

R Y T E C

Pharma Slide[®] Controller iMotion[®]

Installation & Owner's Manual



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INTRODUCTION

The information contained in this manual will allow you to operate and maintain the TORMAX® automatic operator in a manner that will ensure maximum life and trouble-free operation.

TORMAX® is a division and a registered trademark of Landert Motoren AG. iMotion® is a registered trademark of TORMAX.

NOTE: *This manual is intended for the TORMAX operator only. Installation and operation information specific to your door is detailed in the installation and owner's manuals that were shipped with the door.*

Any unauthorized changes to these procedures, or failure to follow the steps as outlined, will automatically void the warranty. Any changes to the working parts, assemblies, or specifications as written, not authorized by Rytec Corporation, will also void the warranty. The responsibility for the successful operation and performance of this drive and control system lies with the owner of the door.

DO NOT INSTALL, OPERATE, OR PERFORM MAINTENANCE ON THIS DRIVE AND CONTROL SYSTEM UNTIL YOU READ AND UNDERSTAND THE INSTRUCTIONS IN THIS MANUAL.

If you have any questions, contact your Rytec representative or call the Rytec Customer Support Department at 800-628-1909. Always refer to the serial number of the door that your control system is connected to when calling the representative or Customer Support. Refer to the installation manual or the owner's manual provided with your door for the location of the serial number plate.

The wiring connections and schematics in this manual are for general information purposes only. A wiring schematic is provided with each individual door, specifically covering the control panel and electrical components of that door.

DOOR SERIAL NUMBER(S)

The **DOOR SERIAL NUMBER** is located on the left side of the head assembly. (See Figure 1.)

IMPORTANT: *When installing multiple doors of the same model but in different sizes, verify the serial number in the head assembly.*

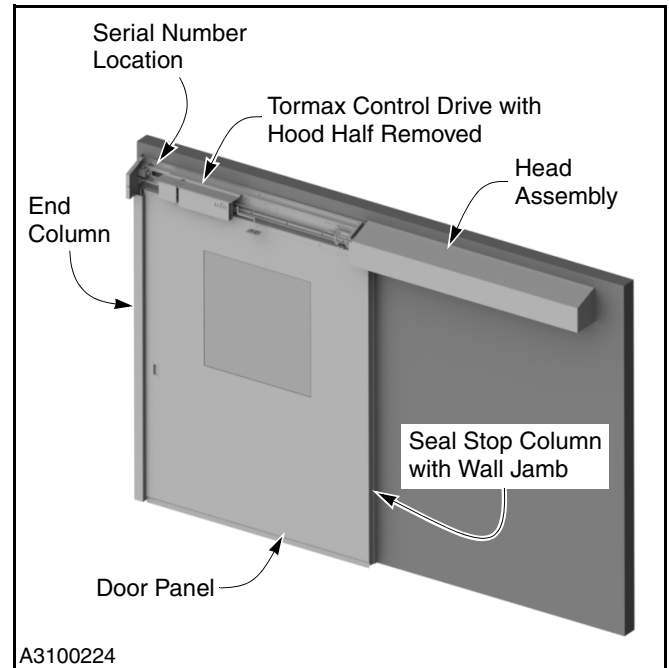


Figure 1

HOW TO USE MANUAL

Throughout this manual, the following key words are used to alert the reader of potentially hazardous situations, or situations where additional information to successfully perform the procedure is presented:

WARNING

WARNING is used to indicate the potential for personal injury, if the procedure is not performed as described.

CAUTION

CAUTION is used to indicate the potential for damage to the product or property damage, if the procedure is not followed as described.

IMPORTANT: *IMPORTANT is used to relay information CRITICAL to the successful completion of the procedure.*

NOTE: *NOTE is used to provide additional information to aid in the performance of the procedure or operation of the door, but not necessarily safety related.*

INTRODUCTION—REQUIREMENTS

REQUIREMENTS

Labor and Site Requirements

1. An electrician is required for all electrical connections. (See “Electrician’s Responsibilities” below.)

IMPORTANT: *All electrical work must be performed in accordance with local and state building codes.*

2. Unlimited accessibility to the door opening is essential during the installation process. Traffic should not pass through the opening during the installation procedure.

Electrician’s Responsibilities

1. Furnish and install fused disconnect(s).
2. Install all necessary conduit.
3. Run electrical power lines to fused disconnect.
4. Run power lines from disconnect to control panel.
5. Run power and control lines from control panel to door head assembly (and defrost system, if used).
6. Install conduit from control panel to floor for floor loop activators and wire activators (if used).

GENERAL SAFETY INSTRUCTIONS

Please read the operating instructions carefully prior to installation or commissioning. Damage to the unit and personal injury may result if these instructions are not carefully followed.

Preventing General Hazards and Possible Damage to Equipment

- Keep fingers away from moving parts.
- Verify that the power selection switch is set to the correct voltage before start-up.
- The power supply cable (flexible cord) should be inserted at the side that is closer to the input power supply plug. It should not be routed through doorways, window openings, walls, ceilings, floors, etc. The power supply cable (flexible cord) should not be attached or otherwise secured to the building structure. It also should not be concealed behind walls, etc.
- Never allow the power supply cable (flexible cord) to become entrapped on moving parts of the operator, door, or system.
- The power receptacle must be of the grounding type. It is very important for the unit to be properly grounded.

- To reduce the risk of electrical shock, this equipment has a grounding-type plug that has a third grounding pin. This plug will only fit into a grounding-type outlet. If the plug does not fit into the outlet, contact a qualified electrician to install the proper outlet. Do not change the plug in any way.

Warnings of Dangerous Electrical Voltages or Current

- Be sure the electrical power is disconnected and locked out when working on the operator unit.
- Install the electrical cables and power only after the mechanical installation to the unit is done.
- Turn on the power to the operator unit only after all internal cables are connected. Do not connect cables while the unit is powered.
- Always use appropriate tools for installation and repair.

APPLICATION

The TORMAX operator has been designed and manufactured according to state-of-the-art engineering and recognized safety-related regulations and is intended exclusively for the operation of automatic Pharma Slide doors. Operators corresponding to IP 22 in the protective system may only be installed at the inside of buildings if no additional protective measures are provided.

Any other use is considered non-permissible and may result in injuries to the user or third parties. The manufacturer will not be liable for damages resulting from incorrect application. The risk of such non-permissible applications must be borne solely and entirely by the owner of the door system.

This manual is applicable for Pharma Slide doors with TORMAX automatic door operator types:

- iMotion 2301 Sliding Door Drive
- iMotion 2401 Sliding Door Drive

PRECAUTIONARY MEASURES

Do not use the system in other than technically perfect condition. Make sure that faults which would impair safety are eliminated immediately by professionals.

The following are consequences of incorrect application of the door operator or the door system:

- Danger of the user’s or a third party’s injury or loss of life.
- Risk of damage to the system or associated equipment.

The operating service and maintenance conditions specified by the manufacturer are to be observed. TORMAX operator units must be maintained and repaired only by trained specialists who are aware of any possible danger that may occur.

In addition to the operating instructions, the generally accepted legal and otherwise relevant rules relating to accident prevention and to occupational medicine – in the country where the door system is installed – are also applicable.

NOTE: The manufacturer is exempt from any liability for damages caused by unauthorized alterations of the system.

GENERAL MEASURES

Doors are to be maintained in such a way that the safety of the user, maintenance personnel, or third party is guaranteed at all times.

Should any fault occur on the safety devices (e.g., safety beams), they may not be bypassed to maintain the automatic door functions.

The person operating, checking, or maintaining door systems must have the relevant operating instructions present.

Personnel charged with duties on the door system must have read and understood the operating instructions prior to performing any work.

Any mechanical or electrical work done on the door and the control systems may be performed by trained specialists or contractors after consulting our trained specialists.

SAFETY DEVICES

There are two self-checking safety beams (photocells) in the passageway.

Self-Checking Photoeye Function

Every interruption of the light beam of a photoeye causes the immediate termination of a closing action. If after 1 minute the light beam is still interrupted (for example, on a fault), then the door continues to operate in a safety mode – that is, with a slow closing speed.

During the opening and closing actions, the door movements are monitored by a sensitive electronic circuit.

NOTE: The controller may flash E31, E32, E33, or E34, indicating a photoeye may be inoperative or out of alignment. (See “GENERAL FAULT CODES” on page 21.)

Electronic Reversing Function

If the door hits an obstacle during closing, it reopens, remains open somewhat longer, and closes again with reduced speed (the overrun distance in the area subject to jamming is 1 inch maximum).

If the door hits an obstacle during opening, it reverses and runs in closing direction for a few inches, stops for a while, and closes (opens, if sensor is active) with reduced speed.

OPERATION OF DOOR

When power is first applied to the unit, a calibration run will begin. The control panel will indicate H61 and H62. The door will travel at a slow speed to the fully open position, finding the end stop. Then the door will close at slow speed until the closed position is calibrated. After the door limits have been set, operate the door using the small blue SW2 switch located on the bottom right corner of the circuit board. (See Figure 2.) The door is now ready for use and custom programming.

NOTE: The code H65 will appear as the door travels. It may take up to 15 cycles for the code to leave the display. H65 indicates the controller is learning the door mass or weight.

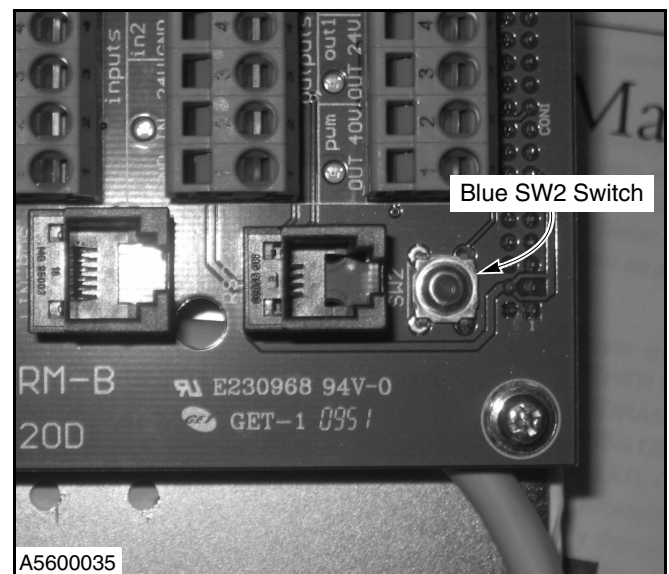


Figure 2

SYSTEM OVERVIEW

CONTROL PANEL

The TORMAX iMotion control panel and automatic operator are specifically used in the Pharma Slide series of doors.

NORMAL OPERATION

Activation for the door can be done with push buttons, motion detectors, or pull cords.

The activation can be wired for automatic closure or reactivate to close.

If an opening activator is activated, the door opens, stops for the duration of the hold-open time, and closes again.

If, for example, the motion detector or safety photocells recognize a person while the door is open, the door will remain open. If a person moves within range of the motion detector, in the direction of the closing door, the door reopens immediately.

The door system may be operated only if all safety relevant devices are installed and functional.

PHOTO EYE

Your door is equipped with four photo eyes mounted on the front of the door. The purpose of these photo eyes is to hold the door open or, if the door is closing, reverse the door to the open position if a vehicle, person, or any object is in the path of the photo eye beam.

