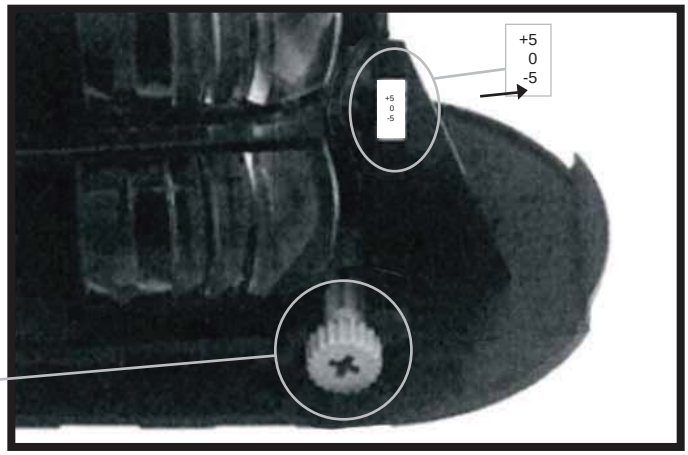
Presence Area Angle Adjustment

Note: It is imperative that you start your presence area angle adjustment with the sensor adjusted to the full -8 degree setting. In some versions, a -8 degree may not be marked on the sensor.

IMPORTANT
This -8 degree angle can be achieved by turning the Presence Area Angle Adjustment screw counter-clockwise a full four turns or until the adjuster screw makes a clicking sound. This is the -8 degree setting.

Fine
Adjustment
Screw

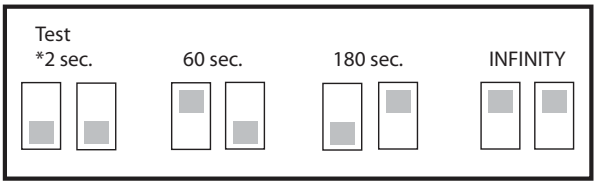
Fully Counter Clockwise



Walk Test Mode

Walk-Test Mode: For setup only: move dipswitch 1 and 2 to the off position (2 second learn).

WARNING! After setup, dipswitch 1 and 2 MUST be **set to 60 seconds, 180 seconds, or infinity to comply** with the ANSI Standard A156.10.



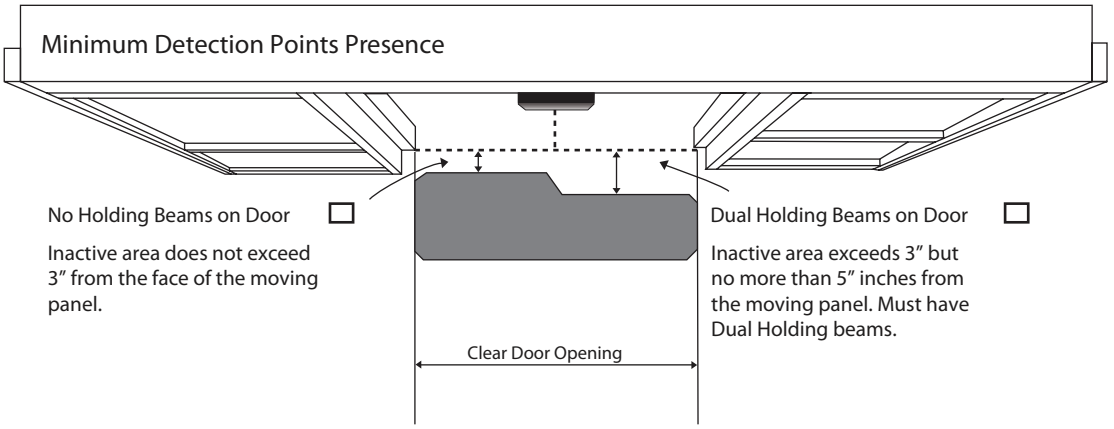
USE PAGE 3 OF THIS DOCUMENT AS YOUR GUIDE FOR PROPER ADJUSTMENT.

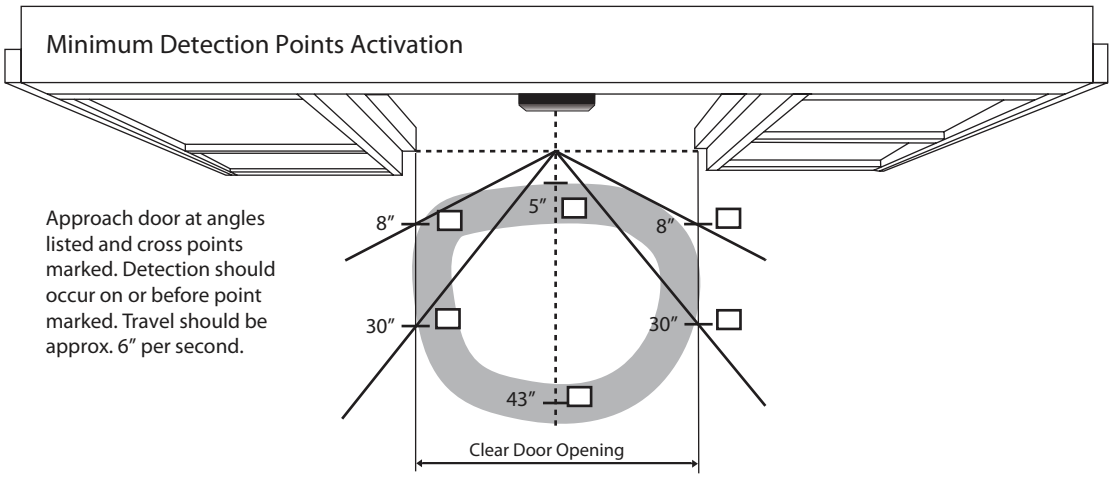
Important! Make sure the presence adjustment angle is at the full -8 degree setting before continuing.

I-One Sensor Presence/Motion Area Adjustment

Connect the sensor on the header cover side. Cycle the door open and closed several times. If ghosting occurs, adjust the Presence/Motion angle adjustment screw ¼ turn clockwise and cycle the door open and closed. Continue this process until ghosting stops.

Connect the sensor on the non-cover side of header and repeat the process described above. Once all adjustments are performed, disconnect 5-pin sensor connector and set dipswitches 1 and 2 for appropriate learn time (60, 180, infinite). Reconnect the 5-pin connector, immediately place the cover on the sensor and clear the area for 5 seconds.





☑ Passed ☒ Failed ☒ Initially failed, then passed after adjustment

Note: Drawings not to Scale

Walk test sensor pattern to ensure conformance with the ANSI standard A156.10. It is imperative that sensors comply with the above detection zones.

For additional information, see the supplied installation manual or call Optex Technologies Inc. at 800-877-6656.

FINAL CHECKLIST

Y	N	N/A	
☐	☐	☐	Do the doors slide freely, no binding/dragging?
☐	☐	☐	Are all wires clear from moving parts?
☐	☐	☐	Are all adjustment bolts tight including anti-risers?
☐	☐	☐	Do the break out panels function properly with no obstructions?
☐	☐	☐	Is the breakout switch functioning? (TX9300 & TX9430)
☐	☐	☐	Are there any fault codes flashing on the FCP?
☐	☐	☐	Are all modes on the FCP operating correctly (Off, Auto, Red Open, Exit, Hold)?
☐	☐	☐	Are the holding beams operating correctly (if equipped)?
☐	☐	☐	Is the lock (electrical or mechanical) functioning properly?
☐	☐	☐	Has an ANSI A156.10 inspection been completed?
☐	☐	☐	Are the Door# decal, Service decal, Daily Safety Check decal all present and in proper location?
☐	☐	☐	Has the Daily Safety Check been reviewed with the Manager?
☐	☐	☐	Have all the FCP functions been reviewed with the Manager?
☐	☐	☐	Was the Owners manual given to the Manager?
☐	☐	☐	Did the Manager sign the work order/service ticket?

