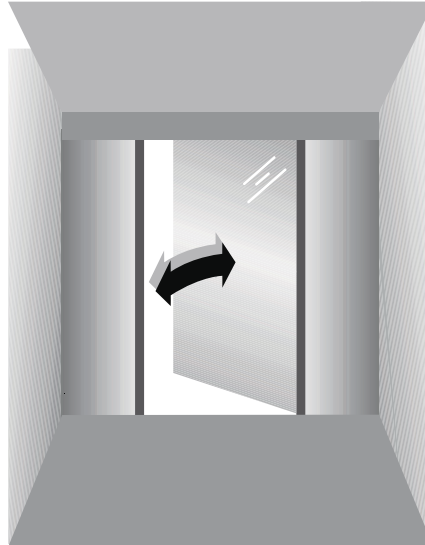# ★★★★★
# TORMAX®
## AUTOMATIC

# Installation and Service Manual
# 1102/ TTX Swing Door Operator
# TORMAX 1201 Swing Door Operator

**Warning** - To reduce the risk of injury of persons - Use this operator only with swing doors.

## TORMAX USA Inc.

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P/N : US801918
Version: FW_3.11

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| SECTION | PAGE |
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## SAFETY/ WARNINGS SYMBOLS

**NOTE** indicates important information specific to the process or steps being performed.

**ELECTRICAL VOLTAGE** indicates that electrical voltage is present and that caution should be taken to prevent injury or property damage.

**CAUTION** indicates failure to follow instructions may result in personal injury and/ or property damage.

**OPTIONAL COMPONENTS** indicates components that are not installed in all systems.

**WARNING - Failure to observe the information in this manual may result in personal Injury or damage to equipment. To reduce the risk of injury of persons use this operator only with pedestrian swing doors.**
**Save these instructions for future reference.**

## Installation and Service

Any and all TORMAX equipment must be installed, serviced and inspected by an *AAADM* Certified technician, to meet the current ANSI A156.10 and/ or ANSI A156.19 standard and any local or state building codes.

The person responsible for the daily operation and maintenance of the system is referred to as "End-User".

**It is the technicians responsibility:**

1. Review the functions of the equipment with the end-user. *Failure to do so, may lead to the improper use, could cause injury to persons and/ or damage to the equipment.*

2. Familiarize the end-user with the Daily Safety Check Decal and how to perform the walk test procedures.

3. Illustrate to the end-user how to place the door out of service  (turn off power or place in P mode or OFF mode of operation), if the equipment does not perform as described in the Daily Safety Check Decal.

4. Recommend to the end-user to have their equipment inspected annually by an *AAADM* certified technician.

## Glazing

The glazing material of all doors shall comply with the requirements of ANSI Z97.1, American National Standard Performance Specifications and Methods of Test for Safety Glazing Material Used in Buildings.

## Important Information

### Intended Installation Environment

The 1102/ TTX and the 1201 are non-handed swing door operators that can be used on interior or exterior doors.

The operator is mounted above the door on the inside of the building. Any other use, or any use exceeding this aim, is deemed as not used in accordance with its intended purpose.

The manufacturer will not be liable for damages resulting from such applications or warranty the product. Arbitrary changes to the system will exempt the manufacturer from any liability for damage resulting from this.

The 1102/ TTX is designed as a Low Energy operator to comply with ANSI A156.19 standard.

The 1201 can be utilized as a Low Energy operator and comply with ANSI A156.19 standard, or setup to operate as a Power Operated Pedestrian Door and comply with ANSI A156.10 standard.

Upon completion of the installation the technician should perform an AAADM inspection to ensure that the door complies to the appropriate standard ANSI a156.19 or ANSI A156.10 in which it is setup to operate within.

### Door Operation

The 1102/ 1201 mode of operation is control by a 3-position switch (standard) or a (FCP) Functional Control Panel (optional). The primary mode of operations are:

> Off - The door remains in the closed position with lock engaged, but can be opened by the Key Switch activating input.

> Automatic - Two-way traffic, typical setting for normal operation. Allows the interior & exterior sensors, Key switch and safety devices (if applicable) to operate the door.