The photo eye is not active when the door is closed. After the obstruction breaking the photo eye beam is removed:

- The door will remain open if it was originally opened by a non-automatic activator until it is closed by a non-automatic activator.
- The door will close automatically if it was originally opened with an automatic activator.

NOTE: The photo eyes are not intended to be used as a door activator and will not open the door when it is closed.

This safety system consists of two pairs of non-adjustable emitter and receiver modules. There are no alignment, gain, or sensitivity settings.

NOTE: Photo eyes should be installed opposite each other to avoid any interference. See Figure 3 for clarification.

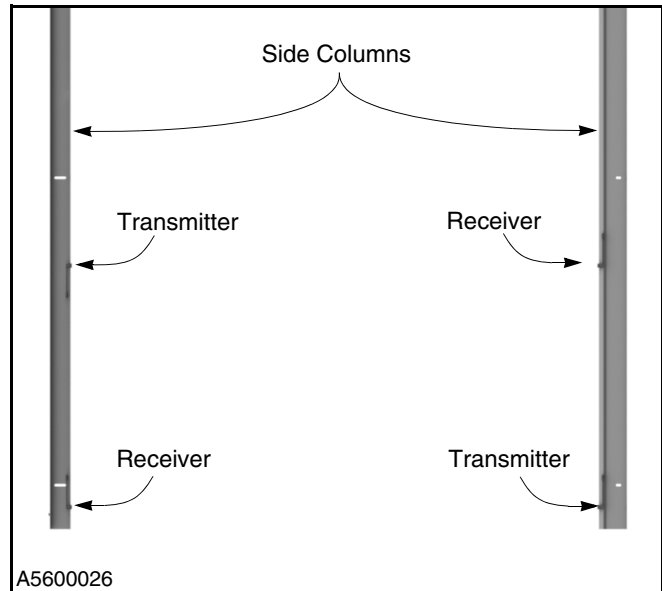


Figure 3

OPERATING MODES

The door automation can be operated and programmed through the TORMAX control panel with six operating modes and a status display. (See Figure 4.)

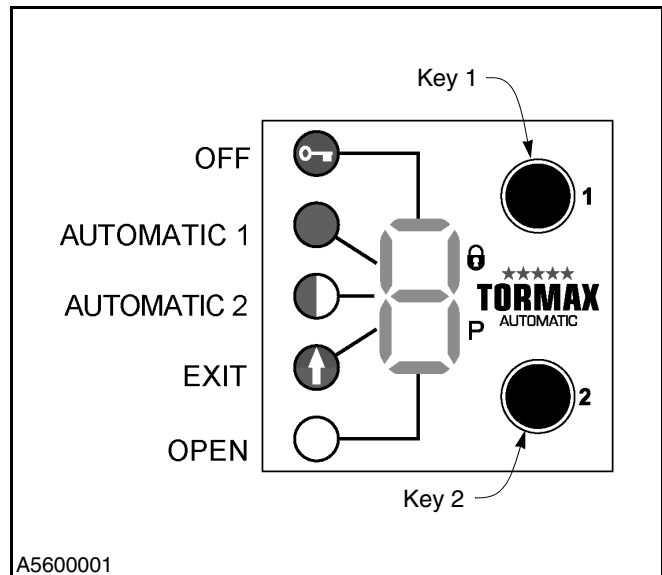


Figure 4

Operating Mode OFF

The activators inside and outside are not active. The door is closed by the motor and is locked. If the door has an optional electromechanical lock, it will engage at this time. Access is only possible through a key switch. (See Figure 5 and Figure 6.)

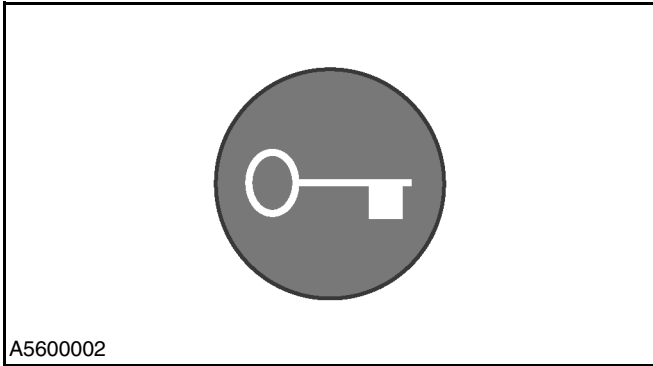


Figure 5

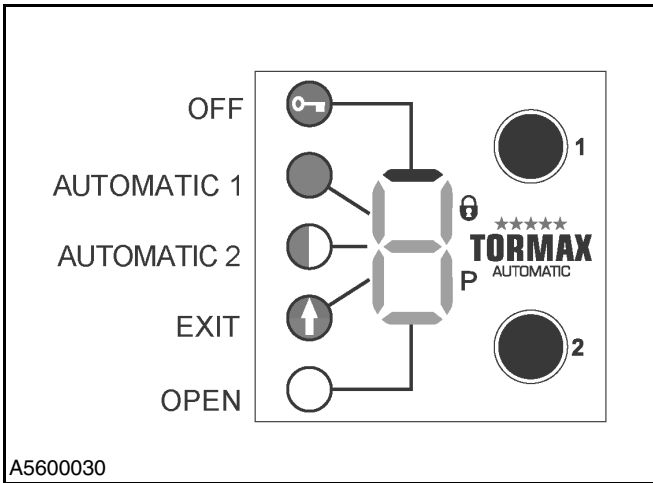


Figure 6

Operating Mode AUTOMATIC 1

Operating mode AUTOMATIC 1 is the most commonly used operation. The door opens automatically by sensors used on both the inside and outside of the door panel(s). This mode usually opens the door to the full allowable width. (See Figure 7 and Figure 8.)

NOTE: Changing the value of parameter 10 will increase or decrease the hold-open time. See table on page 14 for values.

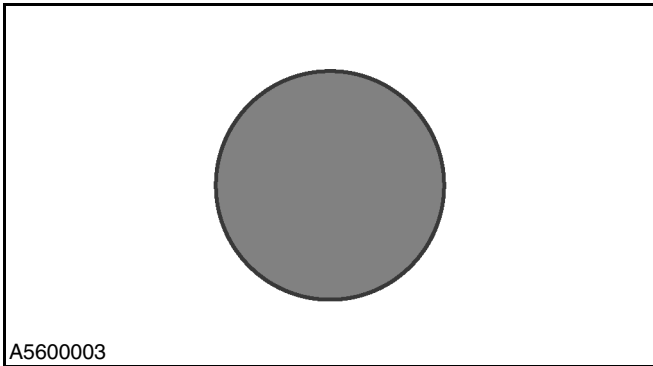


Figure 7

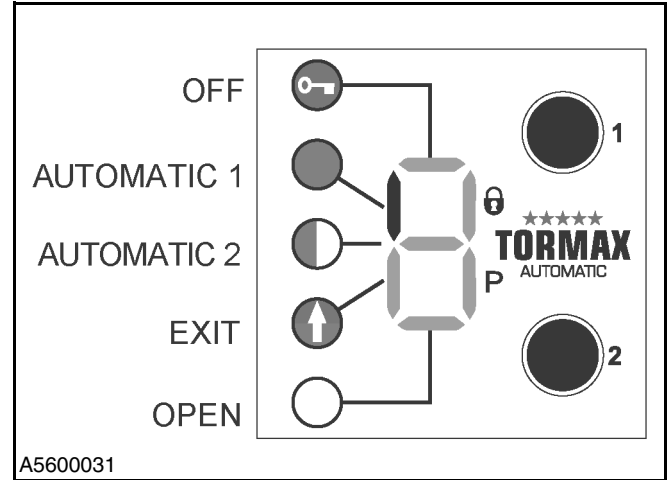


Figure 8

Operating Mode AUTOMATIC 2

Operating mode AUTOMATIC 2 is used when the door panel(s) needs to be opened to a certain distance this is less than the full width. The door opens automatically by sensors used on both the inside and outside of the door panel(s). This mode usually opens the door to a predetermined width. (See Figure 9 and Figure 10.)

NOTE: For a custom door access, the hold-open time can be adjusted through the control panel. See page 10 for control panel programming. Changing the value of parameter 11 will increase or decrease the hold-open time. See table on page 14 for values.

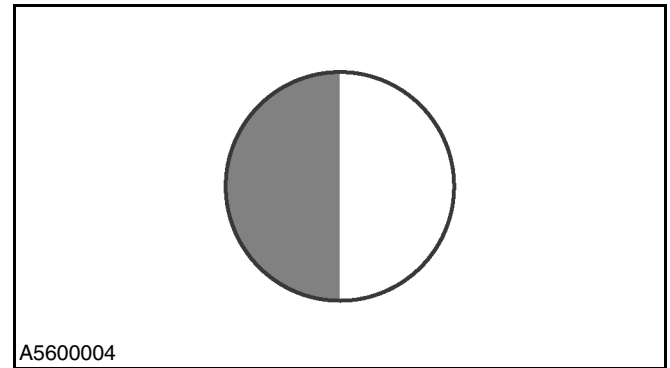


Figure 9

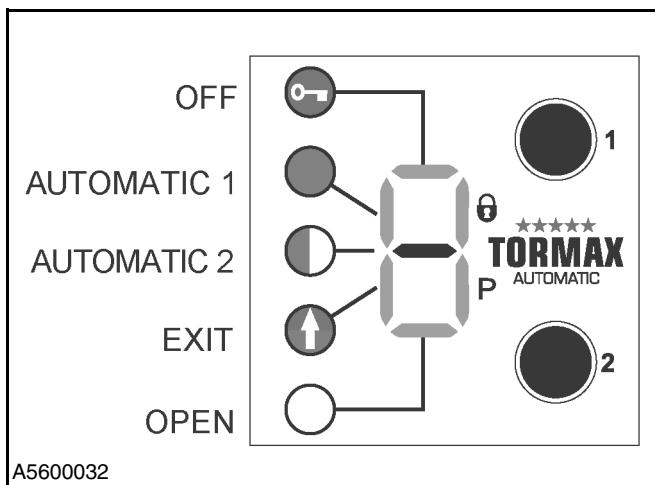


Figure 10

Operating Mode EXIT

In operating mode EXIT, the door opens automatically allowing passage through the doorway from only one side. This is commonly known as a one-way door. For example, personnel or objects may enter through the door but will not be able to exit. The door can be programmed to be used as either an entrance or an exit from a building or room. (See Figure 11 and Figure 12.)

NOTE: As the sensor senses a clear path behind the doorway, the door closes.