Installer signature/date _____

TECHNICAL SPECIFICATIONS

T-1258 e	Technical Data	★★★★★ TORMAX AUTOMATIC 12859 Wetmore Road San Antonio, TX 78247 1-888-685-3707 WWW.TORMAXUSA.COM
Area of application	**iMotion 2301** & **2401 Slide Door Drive**	
Release	November 2009	
Use	Technical Specification	

Door Operator Type iMotion 2301 & 2401 Slide Door Drive

Drive System Electromechanical slide door operator with direct drive through AC permanent magnet synchronous motor with external rotor

Control System iMotion MCU32

Mains Connection 1 x 230 / 1 x 115 V AC, 50 – 60 Hz, 10 A

Power Consuption Max. 190 W (For 2301 Slide Door Drive)
Max. 310 W (For 2401 Slide Door Drive)

Sensor Power Supply 24 V DC (+0.5 – 1.5 V) 0.75 A (For 2301 Slide Door Drive)
24 V DC (+0.5 – 1.5 V) 1.5 A (For 2401 Slide Door Drive)
in battery operation min. 16.5 V

Protective Class of Drive IP 22

Ambient Temperature –4 °F to +122 °F

Outputs 24 V DC short circuit proof (within power supply 0.75 A in total) For 2301 Slide Door Drive
24 V DC short circuit proof (within power supply 1.5 A in total) For 2401 Slide Door Drive

CE Approval CE inkl. RoHS, TÜV, ETL

Standards DIN 18650, EN 60335-1, EN 61000-6-2, EN 61000-6-3, UL 325
Note : iMotion 2401 is a category A drive. It may cause radio interferences in living areas. In this case the user can ask for suitable measures

Durability Class 3 according to DIN 18650-1 Dec. 2005
1,000,000 test cycles with 4,000 cycles per day

For 2301 & 2401 Slide Door Drives

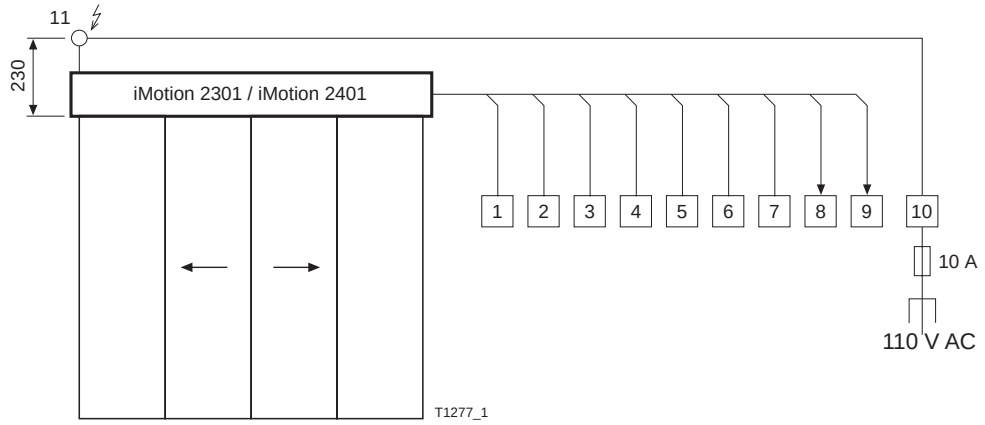
	PACKAGE WIDTH (foot)	MAXIMUM DOOR WEIGHT (LBS) 2301	MAXIMUM DOOR WEIGHT (LBS) 2401
SINGLE SLIDE	7' - 9'	265 lbs	530 lbs
BI - PART	10' - 14'	220 lbs	440 lbs
TELESCOPIC SINGLE SLIDE	7' - 9'	176 lbs	265 lbs
TELESCOPIC BI - PART	10' - 14'	132 lbs	220 lbs
For larger package width Contact Tormax			

Opening speed 3.9 in/s – 39.4 in/s

Closing speed 3.9in/s – 39.4 in/s

Force at the tooth belt 18.4 – 250 Foot Pounds (For 2301 Slide Door Drive)
29.5 - 295 Foot pounds (For 2401 Slide Door Drive)

T-1277 e	Cable Plan	★★★★★ TORMAX AUTOMATIC 12859 Wetmore Road San Antonio,Tx 78247 1-888-685-3707 www.tormaxusa.com
Area of application	iMotion 2301 & 2401 Slide Door Drive	
Release	Jan. 2009	
Use	Wiring Specifications	



No.	☒	Control Components	Notes	Cable	Length (m) without screen	Length (m) with screen
1		Activator/Push-button inside	Stranded wire recommended	4 × 20 AWG	< 30	< 100
2		Activator/Push-button outside	Stranded wire recommended	4 × 20 AWG	< 30	< 100
3		Key-switch	Stranded wire recommended	2 × 20 AWG	< 30	< 100
4		User interface iMotion connected with FCC-connector		Phone ribbon cable 6 x 26 AWG RJ12, 6P6C	< 30	
		User interface iMotion connected with LIN-Adapter		3 × 23 AWG	< 30	< 100
5		Input	Stranded wire recommended	… × 20 AWG	< 30	< 100
6		…		… × 20 AWG	< 30	< 100
7		…		… × 20 AWG	< 30	< 100
8		Message 1 …	Stranded wire recommended	2 × 20 AWG	< 30	< 100
9		Message 2 …	Stranded wire recommended	2 × 20 AWG	< 30	< 100
10		Mains main switch	Stranded wire recommended	3 × 20 AWG		
11		Mains socket	Stranded wire recommended			

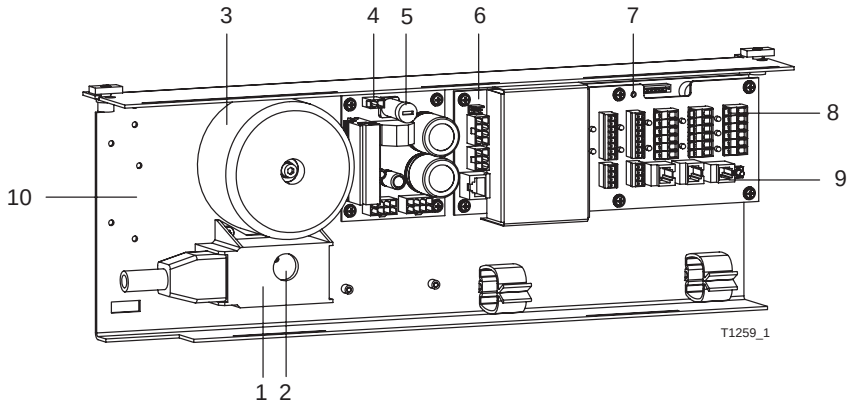
T-1259 e	**Module Documentation** **Control Unit MCU32-CONU-85-18-A**	★★★★★ TORMAX AUTOMATIC 12859 Wetmore Road San Antonio, TX 78247 1-888-685-3707 WWW.TORMAXUSA.COM
Area of application	**iMotion 2301 and 2401 Slide Door Drives**	
Release	November 2009	
Use	Installation and Maintainence	

Purpose

To manage the functions of control system for iMotion 2301 standard and 2401 Heavy duty door door drives

Function

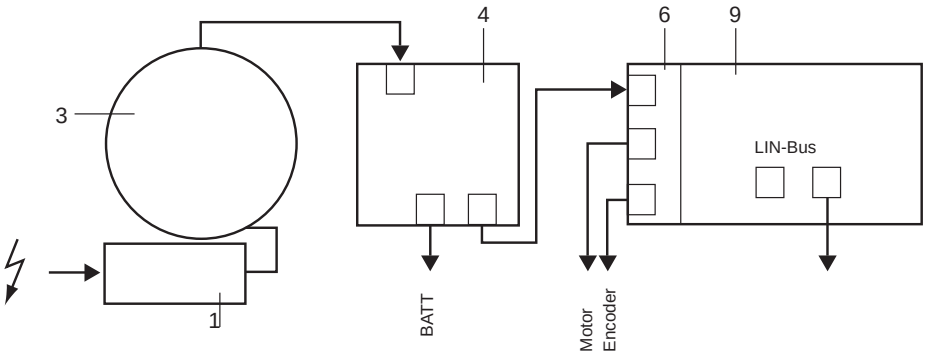
The control unit contains all the necessary control system components for the operation of a sliding door system. It provides the connections and the power supply for the control panel, lock unit, motor unit, battery unit and input / output module.
The system configuration is performed through either the control panel MCU32-USIN or through the service software iMotion.



1 Power supply MCU32-FLTR-B
2 Voltage selector 230 / 115 VAC
3 Transformer MCU32-TRAF-29-85-A
4 Power supply module MCU32-PSUP-40-18-C
5 Fuse 5AT
6 Base module MCU32-BASE-40-200-A
7 Display power supply 24 V / 5 V
8 Terminal module MCU32-TERM-B
9 Push-button for opening impulse
10 Space for installation of 1 input/output module or 1 relay module

Module Connections

Connectors and terminals may only be connected in the current-free state.