> Hold Open - The door goes to the open position and remains there until the switch is taken out of this position.

Upon a power loss the operation of the 1102/ 1201 operating system will function according to specifications:

> Immediate spring closing.
> The operator functions as a manual door closure.
> Lock function will operate to specification (fail secure/ fail safe).
> Continued operation , if equipped with a battery backup.

### ANSI/ BHMA A156.10, A156.19 standards - Knowing Act Switch

Doors activated by a manual switch must have the switch installed in a location from which the operation of the door can be observed by the person operating the switch. Refer to the latest revision of ANSI/ BHMA A156.10 or A156.19 for location of Knowing Act switch and time delays.

# Important Information

Operator Applications

The 1102/ 1201 are Surface Applied (SA) operators and are power open and spring close. Basic configuration adjustments will be made with an on-board programming button.

The operator has 2 standard applications:

       Outswing - The operator pushes the door open.
        Inswing - The operator pulls the door open.

Within each standard application there are important points to know and consider during the installation process.

       Outswing: 8-10 lbs. of manual opening force (Low Energy ANSI A156.19) or Knowing Act Door Activation (Power Operated Pedestrian Door ANSI A156.10)

              18-20 lbs. of manual opening force ( Power Operated Pedestrian Door ANSI A156.10)

       InSwing: 0" reveal, non-handed arm
              0" - 6" reveal, handed arm

Country Code

The Country code is available in firmware V3.02 and above. The country code provides preset values to aid the technician in installing the door to comply with ANSI Standard A156.19. This does not eliminate the need for an AAADM inspection to be performed for compliance. Additional adjustments may need to be made upon inspection.

"U" User mode on FCP

The User mode has two options:
       UR - Ability to read specific programming parameters without changing the parameter.
       UP - Ability to change programming parameters within a limited range.

Refer to programming table for specifics.

(!) Recommend using "P" programming mode to have full range of adjustments on all parameters.

# Modes of Door Operation

Modes of operation can be selected with either the standard 3-position switch or the optional 6 position Functional Control Panel (FCP).

**The technician will review the appropriate mode switch with the end-user.**

Standard:
1102/ 1201

Optional:
1102/ 1201

#1) OFF Mode
#2) AUTOMATIC Mode
#3) REDUCED OPEN Mode
#4) EXIT Mode
#5) HOLD OPEN Mode

HOLD OPEN
AUTO
OFF

KEY 1
Electric door lock LED indicator
TORMAX AUTOMATIC
KEY 2
www.tormaxusa.com

LED indicates current operating mode    #6) (P) MANUAL Mode
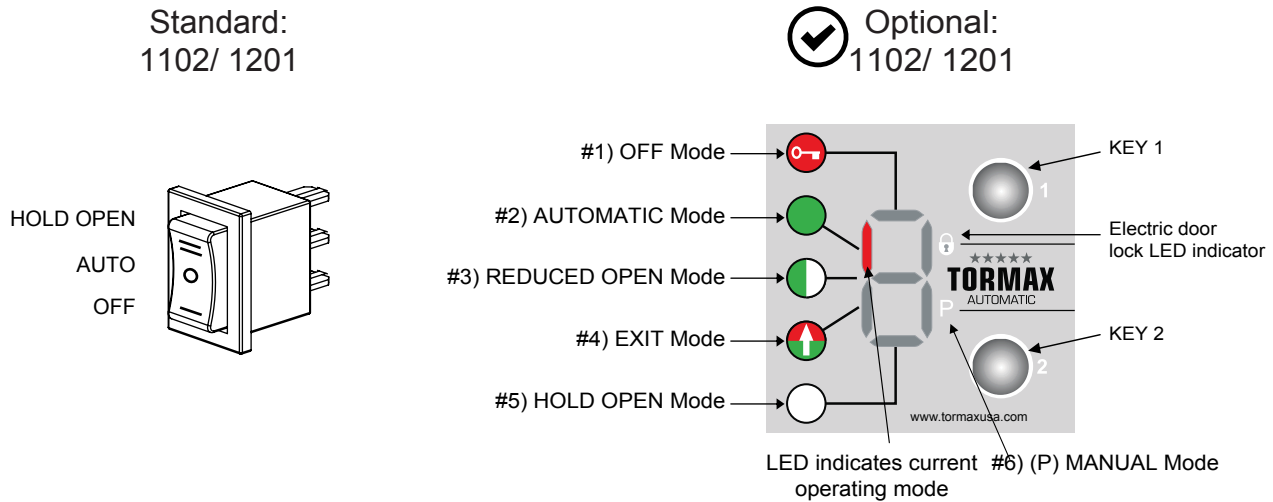
1. **OFF** - The interior and exterior activators are inhibited after the door reached the fully closed position, if an electric lock is present it will be activated. Door will cycle open, if a signal is sent to the key switch input.