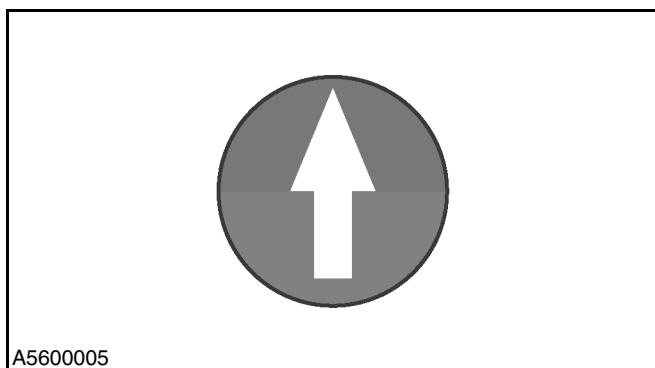


Figure 11

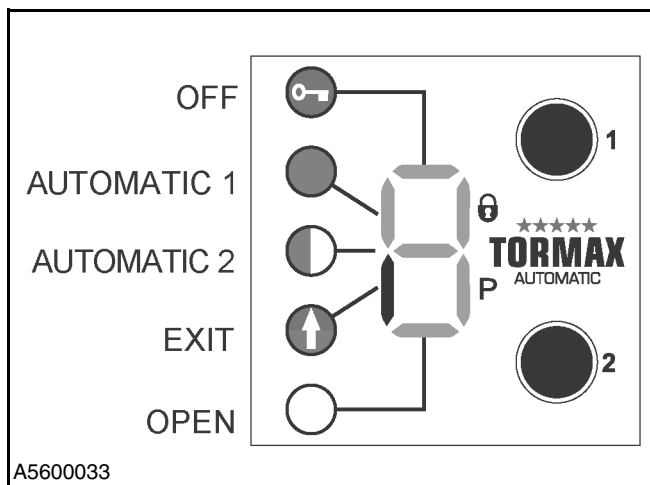


Figure 12

Operating Mode OPEN

In operating mode OPEN, the door opens and is held in the open position. The opening width is determined by the preceding selection of either operating mode AUTOMATIC 1 or AUTOMATIC 2. (See Figure 13 and Figure 14.)

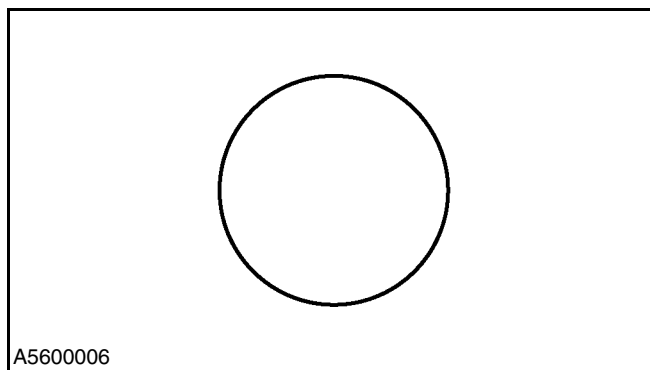


Figure 13

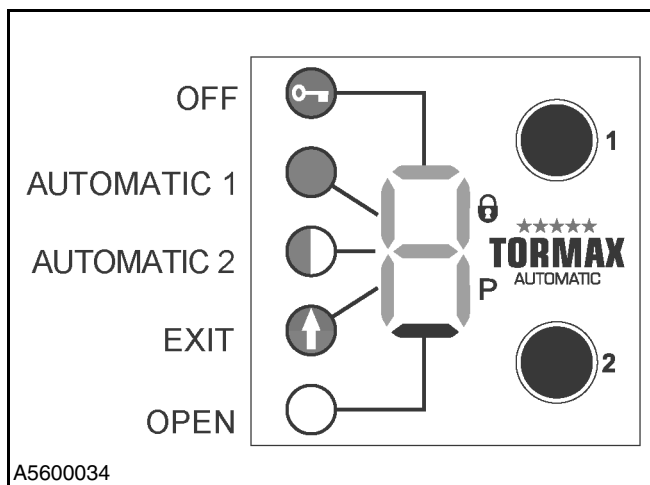


Figure 14

Operating Mode P (Manual Operation)

In operating mode P, the door panel(s) can be manually moved. This operating mode can be used for cleaning the door panel(s) and floor guide or for temporarily shutting down the system for maintenance purposes. (See Figure 15 and Figure 16.)

NOTE: A system reset takes place after quitting this operating mode.

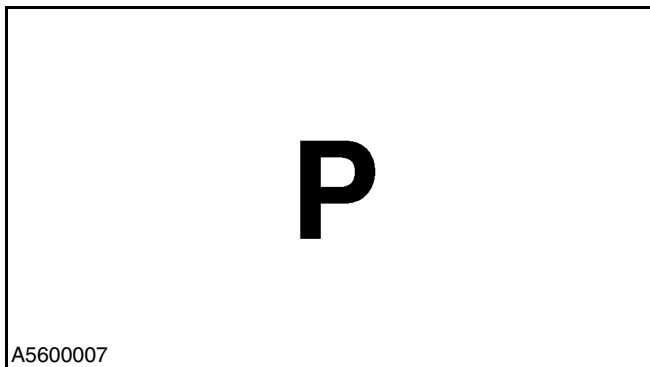


Figure 15

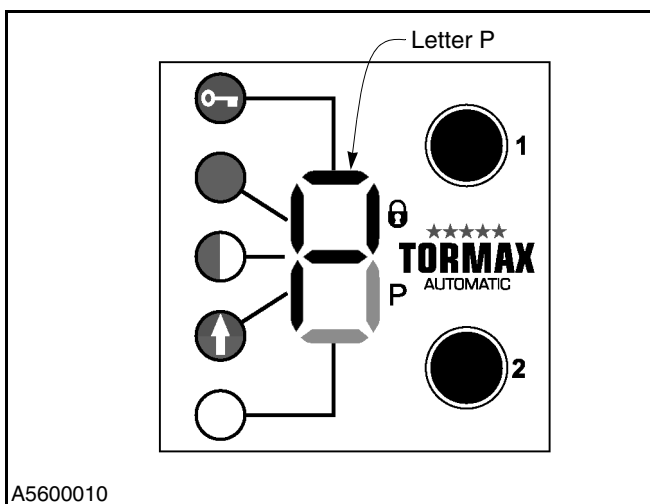


Figure 16

AUTOMATIC DOOR OPERATION WITH SENSORS

When in operating mode AUTOMATIC 1, the door opens automatically through sensors when a person approaches the door. In most cases, the door opens by an activated switching device such as a push-button panel or card reader for controlled access.

Also in operating mode EXIT or OFF, a key switch permits access to the door. The door unlocks, opens, and closes as soon as no other sensors are activated.

The sensors for the door opening and the maintained opening of the door are arranged and adjusted in such a way that the door opens promptly and remains open as long as a person is within the operating range of the door panel. The door can close, but only after an attendance time of more than 1 minute.

Sensors for safeguarding the moving door panels can also be present in the opening direction, depending on the surrounding conditions and design of the system. When a person walks into the sensor area, the door panel(s) stops or slows down to a very low speed, depending on the adjustments performed by the installer.

CONTROL PANEL OPERATION

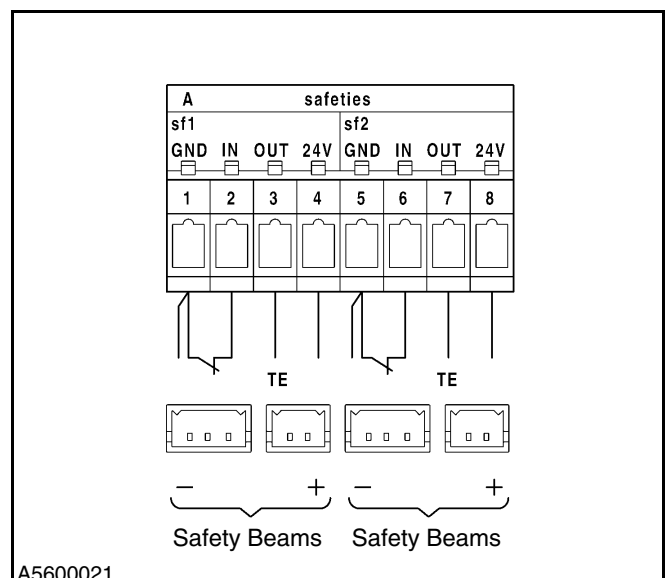
TERMINAL CONNECTION

When making wire connections to the TORMAX control unit, use the wiring schematic that was shipped with the door. The schematics provided in this manual are for general information and should only be used as a reference. Feed all wires through the access hole(s) as required by the Pharma Slide installation manual. Securely route and fasten all wires out of the path of moving parts.

The functions for inputs C and D and output E are programmable. See programming Tables 1 and Table 2 for options and codes.

NOTE: When installing multiple doors of the same model but in different sizes, verify the serial number in the head assembly.

1. Sf1 is the default setting for the safety closing and reversing functions. Sf2, sf3, and sf4 are optional connection points; see Table 2 for code and function. (See Figure 17 and Figure 18.)



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Figure 17

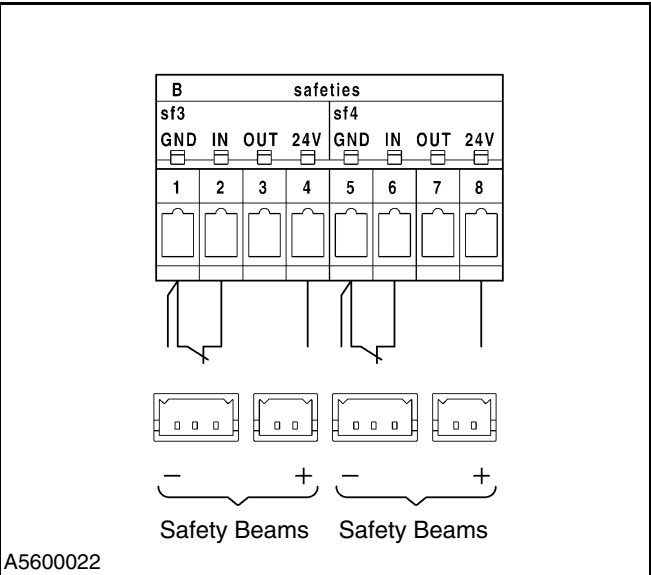


Figure 18

2. Inputs C1 and C2 are connections for the inside activators, and inputs C4 and C5 are connections for the outside activators. (See Figure 19 and Figure 20.) D1 and D2 key switch activates the door open in all operating modes except mode P.

NOTE: Activation signals are inhibited when the FCP (Function Control Panel) is in mode EXIT and the door is fully closed.