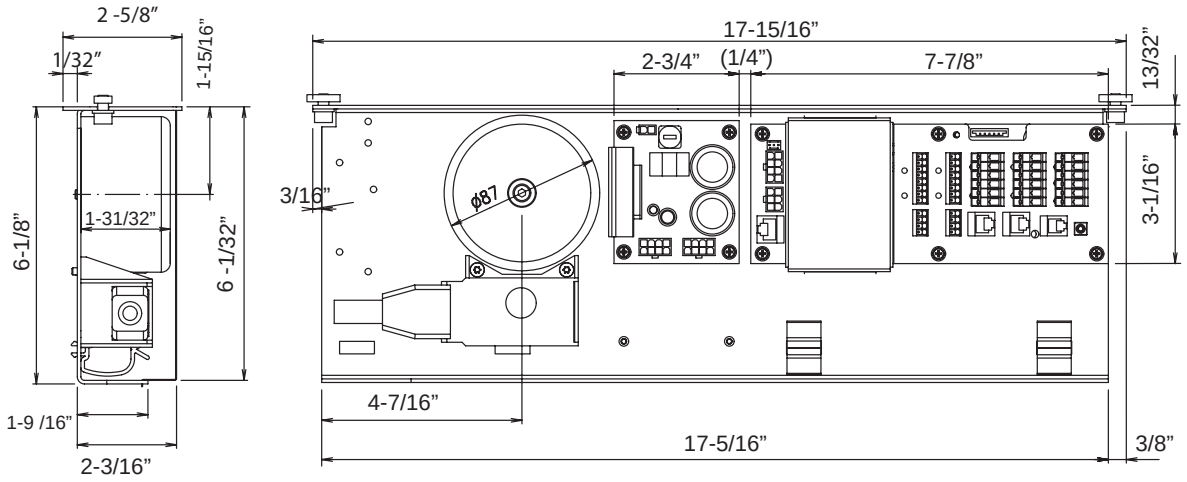


Commissioning

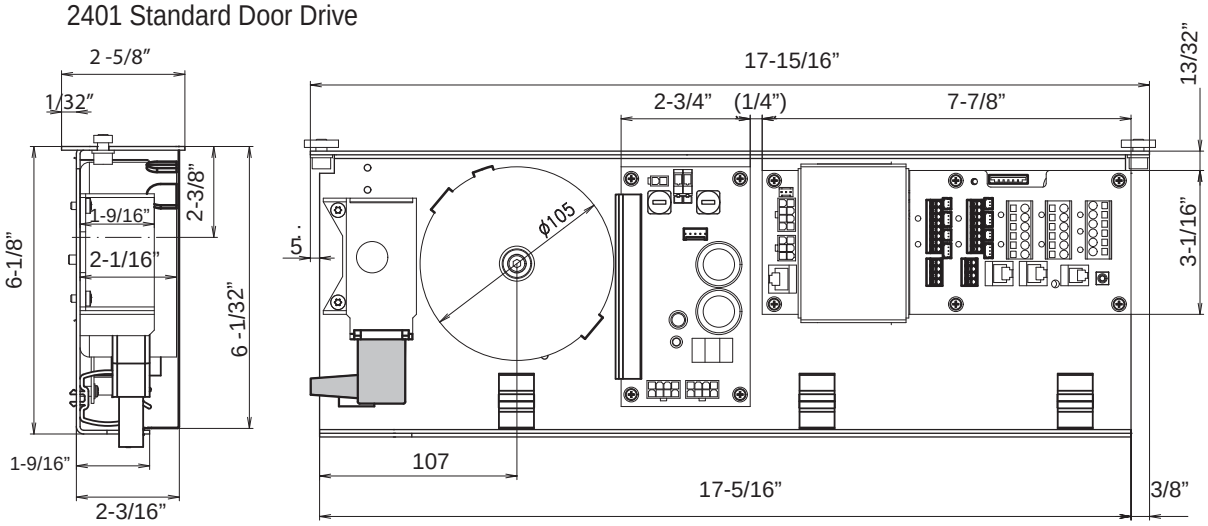
See T-1272.

Component Dimensions

2301 Standard Door Drive



2401 Standard Door Drive



Technical Data

	2301	2401
Mains connection:	115 / 230 V AC, 50-60 Hz	115 / 230 V AC, 50 – 60 Hz
Power consumption:	8 … 190 W	8 – 310 W
Power supply sensors	24 V DC / 0.75 A	24 VDC / 1.5 A
Ambient temperature:	–4°F to +122°F	–4°F to +122°F
Module interfaces:	Motor unit MCU32-MOTU-40-6-A Battery unit MCU32-BATU-24-1-B LIN bus for lock unit MCU32-LOCU-40-7-B LIN bus for input/output module MCU32-INOU-A LIN bus for operating unit MCU32-USIN-7-A RS232 for service software iMotion Config Card MCU32-CONF- …	Motor unit MCU32-MOTU-40-10-A Battery unit MCU32-BATU-24-1-B LIN Bus for lock unit MCU32-LOCU-40-7-B LIN Bus for input/output module MCU32-INOU-A LIN Bus for user interface MCU32-USIN-7-A RS232 Service Software TCP Config Card MCU32-CONF-…

T-1274 e	Module Documentation Motor Unit MCU32-MOTU-40-6-A	★★★★★ TORMAX AUTOMATIC 12859 Wetmore Road San Antonio, TX 78247 1-888-685-3707 WWW.TORMAXUSA.COM
Area of application	iMotion 2301 & 2401 Slide Door Drive	
Release	March 2008	
Use	Installation and Maintainence	

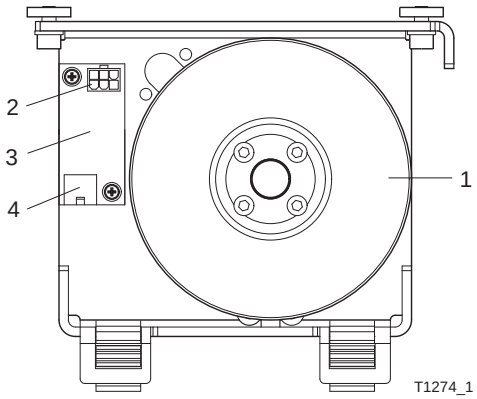
Purpose

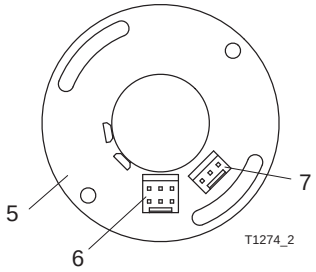
This motor unit is design for 2301 standard and 2401 Heavy duty door drives.

Functional Principle

The motor unit includes MCU32-MOTR-40-6-A (1) (for standard door drive), MCU32-MOTR-40-10-A (1) (for heavy duty drive) with encoder module MCU32-ENCO-24-16-A (5) and brake module MCU32-BRAK-40-3-A (3).

The synchronous motor is attached with permanent magnet and external rotor, which drives the toothbelt directly
The encoder module rotates the motor and determines the door position.The brake module limits the door speed on power interruption or when the motor unit is disconnected from the control module.



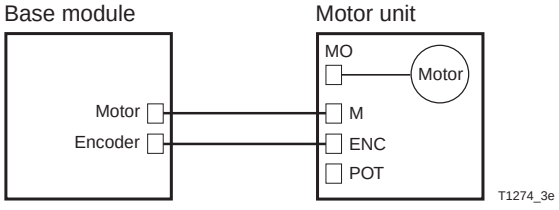


1 Motor
2 Connector MO
3 Brake module
4 Connector M
5 Encoder module
6 Connector ENC
7 Connector POT

Installation

- Connect the motor unit with the base module using the prefabricated motor and encoder cables as shown