2. **AUTOMATIC** - Typical setting for normal 2-way traffic operation with interior and exterior activators, key switch input and safety devices operating the door.

3. **REDUCED OPERATING** - Allows the door to open with a reduced opening width. Activators and safety devices operate the same as automatic mode.

4. **EXIT** - (1-way traffic) Allows interior activator and key switch inputs to operate the door. The exterior activator input is inhibited from opening the door while the door is closed. When the door is opened/ closing the exterior activator becomes operational and will re-open a closing door.

5. **HOLD OPEN** - Hold and maintains the door in the open position.

6. **(P) MANUAL OPERATION** - Allows the door to be used manually without the use of sensors. Push and pull motion applied to the door to open and close the door.

# Components Overview

Single Door
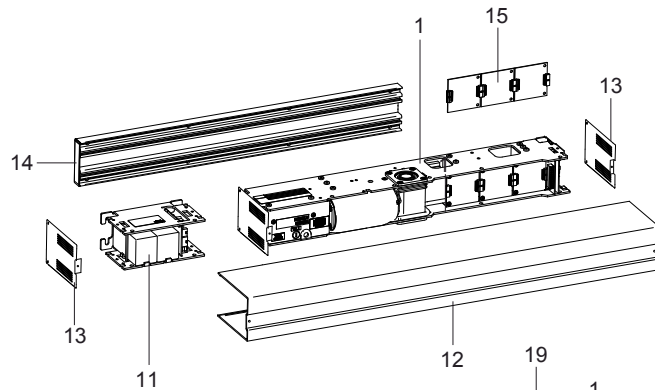
Double Door
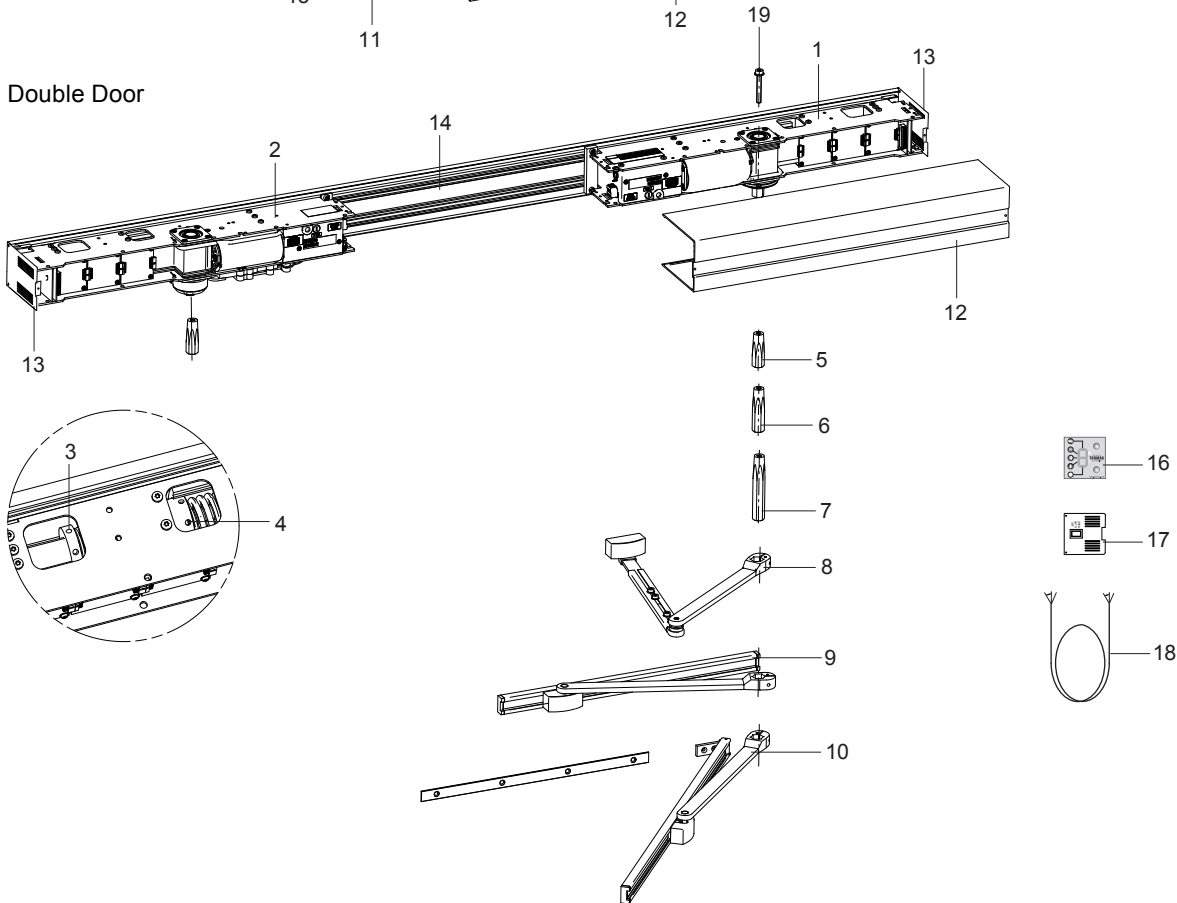
1 Primary drive TORMAX 1102/1201
2 Secondary drive TORMAX 1102/1201
3 Adjustment of spring force TORMAX 1201 only
4 Adjustment of internal open end stop
5 Shaft 2.48 in. (63 mm)
6 Shaft 3.22 in. (82 mm)
7 Shaft 4.84 in. (123 mm)
8 Out-Swing (Push) Arm 11.41/ 13.77 in. (290/350 mm)
9 In-Swing (Sliding Pull) Arm 13.77/ 19.68 in. (350/500 mm)
10 In-Swing (Slide/ Pull) Arm w/Panic 19.68 in. (350 mm)
   (not available at this time)