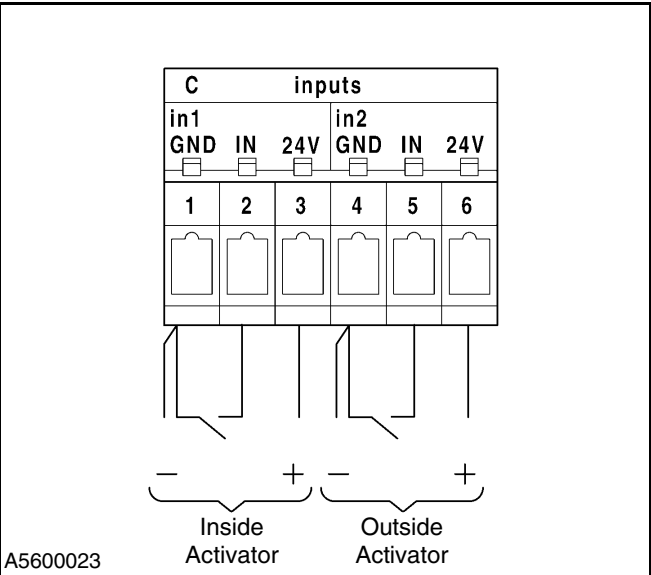


Figure 19

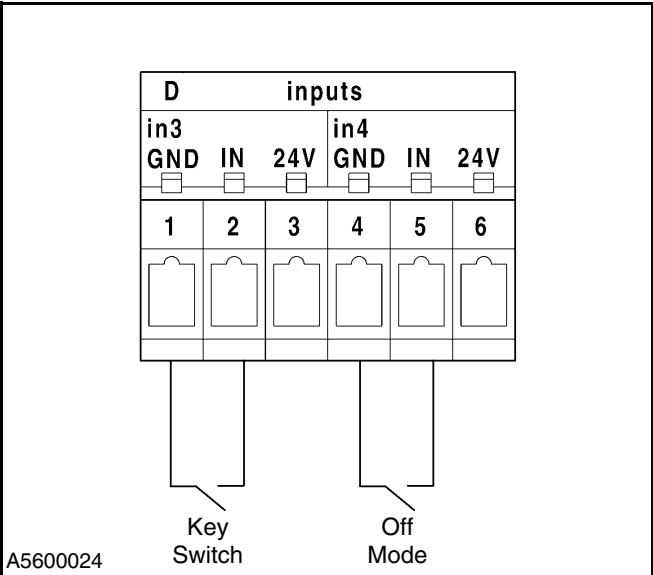


Figure 20

3. There are two outputs provided with the iMotion operators. Output 1 is defaulted to Bell. Output 2 is defaulted to Door Closed. Adjustments can be made to parameter 68 for Output 1 and parameter 69 for Output 2. See the table on page 18 for Output 1 and Output 2 options. The output becomes active when the condition is met.

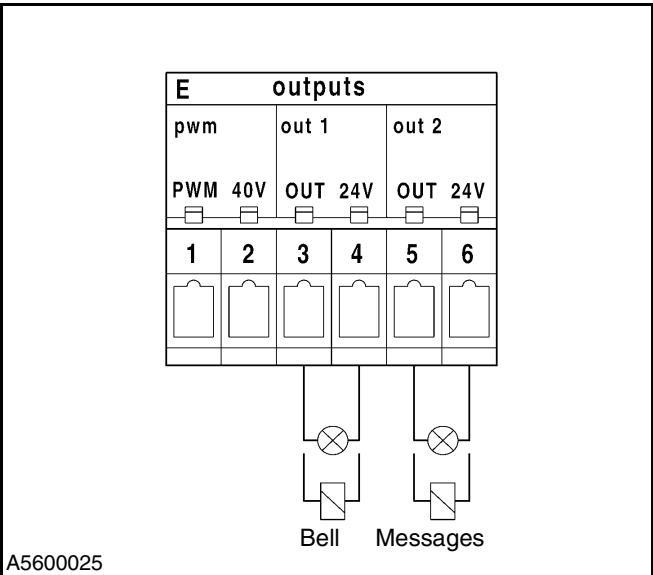


Figure 21

INITIAL START-UP

IMPORTANT: During initial start-up it is very important not to block the photo eyes or any activate sensors on the door. On start-up the controller sets the inputs to look for normally open or normally closed contacts. If the sensor is in an active state, the controller may choose the settings to operate backwards. See page 12 parameters 03 8 to reset inputs.

Prior to switching the power on:

- Unlock any locking mechanisms; e.g. floor lock.
- Make sure that the operating range of the door panel(s) is free and clear of any obstructions.
- Check if the floor guide is clean; e.g. pebbles.
- Switch on main power and select the operating mode.

NOTE: The door motion will be slow after switching on the main power supply for the first time. The control panel will indicate H61 and H62, which is determining the end stops for the door panel.

- The door is now ready for use.

When power is applied to the operator, the door will begin to commission and set the door open and close limits. The door will operate very slowly until the limits have been set. The control panel will display H61 and H62 during the commissioning process. This is the normal operating mode.

NOTE: If the door will not commission, turn off the power and move the door panel(s) manually to check for binding. The panel(s) should move freely. If the door panel is binding, adjust the trolley(s) or drive belt until a smooth operation is obtained. When you have finished the adjustments, turn on the power and the door will go through the commissioning process again.

CONTROL PANEL PROGRAMMING

The programming level can only be reached when the access code is entered. Without the access code, any unauthorized programming of the system is then eliminated. The starting value on the control panel is 0 and goes through 9 and then back to 0. Pressing Key 1 will increase the numerical value by 1 and pressing Key 2 will confirm the selection.

Start Access Code

1. The upper LED indicates the starting mode. (See Figure 22.)

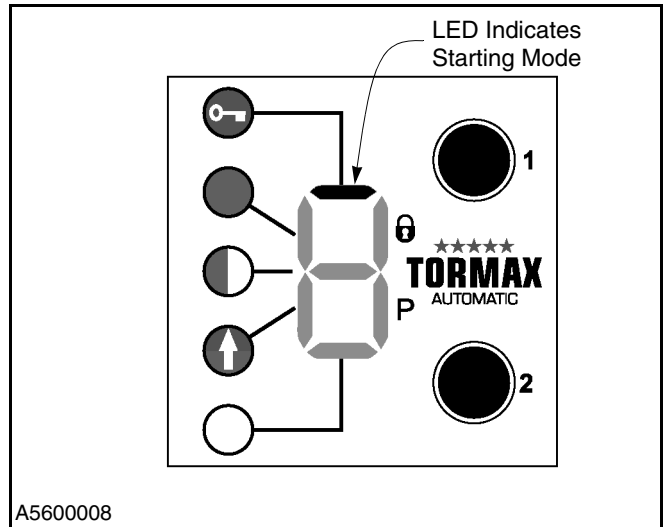


Figure 22

2. Press Key 1 and Key 2 simultaneously until the letter C shows up on the control panel.

NOTE: A time-out occurs after 10 seconds if no input is made after the last selection. Then the control panel will go back to indicating the starting mode.

3. Press Key 2 to confirm the letter C. (See Figure 23.)

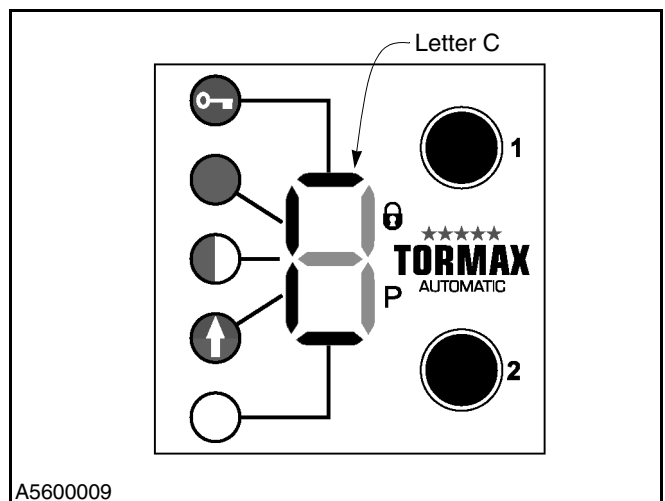


Figure 23

CONTROL PANEL OPERATION—CONTROL PANEL PROGRAMMING

Entering Access Code

1. After pressing Key 2 to confirm the letter C, a zero appears for entering the access code. (See Figure 24.)

NOTE: A time-out occurs after 10 seconds if no input is made after the last selection. Then the control panel will go back to indicating the starting mode.

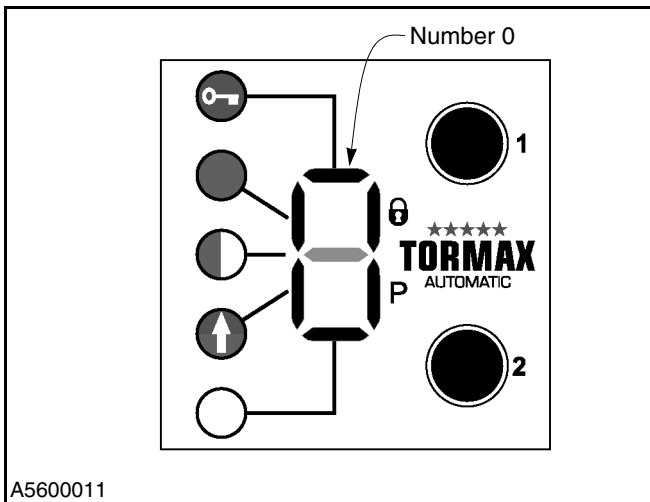


Figure 24

2. Enter access code 111:
 - a. Press Key 1 until number 1 is selected.
 - b. Press Key 2 to confirm the first digit.
 - c. Press Key 1 until number 1 is selected.
 - d. Press Key 2 to confirm the second digit.
 - e. Press Key 1 until number 1 is selected.
 - f. Press Key 2 to confirm the third digit.

Start Programming Level

1. After the access code has been entered, the letter P appears on the control panel.
2. Confirm by pressing Key 2 and now the system is ready for programming.

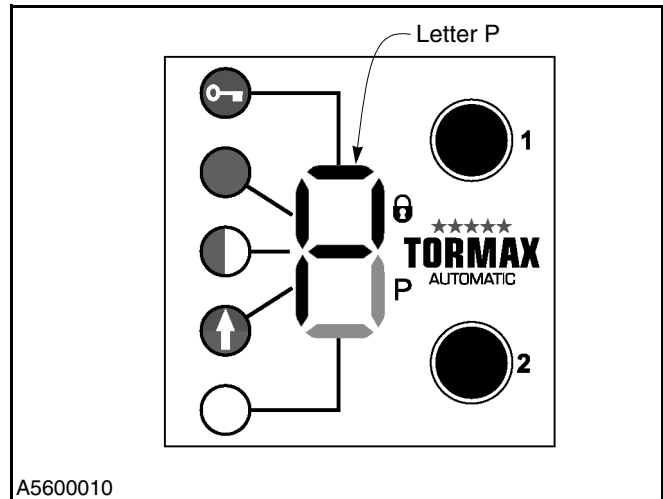


Figure 25

Entering Parameter Code

1. Zero appears as first digit of code. Select first code digit using Key 1.
2. Confirm digit with Key 2.
3. Select and confirm the second and third code digits in the same manner as the first digit code.

NOTE: After the second code digit has been confirmed, the flashing display shows the set value of the parameter. If this or the corrected value is confirmed, the value is saved. This is indicated by a rapidly flashing display during the first second.

By quickly pressing both keys simultaneously an immediate return to the display of the operating mode can be effected.

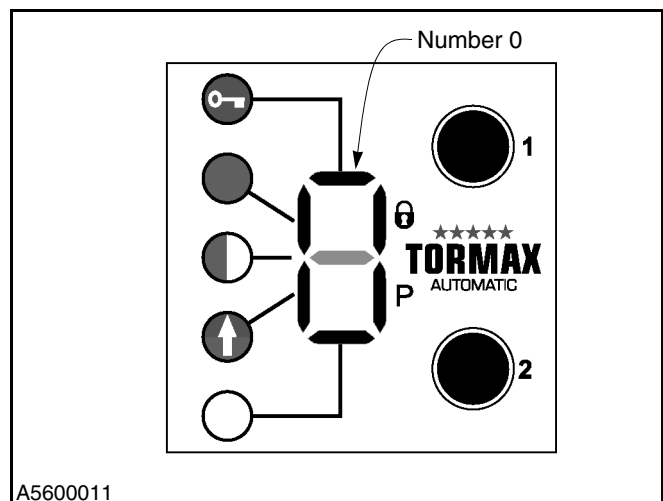


Figure 26

Time-Out

If no entry is made during 10 seconds from the last input, P is shown again.