Connection Diagram

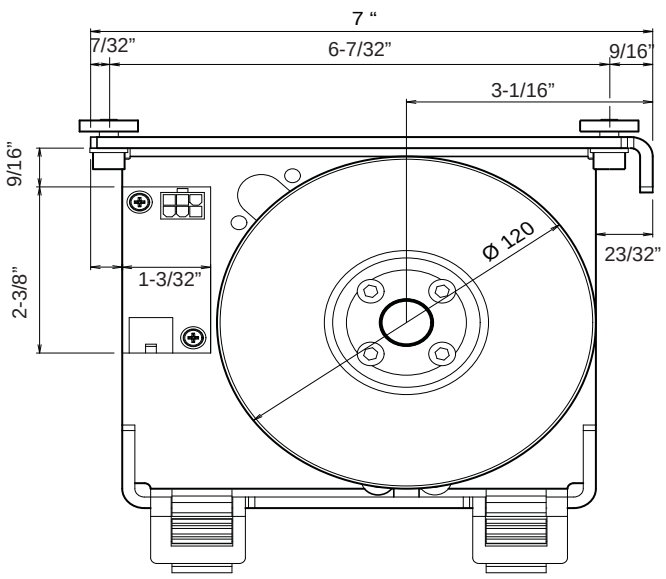


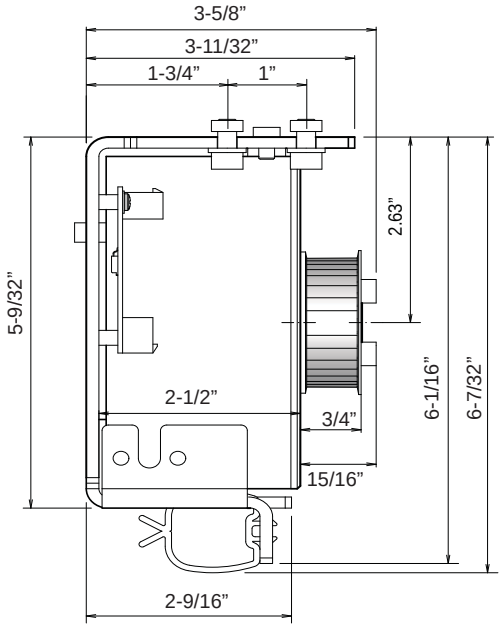
Commissioning

Programming using FCP use T-1272 e

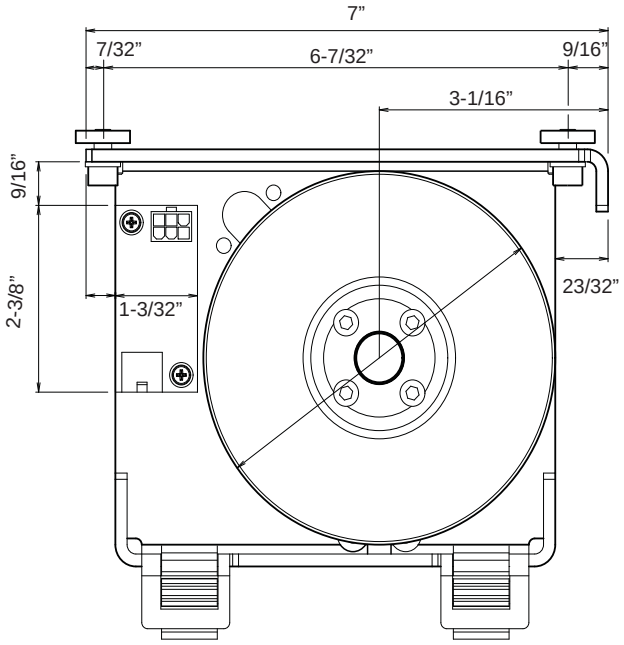
Component Dimensions

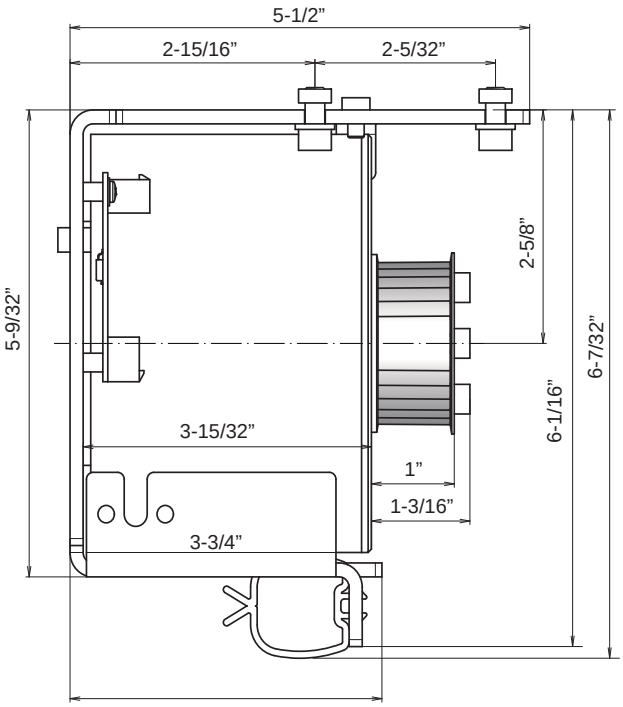
2301 Standard Door Drive





2401 Heavy Duty Door Drive





Technical Data

	2301	2401
Rated voltage	17 V Y	22 V Y
Maximum current	10 A (S3)	10 A (S3)
Torque	4.4 Foot Pounds (S3)	7.3 Foot Pounds (S3)
Ambient temperature	–4° F … +122° F	–4° F … +122° F
Overtemperature protection	194° F	248° F
Interfaces	MCU32-BASE-40-200-A	MCU32-BASE-40-200-A
Toothbelt	9/16”	25/32”
Toothbelt module	3/16”	3/16”

T-1265 e	Module Documentation Lock Unit MCU32-LOCU-40-7-B	★★★★★ TORMAX AUTOMATIC 12859 Wetmore Road San Antonio,Tx 78247 1-888-685-3707 www.tormaxusa.com
Area of application	iMotion 2301, 2401 Slide Door Drive	
Release	September 2009	
Use	Installation and Maintainence	

Purpose

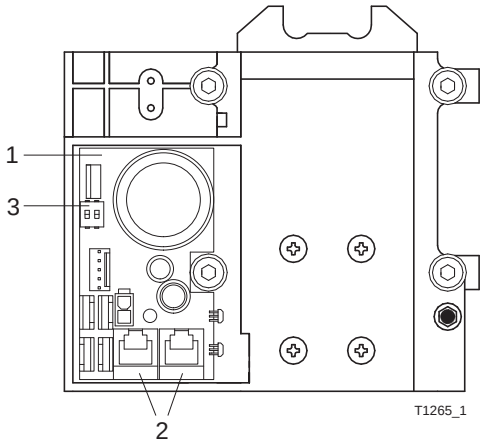
This lock unit is design for 2301 and 2401 slide door drives.It positively locks each SX or X panel.
.

Functional Principle

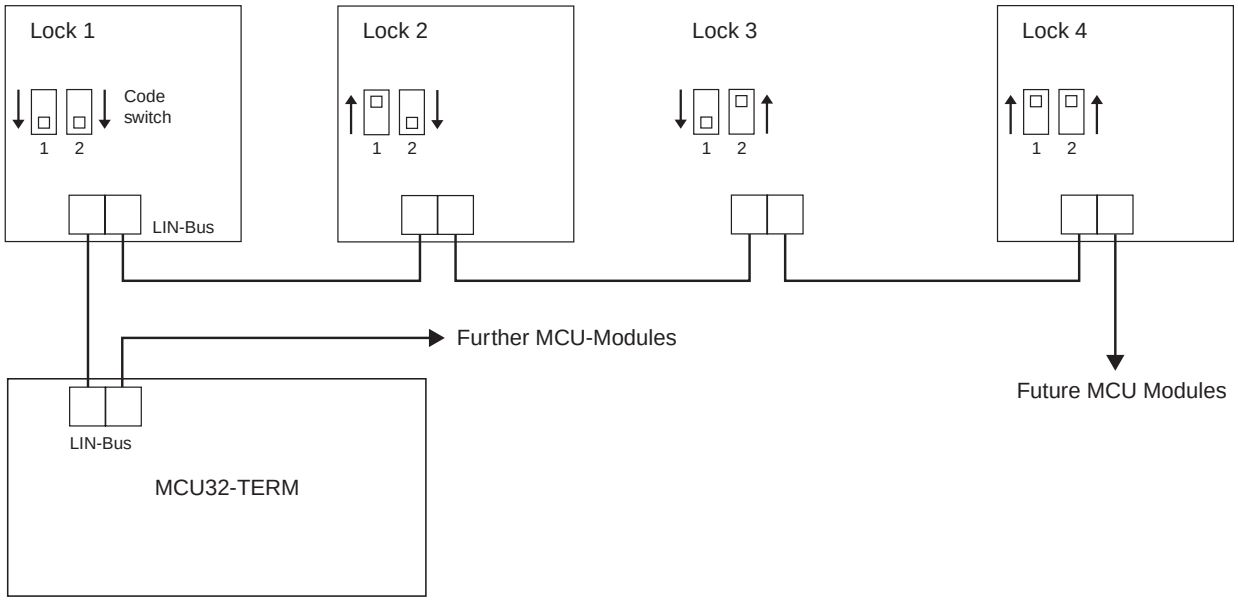
The lock unit includes lock module MCU32-LOCK-40-7-B(1)
The lock unit recieves control commands for locking and unlocking via LIN bus (2) from the base module .

The operating function depends on the programming of the basic control system. For individual functions see programming table

1) Lock module MCU32-LOCK-40-7-B
2) LIN-Bus
3) Code switch



Connection Diagram



Installation

Mount the lock unit at a suitable position with the 4 screws and groove blocks in the supporting profile. On single leaf units the counter bolts are attached to the supporting profile.

LIN Connection

- Cut to length and assemble the LIN connection cable on both ends with a FCC 6-pole plug .

.

FCC-plug is polarity sensitive.