11 Battery unit
12 Header cover
13 Side plate
14 Mounting profile
15 Upgrade modules MDM, PDM, EDM
16 Functional Control Panel (FCP) User interface (Option)
17 On/Off/Hold Open mode of operation switch (Standard)
18 Sync Cable for pairs
19 Shaft retaining bolt

# APPLICATIONS



Standard (Out-Swing) Push Arm Singles
*Operator Non-handed*

LH          RH

Standard (In-swing) Pull Slide Arm Singles
*Operator Non-handed*

RH          LH

Standard (Out-Swing) Push Arm Pair
*Operator Non-handed*

LH          RH

Standard (In-Swing) Pull Slide Arm Pair
*Operator Non-handed*

RH          LH

Standard Double Egress Pair - RH
*Operator Non-handed*

RH          RH

Standard Double Egress Pair - LH
*Operator Non-handed*

LH          LH

# On-Board Programming Configuration Tool - Description

## Overview

The On-board programming tool allows the installer to commission the operator without the use of the FCP. If additional changes are needed i.e. time delay, push-n-go the FCP will be required.

The on-board programming tool utilizes the programming button, green & yellow LEDs and an audible tone device to aid the installer during the commissioning process. During the commissioning process, the LED's flashing sequence and audible tone will continually repeat until a selection is made, then the audible tone and flashing sequence changes for the next parameter selection.