If P is not confirmed during the next 10 seconds with Key 2, the control panel returns to the indication of the starting mode (see Figure 22). During the next 10 minutes, pressing both keys simultaneously will cause a direct change to programming level P.

Exiting Programming Level

After a time-out of 10 minutes, the programming level will be automatically protected by the access code. The access code must be re-entered as described in “Start Access Code” on page 9 to return to the programming level.

PROGRAMMING EXAMPLE

Accessing programming level:

	Display
Press Keys 1 and 2 at the same time:	
Press Key 2 to confirm selection.....	C
Select first digit 1 with Key 1.....	0
Confirm with Key 2.....	1
Select second digit 1 with Key 1.....	0
Confirm with Key 2.....	1
Select third digit 1 with Key 1.....	0
Confirm with Key 2.....	1
Access to program level confirmed.....	P

A5600012

Figure 27

The system is now in programming mode. Enter the code of the parameter to be maintained. If the letter P disappears after 10 seconds, you can change back into programming mode P by simultaneously pressing Keys 1 and 2 within 10 minutes.

	Display
Press Keys 1 and 2 at the same time:	
Press Key 2 to confirm selection.....	P
Select first digit 1 with Key 1.....	0
Confirm with Key 2.....	5
Select second digit 1 with Key 1.....	1
Confirm with Key 2.....	8
Select third digit 1 with Key 1.....	0
Confirm with Key 2.....	4
Access to program level confirmed.....	4
	P

The Display Flashes During This Segment

A5600014

Figure 28

PROGRAMMING CODES

Table 1

Code	Function	Note
01 1	Door operator type iMotion 2301	Standard operator
01 2	Door operator type iMotion 2401	Heavy duty operator
02 1	Automatic configuration bi-part, right-handed	Bi-parting and right-hand open slide door
02 2	Automatic configuration left-handed	Left-hand open slide door
03 0	Detect and store reference way	
03 1	Detecting and storing of safety facilities 1–4	Safety inactive
03 2	Detecting and storing MCU Lock Module 1	Check coding on module and code 572
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 and storing of MCU user interface 2	Check coding on module
03 8	Terminal Module: Detecting and storing of “in 1–4”	Pulse generators inactive — during the reset, all sensing fields should be clear of all obstructions
03 9	I/O Module 1: Detecting and storing of “in 1–4”	Pulse generators inactive — during the reset, all sensing fields should be clear of all obstructions
04 0	Reset	Starts program with calibration run
04 1	Factory reset	All adjustments back to default values
04 2	Firmware version	Example: r06_00=V06.00
04 3	Number of cycles	Example: c10_302=10,302 cycles
04 4	Number of operating hours	Example: h4_002=4002 hours
07 0...9	Door mass	Automatic detection contained in 021/022

*= Default Value

PROGRAMMING CODES—CONTROL PANEL PROGRAMMING

Table 2

Code	Function											Note
10 0...9	Hold-open time of activator in mode of operation AUTO 1											
	Code	0	1	2	3	4	5	6	7	8	9	
	Seconds	0	0.5	1	2	3	5	10	20	30	60	
11 0...9	Hold-open time of activator in mode of operation AUTO 2											Reduced opening width
	Code	0	1	2	3	4	5	6	7	8	9	
	Seconds	0	0.5	1	2	3	5	10	20	30	60	
12 0...9	Hold-open time of key switch											
	Code	0	1	2	3	4	5	6	7	8	9	
	Seconds	0	0.5	1	2	3	5	10	20	30	60	
13 0...9	Delay time mode of operation OFF											
	Code	0	1	2	3	4	5	6	7	8	9	
	Seconds	1	3	5	7.5	10	15	20	30	45	60	
14 0...9	Bell duration											0=Duration identical to trigger duration
	Code	0	1	2	3	4	5	6	7	8	9	
	Seconds	id	0.5	1	2	3	4	5	6	8	10	
15 0...9	Bell intermission											
	Code	0	1	2	3	4	5	6	7	8	9	
	Seconds	0	0.5	1	2	3	4	5	6	8	10	
16 0...9	Stop time after safety											
	Code	0	1	2	3	4	5	6	7	8	9	
	Seconds	0	0.5	1	2	3	4	5	6	8	10	
17 0...9	Runtime battery in mode of operation 2–6											Door opens after switch-off battery
	Code	0	1	2	3*	4	5	6	7	8	9	
	Seconds/Minutes	10	1	5	10	30	60	120	240	360	480	
18 0...9	Runtime battery in mode of operation OFF											
	Code	0*	1	2	3	4	5	6	7	8	9	
	Seconds/Minutes	10	1	5	10	30	60	120	240	360	480	

PROGRAMMING CODES—CONTROL PANEL PROGRAMMING

Code	Function											Note
20 0...9	Speed opening											
	Code	0	1	2	3	4	5	6	7	8	9	
	Inches/Second	3.93	7.87	11.8	15.7	19.6	23.6	27.5	31.5	35.4	39.3	
21 0...9	Speed closing											
	Code	0	1	2	3	4	5	6	7	8	9	
	Inches/Second	3.15	6.3	9.45	12.6	15.7	18.9	22.0	25.2	28.3	31.5	
22 0...9	Homing-in-speed close, minimal											
	Code	0*	1	2	3	4	5	6	7	8	9	
	Millimeters/Second	15	16	18	21	25	30	36	43	51	60	
26 0...9 2*	Breaking distance opening											9=max
28 0...9 4*	Breaking distance opening											9=max
30 0...9	Motor force opening											Net force on door edge
	Code	0	1	2	3	4	5	6	7	8	9	
	%	10	20	30	40	50	60	70	80	90	100	
31 0...9	Motor force closing											Net force on door edge
	Code	0	1	2	3	4	5*	6	7	8	9	
	%	10	20	30	40	50	60	70	80	90	100	
33 0...9	Force closed position											Net force on door edge>reduce if H73 after 10s!
	Code	0	1	2	3	4	5	6	7	8	9	
	N	10	20	30	40	50	60	70	80	90	100	
35 0...9 5*	Reversing sensitivity opening											9=max
36 0...9 5*	Reversing sensitivity opening											9=max
41 0...9	Reduced opening width											
	Code	0	1	2	3	4	5	6	7	8	9	
	%	10	20	30	40	50	60	70	80	90	100	
51 0*	Operating mode return to last setting on Function Control Panel											After terminal operating mode
51 1...6	Operating mode return to mode of operation											After terminal operating mode
	Code	1	2	3	4	5	6					
	Mode of operation	OFF	AUT1	AUT2	EXIT	OPEN	MANUAL					

PROGRAMMING CODES—CONTROL PANEL PROGRAMMING

Code	Function											Note
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*	Unlocks never in case of power failure											
56 1	Unlocks in AUTO 1, AUTO 2, 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 strikes with 100% duty ratio
57 2*	Without electric strike											
57 3	Electric strike switch on range 100%											Only for electric strikes with 100% duty ratio
58 0...9	Delay time to open											Only valid if electric strike has to unlock
	Code	0*	1	2	3	4	5	6	7	8	9	
	Seconds	0	0.2	0.4	0.8	1.2	1.6	2	2.5	3	4	
59 1...4	Voltage output											E 1 & 2
	Code	0	1	2	3	4*	0	0	0	0	0	
	V DC	6	9	12	15	24						
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

PROGRAMMING CODES—CONTROL PANEL PROGRAMMING

Code	Function	Note
60 5	in1: Key switch	Contact NO. NC detect with code 038
60 6	in1: Emergency open except in OFF	Contact NO. NC detect with code 038
60 7	in1: Emergency open in all modes of operation	Contact NO. NC detect with code 038
60 8	in1: Emergency close (with locking)	Contact NO. NC detect with code 038
60 9	in1: Operation mode EXIT	Contact NO. NC detect with code 038
61 0...9 4*	in2: Same choice of functions as on “in 1”	Contact NO. NC detect with code 038
62 0...9 5*	in3: Same choice of functions as on “in 1”	Contact NO. NC detect with code 038
63 0...9 0*	in4: Same choice of functions as on “in 1”	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 except in OFF	Type of connection detect with code 031

PROGRAMMING CODES—CONTROL PANEL PROGRAMMING

Code	Function	Note
64 7	sf1: Emergency opening in all modes of operation	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 choice of functions as on "sf1"	Type of connection detect with code 031
66 0...d 0*	sf3: Same choice of functions as on "sf1"	Type of connection detect with code 031
67 0...d A*	sf4: Same choice 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"	

PROGRAMMING CODES—CONTROL PANEL PROGRAMMING

Code	Function	Note
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 operation OFF	
74 2	I/O Module 1: out1: Mode of operation AUTOMATIC 1	
74 3	I/O Module 1: out1: Mode of operation AUTOMATIC 2	
74 4	I/O Module 1: out1: Mode of operation EXIT	
74 5	I/O Module 1: out1: Mode of operation OPEN	
74 6	I/O Module 1: out1: Mode of operation MANUAL	
74 7	I/O Module 1: out1: Door opens	

PROGRAMMING CODES—CONTROL PANEL PROGRAMMING

Code	Function	Note
75 0...9 0*	I/O module 1: out2: Same choice of functions as in I/O Module 1: out1	
76 0...9 0*	I/O module 1: out3: Same choice of functions as in I/O Module 1: out1	
77 0...9 0*	I/O module 1: out4: Same choice of functions as in I/O Module 1: out1	
78 0	User Interface 1: in1: No function	
78 1*	User Interface 1: in1: Panel lock	Contact NO
78 2	Function Control Panel: in1: Mode of operation OFF	Contact NO
78 3	Function Control Panel: in1: Mode of operation AUTOMATIC 2	Contact NO
78 4	Function Control Panel: in1: Mode of operation EXIT	Contact NO
78 5	Function Control Panel: in1: Mode of operation OPEN	Contact NO
78 6	Function Control Panel: in1: Mode of operation MANUAL	Contact NO
78 7	Function Control Panel: in1: Emergency closing	Contact NO
78 8	Function Control Panel: in1: Emergency opening in all operation modes	Contact NO
79 0...9 0*	Function Control Panel: in1: in 2: Same choice as on FCP: in1	Contact NO
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 activator inside and outside	
82 3	Step by step control for activator inside, outside, and key switch	
85 0*	No airlock function	

*= Default Value

TROUBLESHOOTING

Error messages on the control panel are the result of sporadic door malfunctions. Error messages appear on the control panel as a flashing E or H followed by two numerical figures. When the letter H is displayed on the control panel, there is information pertaining to erratic door operations. The door can continue its service but it will require maintenance. When the letter E is displayed on the control panel, there is a fault and the system has stopped operating. It will require immediate repair.

DISPLAY AND RESET CONTROL PANEL

1. Press Key 1 to process the fault(s) listed on the control panel.
2. Press Key 2 to reset the error message or push for 5 seconds for software reset.