FCC 6 pole 98’ Max. FCC 6 pole

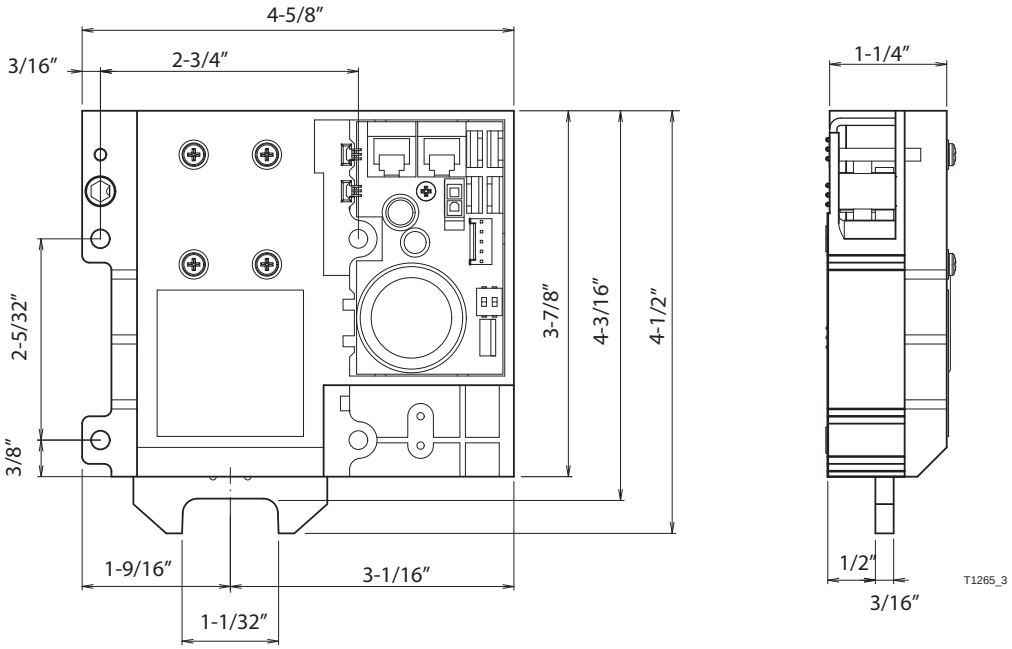
First connect the LIN cable and FCP to the slide door drive then switch the 110 vAC on.

Commissioning

Programming Through FCP See T-1272 e

See programming table for specific lock functions

Component Dimensions



Technical Data

Rated voltage of solenoid	12 V DC
Maximum power of solenoid	40 W
Loading of 24 V sensor power supply	100 mA
LIN Interface	FCC 6-Pol
Length of all LIN cables:	< 98’ (Foot)
LIN cable length between modules:	< 30 m with phone ribbon cable 6 x 0,14 mm^2
	<100 m with LIN-Bus-Adapter MCU32-LADP-A
Ambient temperature	–4 °F … +122 ° F
Interface	MCU32-TERM
	Monitoring for lock 01
	Manual disengagement

T-1268 e	Module Documentation Battery Unit MCU32-BATU-24-1-B	★★★★★ TORMAX AUTOMATIC 12859 Wetmore Road San Antonio,Tx 78247 1-888-685-3707 www.tormaxusa.com
Area of application	iMotion 2301 & 2401 Slide Door Drive	
Release	Feb. 2008	
Use	Installation	

Purpose

This battery unit is design to be used on iMotion 2301 or 2401 Slide Door Drives.

The module is used for limited - time operation of the system and/or for accomplishment of a final motion into a determined position.

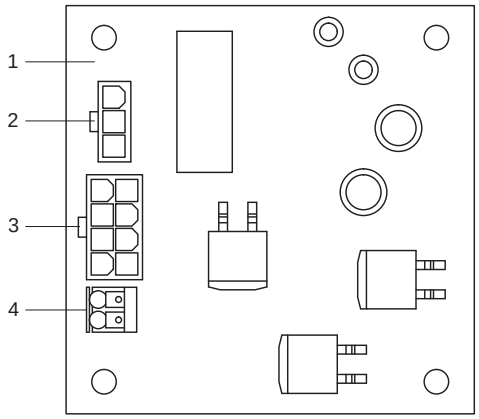
Functional Principle

The battery unit includes the batteries MCU32-ACCU-24-1-A and the battery module MCU32-BATT-24-1-B (1).

The batteries store the energy required to continue system operation on power failure. The battery module contains a charging circuit that charges the batteries in the presence of mains power and/or holds them in the charged state. In order to avoid total discharge, the battery can be switched off with a switch.

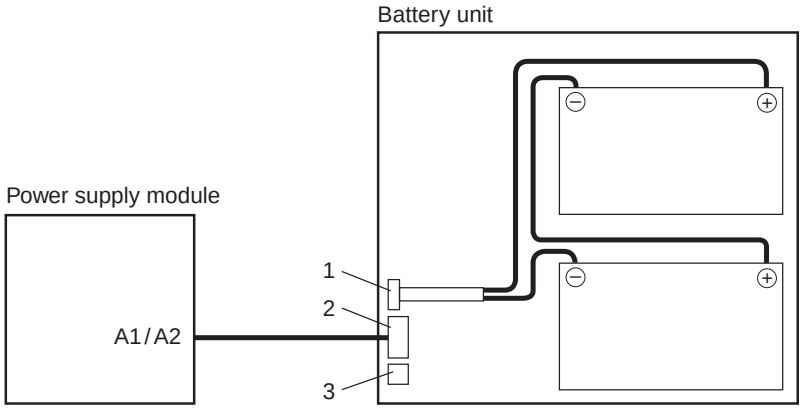
The operational function depends on the programming of the basic control system. See programming table for programming options.

The wake-up function allows renewed switching on with subsequent door opening after the battery has been disconnected. The function depends on the current charge of the accumulators and necessitates a connected key switch (4).



1 Battery module
2 Connector BAT
3 Connector A
4 Terminal key switch

Connection Diagram



Installation

- Mount the battery unit at the suitable position with screws and groove blocks
- Connect the battery unit with the power supply module as shown in the connection diagram

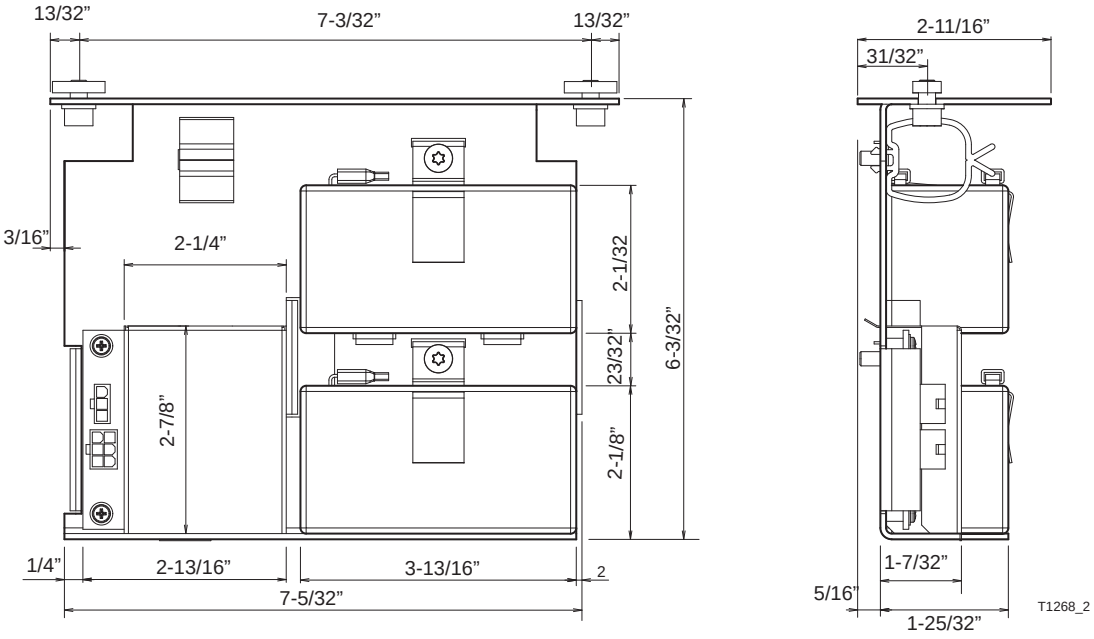
When connecting the batteries make sure that the polarities are not interchanged and the contacts are not short circuited. A sudden discharge may cause an explosion of the batteries. The constituents are highly poisonous.

Commissioning

The battery module is detected automatically during auto configuration.