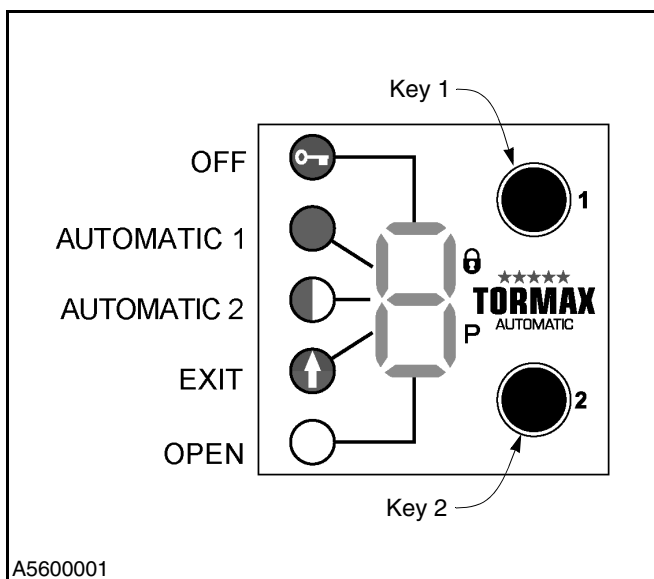


Figure 29

Control Panel Fault Reset — Power Supply

If the instructions above do not clear the error messages, turn off the main power supply to the system for a minimum of 10 seconds and reapply power. See “INITIAL START-UP” on page 9 when power is first applied to the door.

If this doesn't clear or fix the malfunction, please contact your Rytec representative or call the Rytec Customer Support Department at 800-628-1909. Always refer to the serial number of the door that your control system is connected to when calling the representative or Customer Support. Refer to the installation or owner's manual provided with your door for the location of the serial number plate.

GENERAL FAULT CODES

Table 3 lists the fault codes (H) associated with the general operation of the door. Included in this table are the available fault codes, a description of each code, and the suggested corrective action to clear the fault.

The microprocessor control system TCP 101 performs a self-diagnosis continually and displays faults by means of periodically flashing combinations of LEDs on the control panel. If a fault occurs, the corresponding fault code is displayed on the control panel — in the form of flashing LED combinations — alternating with the display of the active operating mode.

Table 3

Fault Code	System Problem	Cause	Repair/Action
H11	Operator has not been programmed.	Door does not operate.	Program operator.
H14	Automatic configuration not executed.	No door configuration entered.	Program 021 or 022. 021 for 2301, and 022 for 2401 operators.
H61 H62	Door is searching for end limits.	Door performs this automatic function after power is applied to the system.	Allow door to complete its cycle.
H63	Door searching for open limit.	1) Sensor or motion detector is active. 2) Sensor or motion detector is inactive.	1) Remove object from sensor path. 2) Check the connection on the sensor.
H64	Door searching for close limit.	1) Sensor or motion detector is active. 2) Sensor or motion detector is inactive.	1) Remove object from sensor path. 2) Check the connection on the sensor.
H65	Learning curve for open and close.	Door is learning open and close limits. NOTE: Use SW2 button to operate door.	It may take up to 15 cycles for the fault to leave the display.
H71	Door operates with reduced speed.	1) Door is operating under battery power. 2) Door is performing end limits search.	1) Wait for power to recover. Switch on the main power. 2) Allow door to complete its cycle.
H91	Door stops during the opening cycle.	1) A sensor recognizes an obstacle during the opening cycle. 2) Dirt in the floor guide. 3) Excessive door resistance.	1) Remove obstacle or clean sensor lens. 2) Clean the floor guide. 3) Readjust door panel(s).
H92	Door reverses during closing.	1) A sensor recognizes an obstacle during the opening cycle. 2) Dirt in the floor guide. 3) Excessive door resistance.	1) Remove obstacle or clean sensor lens. 2) Clean the floor guide. 3) Readjust door panel(s).
H93	Door stops repeatedly during opening.	Electronic obstacle recognition on opening in the same position by stationary obstacle.	Remove obstacle. Clean floor guide in operating mode.
H94	Door stops repeatedly during closing.	Electronic obstacle recognition on closing in the same position by stationary obstacle.	Remove obstacle. Clean floor guide in operating mode.

TROUBLESHOOTING—GENERAL FAULT CODES

Table 4 lists the fault codes (E) associated with the general operation of the door. Included in this table are the available fault codes, a description of each code, and the suggested corrective action to clear the fault.

Table 4

Fault Code	System Problem	Cause	Repair/Action
–	Door remains closed.	1) Operating mode OFF or P has been selected. 2) Operating mode EXIT has been selected.	1) Select operating mode AUTO-MATIC 1 or AUTOMATIC 2. 2) Door will only open from one side; find alternate exit or entrance.
–	Door remains open.	Operating mode OPEN or P has been selected.	Select an operating mode.
–	Door hits a person or object.	Inadequate adjustment(s) or dirty sensors.	Remove door from service until repairs or adjustments are done.
E11	Door does not lock in OFF.	1) Lock is jammed. 2) Lock is defective.	1) With the door closed, press against the door panel for a few seconds. 2) Replace lock.
E11	Door does not open after changing from OFF to AUTO-MATIC. Lock makes switching noise.	1) Lock is jammed. 2) Lock is defective.	1) With the door closed, press against the door panel for a few seconds. 2) Replace lock.
E11	Door does not open in OFF through the key switch. Lock makes switching noise.	1) Lock is jammed. 2) Lock is defective.	1) With the door closed, press against the door panel for a few seconds. 2) Replace lock.
E31	Door remains closed.	1) The safety sensor in the opening direction is permanently active (>1 min.). 2) The safety sensor in the opening direction is defective.	1) Remove the object(s) within the range of the sensor. Clean lens of the sensor. 2) First, clean lens of the sensor and retry door operation. Second, replace sensor.
E32	Door remains open.	1) The safety sensor in the closing direction is permanently active (>1 min.). 2) The safety sensor in the closing direction is defective.	1) Remove the object(s) within the range of the sensor. Clean lens of the sensor. 2) First, clean lens of the sensor and retry door operation. Second, replace sensor.
E33	Door will not open or close.	1) The safety sensor in the opening direction is permanently active (>1 min.). 2) The safety sensor in the opening direction is defective.	1) Remove the object(s) within the range of the sensor. Clean lens of the sensor. 2) First, clean lens of the sensor and retry door operation. Second, replace sensor.

TROUBLESHOOTING—GENERAL FAULT CODES

Fault Code	System Problem	Cause	Repair/Action
E34	Door will not open or close.	The safety facility stop is permanently active (> 1 min.) or defective.	Remove the object(s) within the range of the sensor.
E41	Door remains open.	The inside door activator is active (>1 min.).	Clean and readjust sensor as needed.
E42	Door remains open.	The outside door activator is active (>1 min.).	Clean and readjust sensor as needed.
E43	Door remains open.	1) Key switch is active (>1 min.). 2) Key switch is defective.	1) Reset key switch. 2) Replace key switch.
E5..	Door stops.	1) There is an obstacle in the path of the door panel. 2) Excessive door resistance. 3) System may have a glitch or malfunction.	1) Remove obstacle from the path of the door panel. 2) Adjust the door panel(s). 3) Perform a system reset.
E61 E62	Door stops.	Power supply is overloaded or voltage is too low.	Have a electrician check out the power supply and connections.
E64 E65	Door stops.	The drive/control system is overheated.	Wait for the automatic reset after cooling down. Door panel may need adjustment.
E8..	Door remains open.	Control unit safety power is off.	Perform a system reset.

TROUBLESHOOTING

TROUBLESHOOTING WITH LEDS

If a problem occurs with the control system or the door, the controller is configured with various light-emitting diodes (LEDs) that can be helpful when troubleshooting the problem. The LEDs are grouped in various functions and indicators as detailed below with interpretation of each group of LEDs.

Battery Module

1. Battery Module
2. Batteries (12 Volt)
3. Battery Cable
4. Fuse
5. LEDs
6. Inputs (Terminals)
7. Power Cable
8. Mounting Bracket

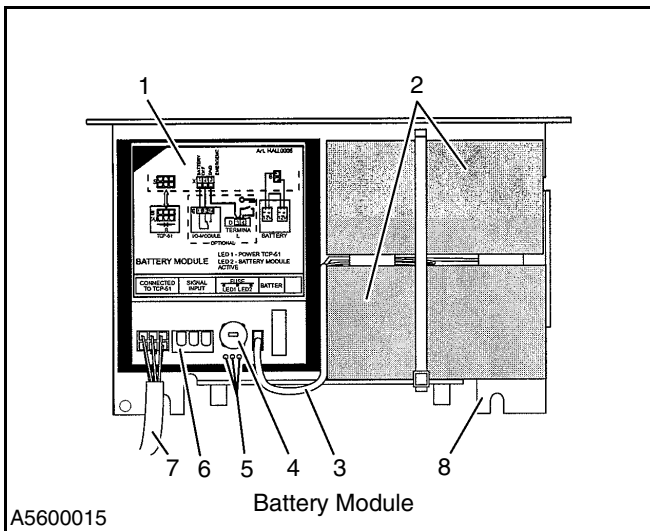


Figure 30

Functions

As long as the battery module is in standby operation (normal operation) and main power is applied to the control system and battery module is connected, the door operator is supplied directly from main power supply and the batteries are charged (LED 1 is illuminated).

Periodic Tests

An automatic battery test occurs once a week, providing the system was programmed accordingly by the installer or owner. However, the test is only activated through an opening command. On completion of the test, the door is automatically put back into normal operation (LEDs 1 and 2 are illuminated).

Power Failure/Voltage Variations

In case of power failure or variations in voltage, the battery module switches automatically without interruption to battery operation (LED 2 is illuminated).

Power Recovery

When power is restored, the system switches automatically back to normal operation and starts recharging the batteries.

NOTE: If the batteries have been completely discharged, it will take several hours to fully charge.

Programmable Functions

The operating actions of the battery module can be programmed by the installer or owner. Depending on the programming, the door will operate on battery power as follows:

- The door continues to operate in the power saving mode (standard setting). The door operates on reduced speed and less energy. The sustained maximum number of opening cycles is dependent on a number of factors: door weight, sensor load, and the current capacity and charge of the batteries.
- The door panels are moved into a selected position and then the system is switched to operating mode OFF. This will make the sensors inactive.

LED Display

The LED (Light Emitting Diode) display is built into the battery module. The display will define the illuminated LEDs and assist in troubleshooting door symptoms.

- Voltage from the main power supply is off.
(See Figure 31.)

NOTE: Batteries are being charged.

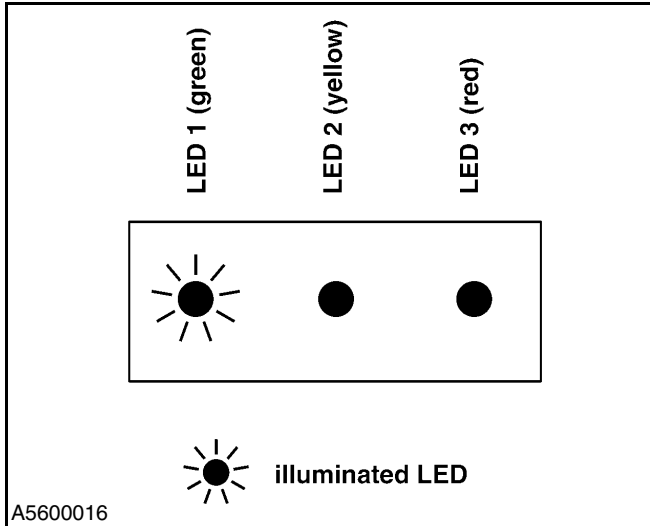


Figure 31

- The main voltage is low or the door is experiencing reduced performance. (See Figure 32.)

NOTE: Batteries are not being charged.

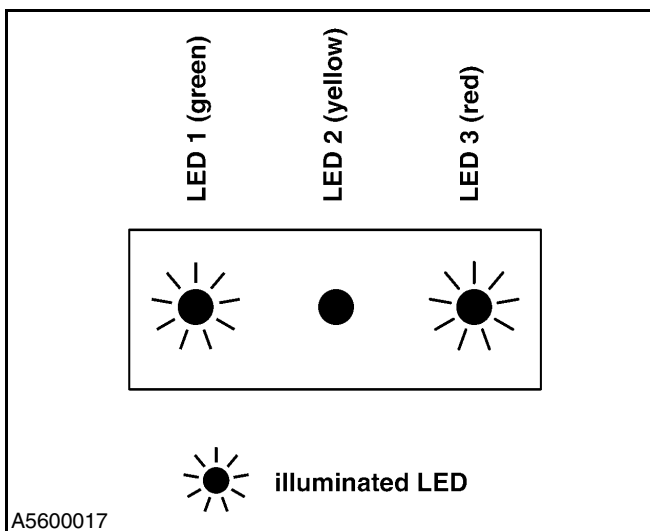


Figure 32

- The main voltage is low or the door is experiencing reduced performance. (See Figure 33.)

NOTE: The door is under battery operation in support of door operation.

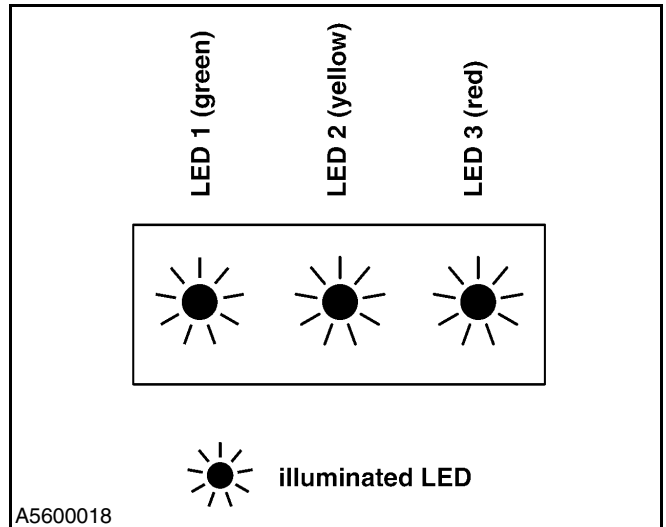


Figure 33

- Power provided by main power supply.
(See Figure 34.)

NOTE: Battery test is being performed.

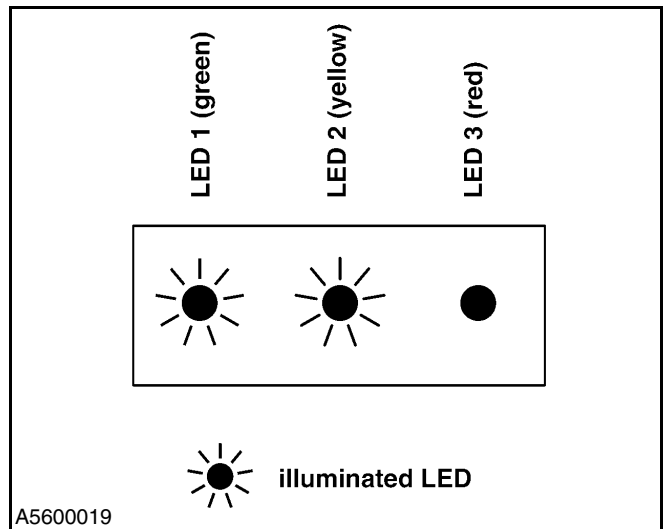


Figure 34

TROUBLESHOOTING—TROUBLESHOOTING WITH LEDS

- Main power failure. (See Figure 35.)

NOTE: Battery operation only.

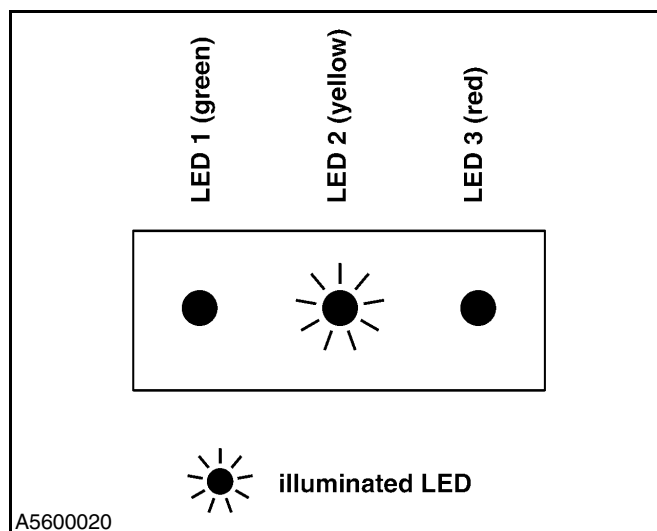


Figure 35

SPECIFICATIONS

MECHANICAL

Overall Dimension	• 2301 Standard: 17 ¹⁵/₁₆ in. (w) x 6 ¹/₈ in. (h) x 2 ⁵/₈ in. (d) • 2401 Heavy Duty: 17 ¹⁵/₁₆ in. (w) x 6 ¹/₈ in. (h) x 2 ⁵/₈ in. (d)
Mounting Points	Two (Maximum of 4 usable)
Weight	Type-A and -B enclosure: 58 lb. (approximately) Type-C enclosure: 75 lb. (approximately)
Protection Class	IP 22
Operating Temperature Range	–4°F to 122°F
Wire Retention	Wire Clips (Two on model 2301 and three on model 2401)
Battery Lifetime	Up to 5 years

INPUTS

Power Supply (Line Voltage)	Standard 115 volt: • 115 volt, 50–60 Hz, 10 A Standard 230 volt: • 230 volt, 50–60 Hz, 10 A
-----------------------------	---

OUTPUTS

Supply Output Voltage (24 Volts)	Nominal value: 24 VDC ± 5% For external 24 VDC devices Maximum load: • 1 amp, without plug-in modules installed • 0.75 amp, with plug-in modules installed Protected by self-resetting semiconductor fuse (short circuit protected) iMotion 2301: • 0.75 amp iMotion 2401: • 1 amp
----------------------------------	--

SPECIFICATIONS—ABBREVIATIONS

ABBREVIATIONS

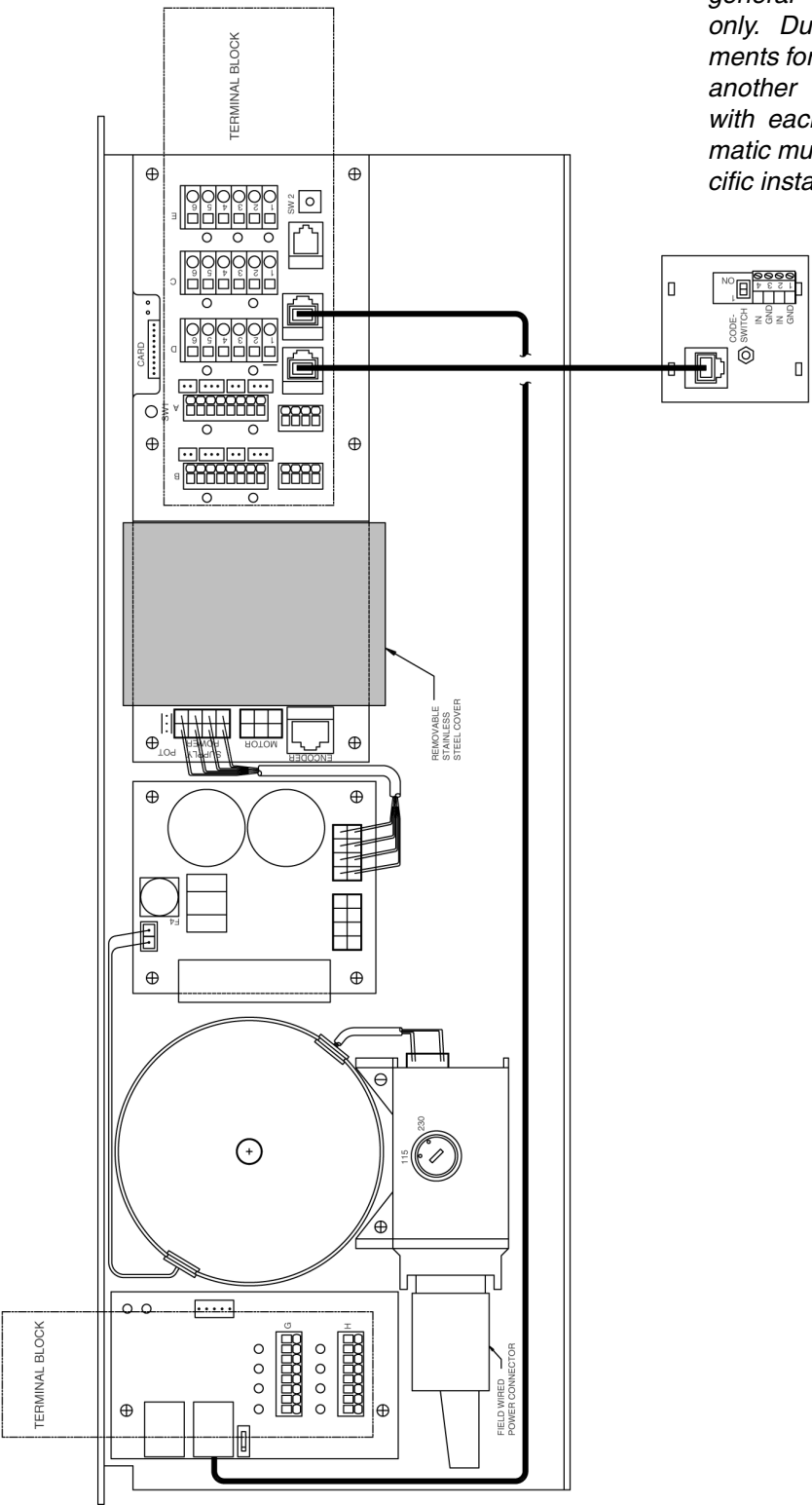
Table 5 lists the abbreviation of each unit of measurement referenced throughout the control system program menu and this manual.