See Commissioning of the Entire System T-1272 e

Component Dimensions



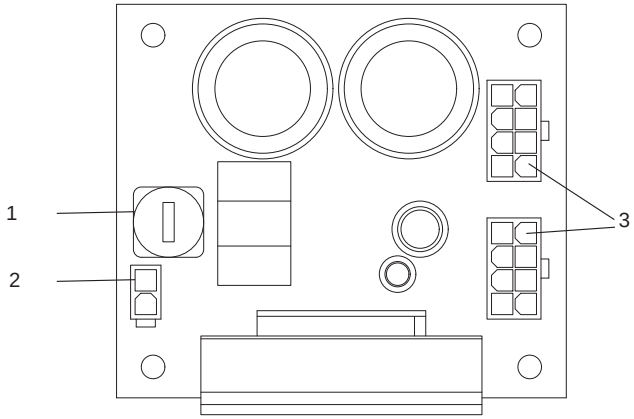
Technical Data

Rated voltage	24 VDC
Maximum power	120 W
Batteries	2 × 12 V / 1.2 Ah (52 × 97 × 43 mm)
Ambient temperature	32° F… +104° F
Interfaces	MCU32-PSUP-40-18-C
	MCU32-PSUP-40-36-A

T-1269 e	Module Documentation Power Supply Module	★★★★★ TORMAX AUTOMATIC 12859 Wetmore Road San Antonio,Tx 78247 1-888-685-3707 www.tormaxusa.com
Area of application	iMotion 2301 & 2401 Door Drives	
Release	April 2008	
Use	Installation and Maintainence	

Purpose

To provide intermediate circuit voltage and the 24 V sensor voltage from the transformer or the battery unit

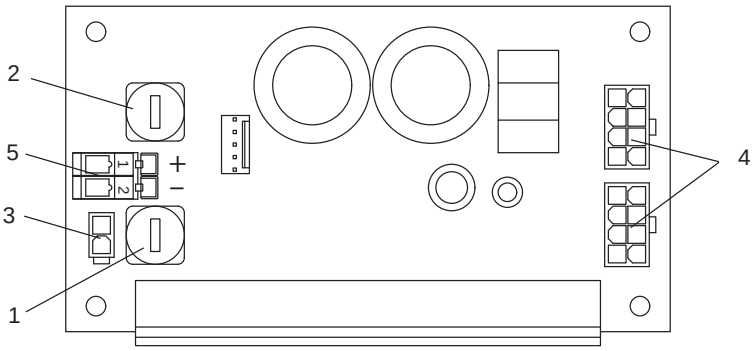


2301 Door Drive
Power Supply Module : MCU32-PSUP-40-18-C

1 Fuse 5A T (25 V AC)

2 Connector AC for connection to transformer

3 Connector A1 for connection to base module MCU32-BASE-40-200-A or battery module MCU32-BATT-24-1-B



2401 Door Drive
Power Supply Module : MCU32-PSUP-40-36-A

1 Fuse 8-A slow blow (25 VAC transformer)

2 Fuse 5-A slow blow (24 … 42 V ext. DC source)

3 Connector AC for connection to transformer

4 Connector A1 for connection to base module MCU32-BASE-40-200-A or battery module MCU32-BATT-24-1-B

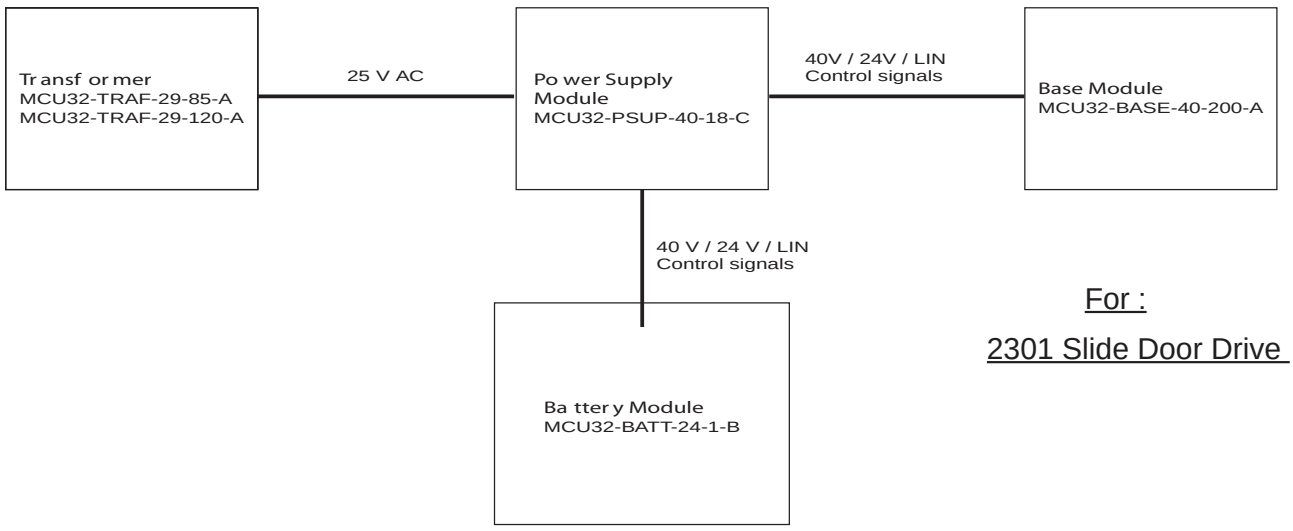
5 DC terminal for connection of external DC source

Installation

The module must be protected against electrostatic discharge (ESD) when touching it.

- Fasten the printed circuit board in the power-free state at the designated points.
- Switch on the power supply only after all surrounding MCU32 modules are connected.

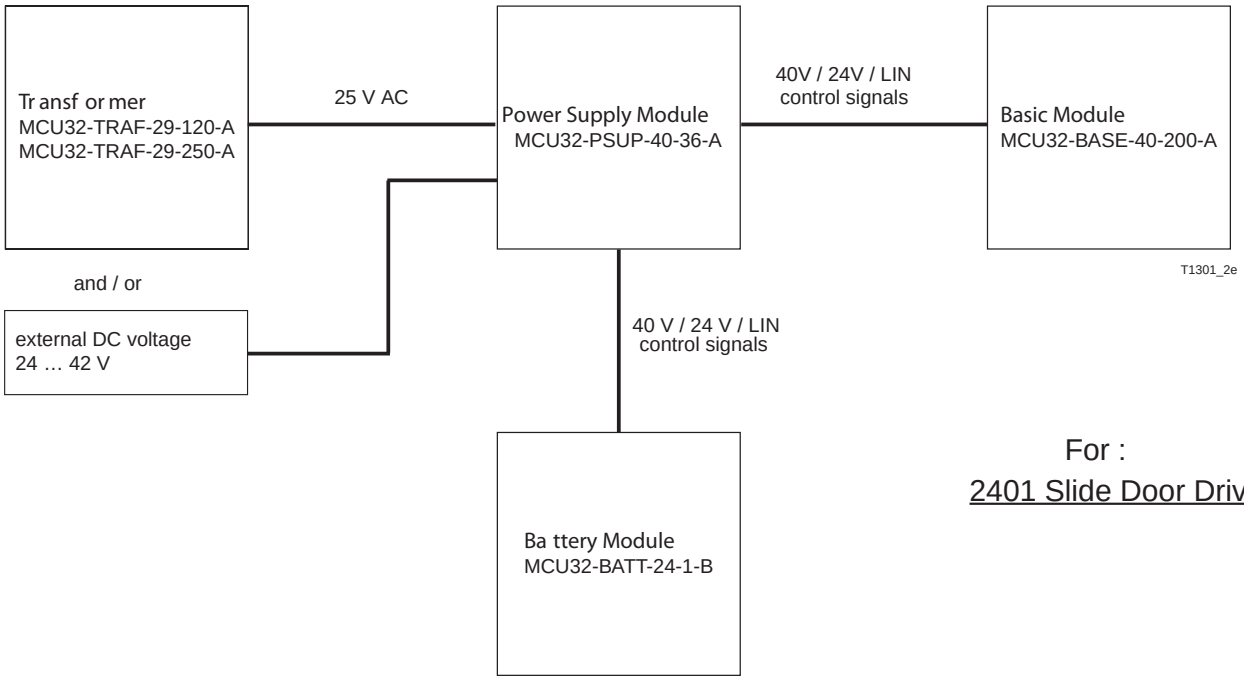
Module Connections



For :