Table 5

Unit	Abbreviation
Celsius	°C
Counter	Cnt
Current (Ampere)	A
Cycles	Cyc
Digits	Dig
Fahrenheit	°F
Hertz (Frequency)	Hz
Increments	Inc
Milliseconds	Ms
Minute	Min
Number	#
Percentage	%
Seconds	Sec
Voltage (Volt)	V

SCHEMATICS

GENERAL



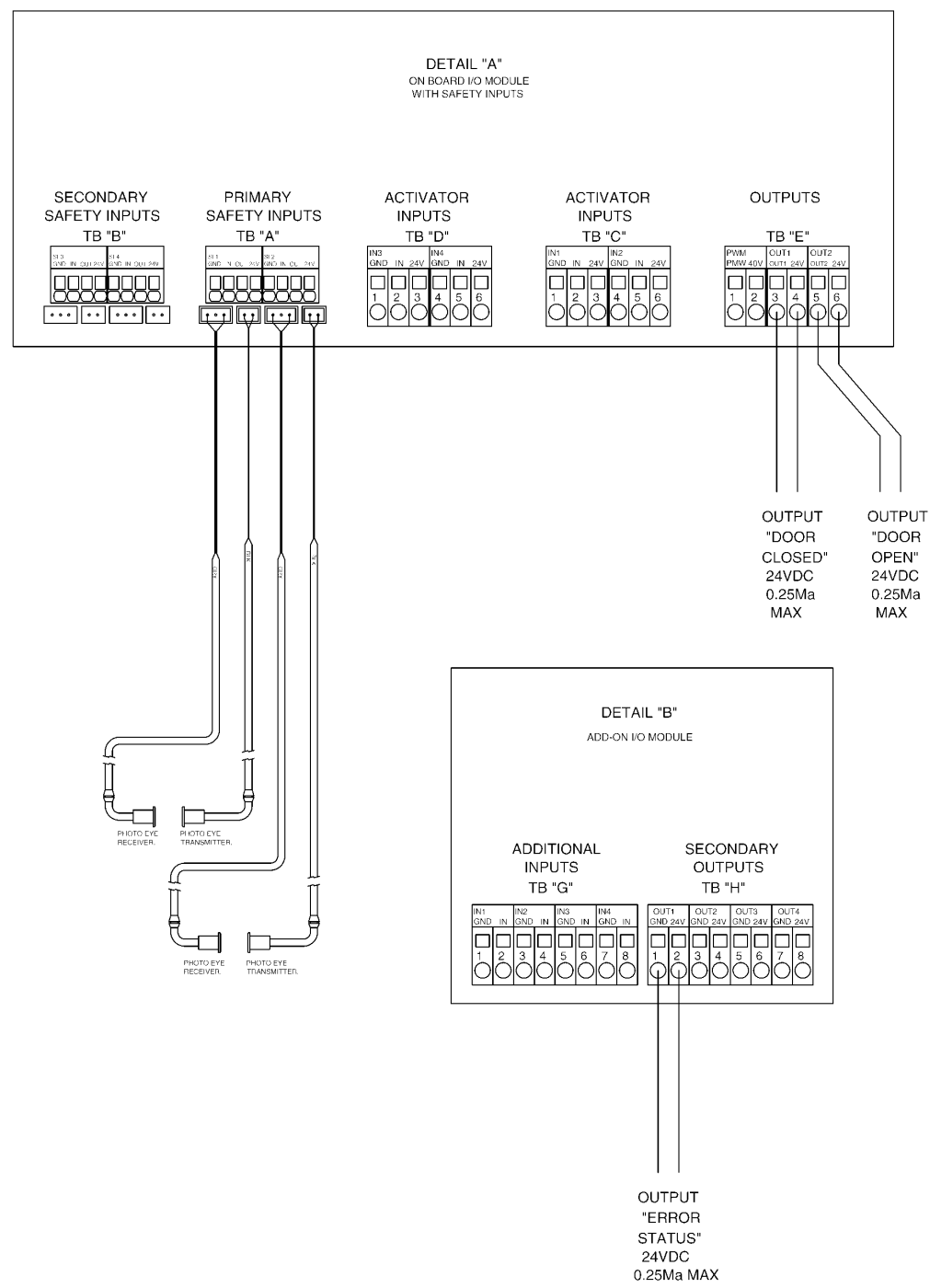
NOTE: This schematic is provided for general information purposes only. Due to varying requirements for individual installations, another schematic is shipped with each door and that schematic must be used for that specific installation.

A5600036

Figure 36

GENERAL (SHEET 2)

NOTE: This schematic is provided for general information purposes only. Due to varying requirements for individual installations, another schematic is shipped with each door and that schematic must be used for that specific installation.



A5600037

Figure 37

PARTS LIST

PARTS ORDERING INFORMATION

How to Order Parts

1. Identify the parts required by referring to the following pages for part numbers and part descriptions.
2. To place an order, contact your local Rytec representative or the Rytec Customer Support Department at: 800-628-1909 or 262-677-2058 (fax).
3. To ensure that the correct parts for your controller are shipped, please include the serial number of your door with the order. Refer to the owner's manual of your door to determine the location of the serial number plate. The serial number plate is generally located under the hood on the head assembly. (See Figure 38.)

Substitute Parts

Due to special engineering or product enhancement, the actual parts used on your control system may be different from those shown in this manual.

If a part has been improved in design and bears a revised part number, the improved part will be substituted for the original part ordered.

Return of Parts

Rytec will not accept the return of any parts unless they are accompanied by a Return Merchandise Authorization (RMA) form.

Before returning any parts, you must first contact the Rytec Customer Support Department to obtain authorization and an RMA form.

NOTE: *You must provide the door serial number for all control panels and enclosures. The door serial number can be found on a white decal inside the control panel door.*

DOOR SERIAL NUMBER(S)

The **DOOR SERIAL NUMBER** is located on the left side of the head assembly. (See Figure 38.)

IMPORTANT: *When installing multiple doors of the same model but in different sizes, verify the serial number in the head assembly.*

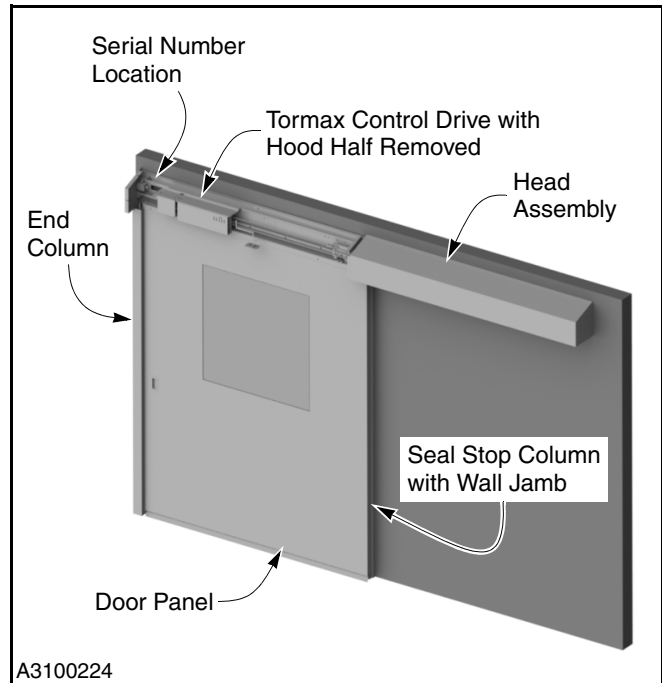
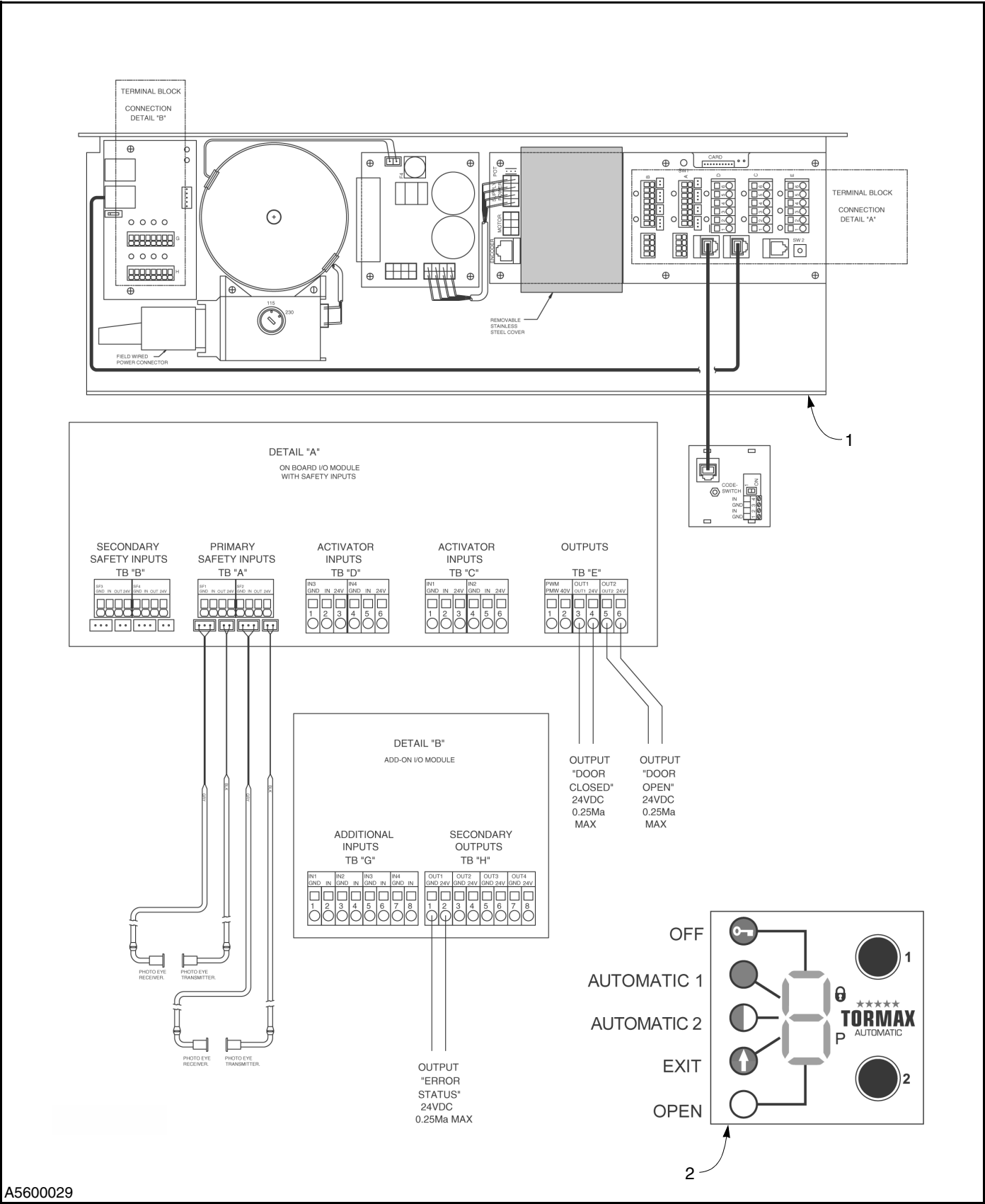


Figure 38

CONTROL PANEL



A5600029

Figure 39

PARTS LIST—CONTROL PANEL

ITEM	QTY.	PART #	DESCRIPTION
1	1	1120212-0	iMotion 2301 Drive
		1120213-0	iMotion 2401 Drive
2	1	1120273-0	Control Plate, iMotion
3	1	1120291-0	Cable, iMotion (not shown)
4	1	1120215-0	Solenoid Lock (optional) (not shown)
5	1	1120274-0	I/O Module (optional) (not shown)
6	1	1120165-0	Photoeyes (includes one set of transmitter and receiver) (not shown)