2301 Slide Door Drive

Module Connections



For :
2401 Slide Door Drive

Technical Data

	2301	2401
Rated voltage (input, from transformer)	25 V AC	25 V AC
Nominal power (input, from transformer)	85 VA	250 VA
Rated Voltage (input,from ext.DC voltage)	24 V DC ....42 V DC	24 V DC ....42 V DC
Nominal Power (input, from ext.DC coltage)	-	5 A
Rated voltage (input, from battery module)	-	24 V DC
Maximum power (input, from battery module)	120 W	120 W
Maximum current 24 V sensor power supply (output)	0.75 A	1.5 A
Ambient temperature	–4°F to +122°F	–4°F to +122°F
Dimensions length x width x height (mm)	3-1/8”x 2-3/4”x 1-11/16”	5-1/8”x2-3/4”x1-11/16”
Interfaces	Transformer MCU32-TRAF-29-85- A Battery module MCU32-BATT-24-1-B Base module MCU32-BASE-40-200-A	Transformer MCU32-TRAF-29-250-A Battery module MCU32-BATT-24-1-B Base module MCU32-BASE-40-200-A

T-1261 e	Module Documentation Base Module MCU32-BASE-40-200-A	★★★★★ TORMAX AUTOMATIC 12859 Wetmore Road San Antonio, Tx 78247 1-888-685-3707 www.tormaxusa.com
Area of application	2301 & 2401 Slide Door Drive	
Release	August 2008	
Use	Installation and maintenance	

Purpose

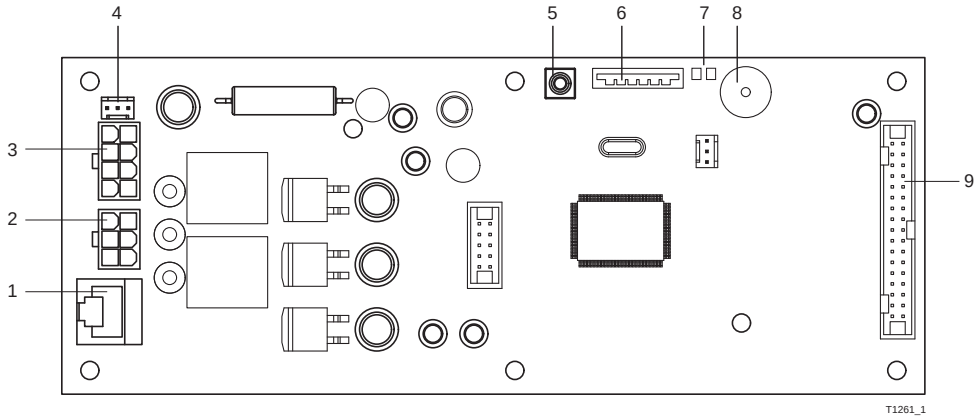
To manage the function of all iMotion 2301,2401 sliding door drives.

Function

The base module is the central functional control system of the MCU32 module family. The module contains the processor system including a non-volatile (i.e. voltage failure safe) memory for the adjusted values, a 3-phase converter for the motor and the drivers for the interfaces OUT1-2, PWM, as well as LIN and CAN.

The control system is programmed witht he FCP.

Base module MCU32-BASE-40-200-A



1 Connection for encoder MCU32-ENCO-24-16-A
2 Connection for motor MCU32-MOTR-40-… (*)
3 Connection for power supply module MCU32-PSUP-40-… (*)
4 Connection for potentiometer, closed position indicator
5 Push-button for starting a download or newer SW, Sersoft required
6 Slot for configuration card MCU32-CONF-… (*)
7 Display for power supply 24 V and 5 V
8 Beeper
9 Connection for terminal module MCU32-TERM-… (*)

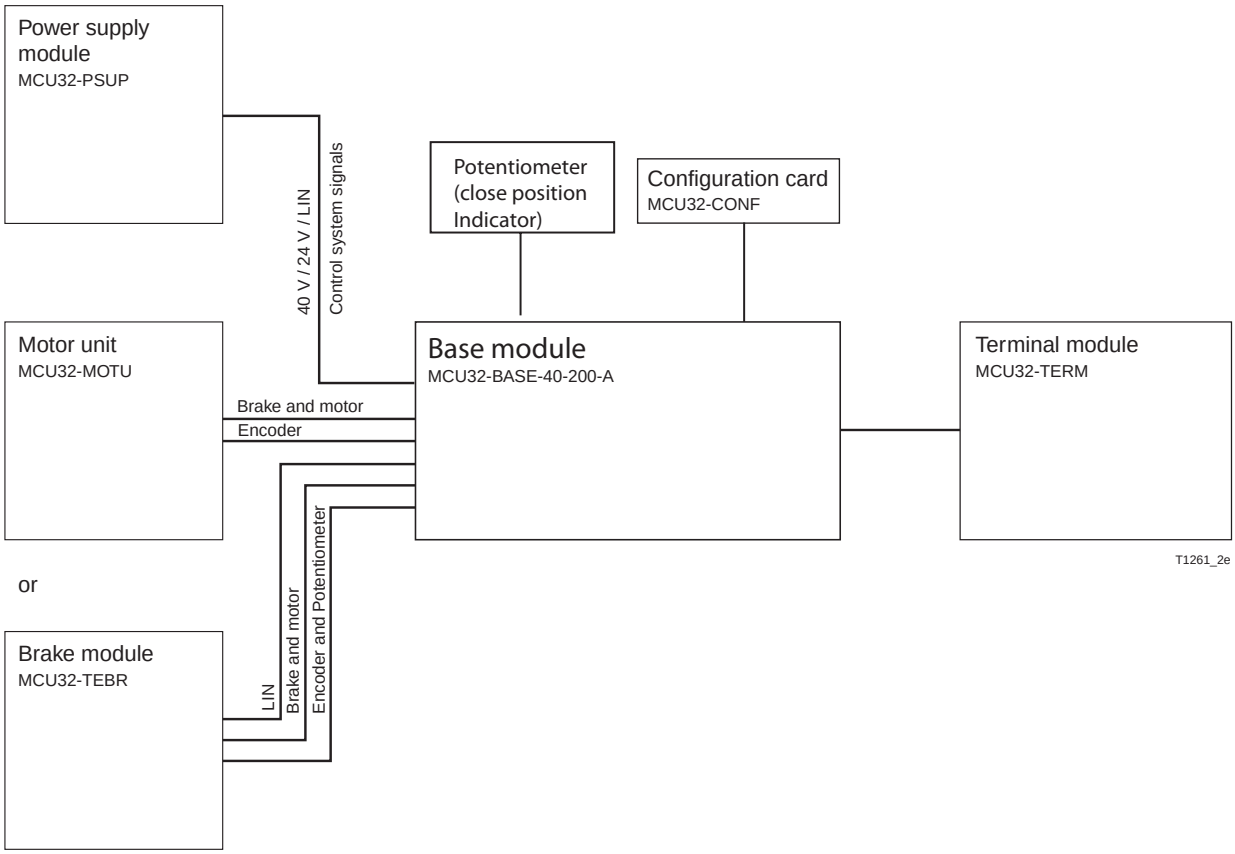
(*) Different versions

Installation

The module must be protected against electrostatic discharge (ESD) when touching it.

- Fasten the printed circuit board at the predetermined points in the power-free condition.
- Switch on the power supply only after all surrounding MCU32 modules are connected.

Module Connections



Commissioning

Program using FCP see T-1248

Technical Data

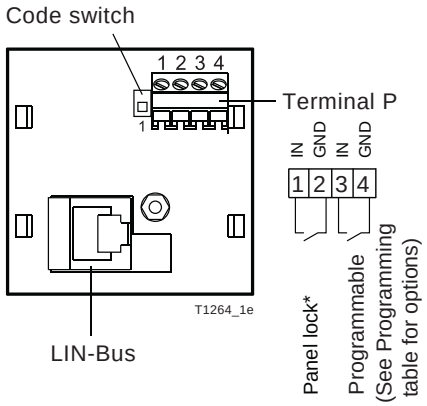
Processor	32 bits, 30 MHz
System monitoring	Complies with DIN 18650 requirements
Ambient temperature	–4°F...+167°F
Overheating protection	for power supply 40 V
Dimensions	7.873 x 3.031 inch
Module interfaces:	MCU32-PSUP
	MCU32-MOTU
	MCU32-TERM
	MCU32-CONF
	MCU32-TEBR

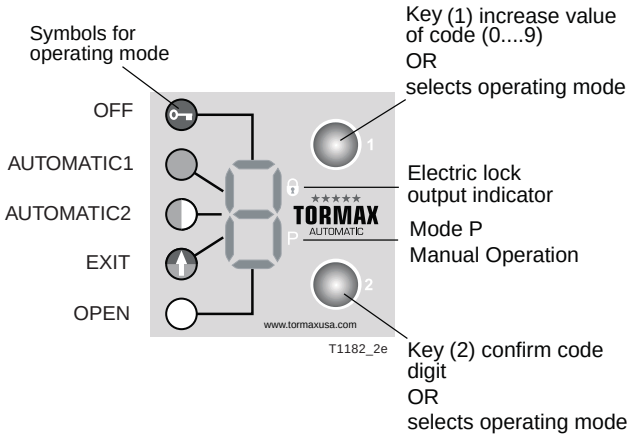
T-1264 e	Module Documentation Function Control Panel (FCP) MCU32-USIN-7-A	★★★★★ TORMAX AUTOMATIC 12859 Wetmore Road San Antonio, TX 78247 1-888-685-3707 www.tormaxusa.com
Area of application	iMotion 1301, 1401 Operators and 2301, 2401 Drives	
Release	October 2008	
Use	Programming and mode selection	

Purpose

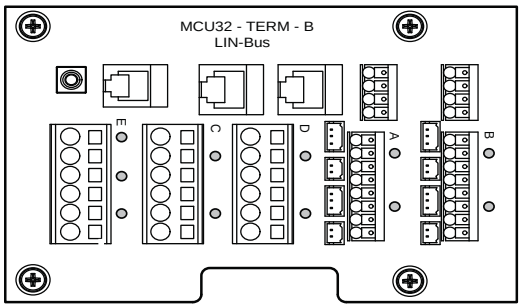
Programming and operating the TORMAX iMotion universal processor.

Functional control panel (FCP) MCU32-USIN-7-A

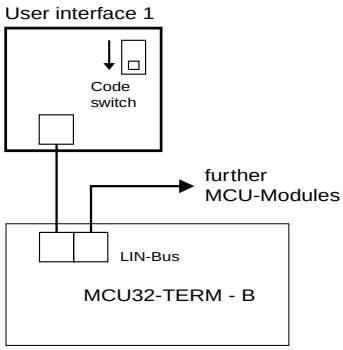




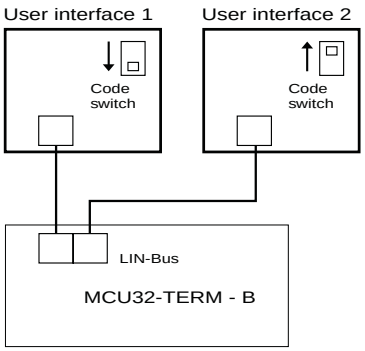
Connection Diagram



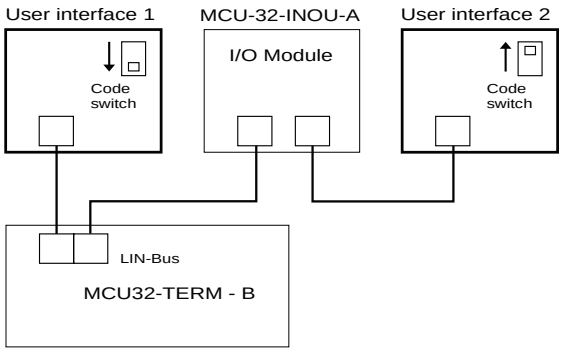
Connection Option 1



Connection Option 2



Connection Option 3



- Switch mains 115 V AC ON after the functional control panel(FCP) is connected.

LIN Connection

- Cut to length and assemble the LIN connection cable on both ends with a FCC 6-pole plug
- FCC plug is polarity sensitive

FCP 6 pole 98’ Max FCP 6 pole

- First connect the LIN cable and FCP to the 2301 or 2401 Door Drive then switch the 115 VAC on.

Technical Data

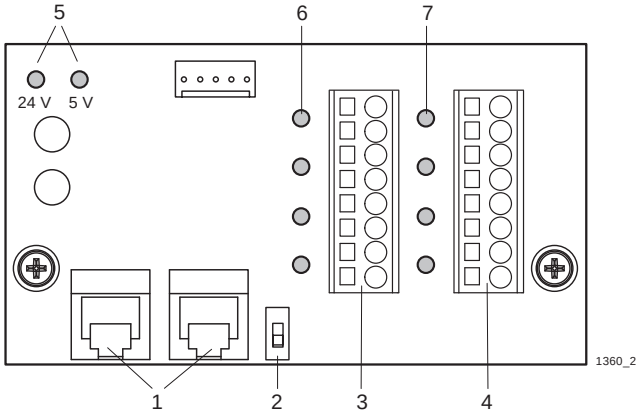
Inputs:	2 × Pull up in: 24 VDC / 3 mA, function programmable
Terminal cross section:	0.5 mm^2 (strand or wire)
Interface	LIN, FCC 6-Pol
Ambient Temperature:	–4°F…+122°F
Dimensions:	1.7716 inch x1.7716 inch
LIN cable length:	98’ Max

T-1360 e	Module Documentation Input /Output Module MCU32-INOU-A	★★★★★ TORMAX AUTOMATIC 12859 Wetmore Road San Antonio,Tx78247 1-888-685-3707 www.tormaxusa.com
Area of application	iMotion 1301, 1401, 2301, 2401	
Release	January 2010	
Use	Input/Output terminal board	

Purpose

Additional inputs and outputs for automatic door drives with iMotion. Not suitable for time-critical applications such as security or safety functions.

Function

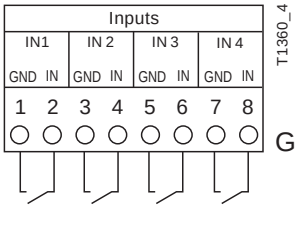


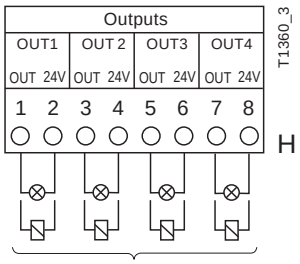
1 LIN-Bus
2 Code switch for LIN address
3 Input 1 … 4
4 Output 1 … 4
5 Display power supply
6 Display status of inputs 1 … 4
7 Display status of outputs 1 … 4

The IO module receives its control commands from the base module via the LIN-Bus (1). The two LIN plugs are identical. Each module must have a unique LIN address which can be set with the code switch (2). The function of the inputs and outputs depends on the programming of the basic control system. See the MCU programming table in the Extranet for the functions.

A self-resetting thermal cut-out protects the control system's 24 V power supply against continuous overload. The thermal cut-out resets itself immediately after the overload is removed.

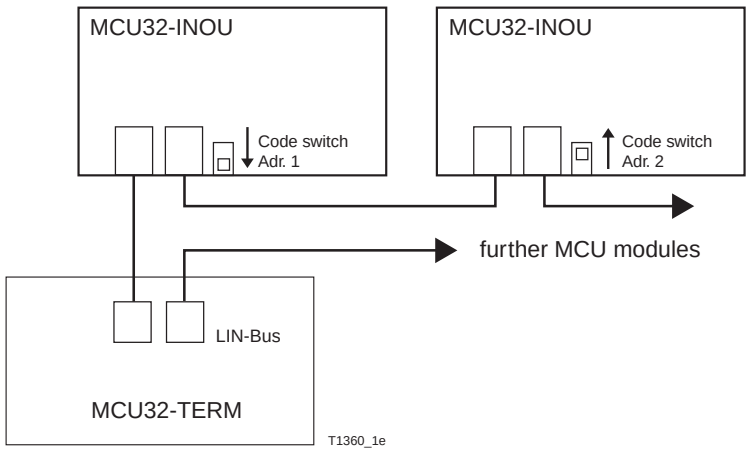
Connection Diagram





Load on the 24 V system max. 25 mA per output.

The inputs must not be used for security or safety-related functions (e.g. light beams).



The 24 VDC power supply on this module must not be used as the power supply to sensors.

Installation

The module is installed on the module carrier.

LIN Connection

- Cut to length and assemble the LIN connection cable on both ends with a FCC 6-pole plug (article see TORMAX price list).

The polarity of the FCC-plug is not of importance.

Max 98’

FCC 6 pole FCC 6 pole

For alternative cable connections via adapter with terminal connection see module documentation LIN-Bus adapter T-1322.

Commissioning

The modules must be coded according to the connection diagram.

The modules are detected automatically when initiating the auto configuration.

See programming table on TORMAX Extranet for input and output functions (021). No functions are programmed as standard.

Technical Data

Inputs:	4 x Pull up in: 24 VDC / 5 mA, function programmable
Outputs:	Transistor out: 24 VDC / Continuous current max. 25 mA, function programmable
Input/output reaction time:	with 1 module MCU-INOU-A < 50 ms with 2 modules MCU-INOU-A < 100 ms
Power supply 24 V:	Total continuous load < 100 mA
Terminal cross section:	0.14 … 1.5 mm² (recommended conductor cross section: 0.5 mm²)
LIN Interface	FCC 6-Pol
Length of all LIN cables:	< 100 m
LIN cable length between modules:	98’ Max
Ambient temperature:	–4° F … +122° F
Dimensions:	2 5/32” - 3 11/16”
Module interface:	MCU32-TERM

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