## On-board Configuration Tool Familiarization
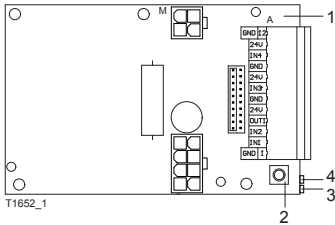


1  Base door module BDM

2  Programming Button

3  LED GREEN: status display (control system ready for operation) or configuration display.

4  LED YELLOW: error display or configuration display

Programming functions can be launched by means of the programming button.

The GREEN LED supports parameter selection → Release the button at the right point in time.

The YELLOW LED indicates the parameter by a series of flashes → Press the button at the right point in time.

## Programming Procedure – General

• Keep the programming button depressed. The GREEN LED starts to *FLASH* at one second intervals for a short time. The number of flashes corresponds to the programming code as in the programming table.

• Release the programming button after the required number of *GREEN FLASHES*.

Example: Code 5 "Factory Reset" (see below for codes)
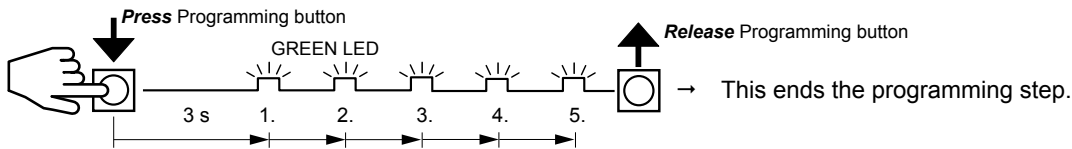


## Programming Codes

⚠ In order to ensure the safety of the system, please follow the details of the programming steps in the following pages.

Code 1: Commissioning (enter system values, preloads, performs learn)
Code 2: (Consult factory)
Code 3: Detecting/mask out safety features
Code 4: Spring pre-tension parameter (only applicable for TORMAX 1201)
Code 5: Factory reset (Reset all values, excluding operator type)
Code 6: Repeat commissioning (without entering system values, door preloads, performs learn)
Code 7: Preset value 1 = Low Energy (preset values for multiple parameters)

# System Values for the Application

## System Values

After installing the operator determine the 3 system values. Measure the dimensions shown in the illustrations below, select each system value listed below the measurement. Write these numbers down as they are referenced during commissioning.

Audible Tone ))) 1

**Door width**

| 28" | 32" | 36" | 40" | 44" | 48" | *52" | *56" | Door width |
|-----|-----|-----|-----|-----|-----|------|------|------------|
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **Value 1** |

Number of Flashes

1102 — Yellow LED
1201 — Yellow LED

Green LED



Audible Tone ))) 2

**Reveal**

| 0 - 2" | 2 - 4" | 4-6" | 6- 8.5" | 8.5 - 10.5" | 10.5 - 12.5" | Distance A |
|--------|--------|------|---------|-------------|--------------|------------|
| **1** | **2** | **3** | **4** | **5** | **6** | **Value 2** |

Number of Flashes

Yellow LED

Green LED



Audible Tone ))) 3

**Drive Arm**

| Outswing | | | Inswing | | | |
|----------|--------|--------|---------|--------|------|-----------------|
| 11-3/8" | Custom | 13-3/4" | A | Custom | B | Lever length C |
| **1** | **2** | **3** | **4** | **5** | **6** | **Value 3** |

Number of Flashes

Yellow LED

Green LED

# Outswing - Low Energy 8 - 10 lbs Spring Holding Force
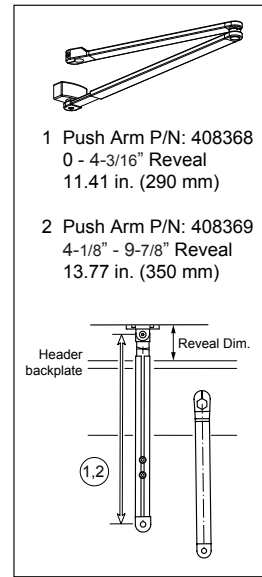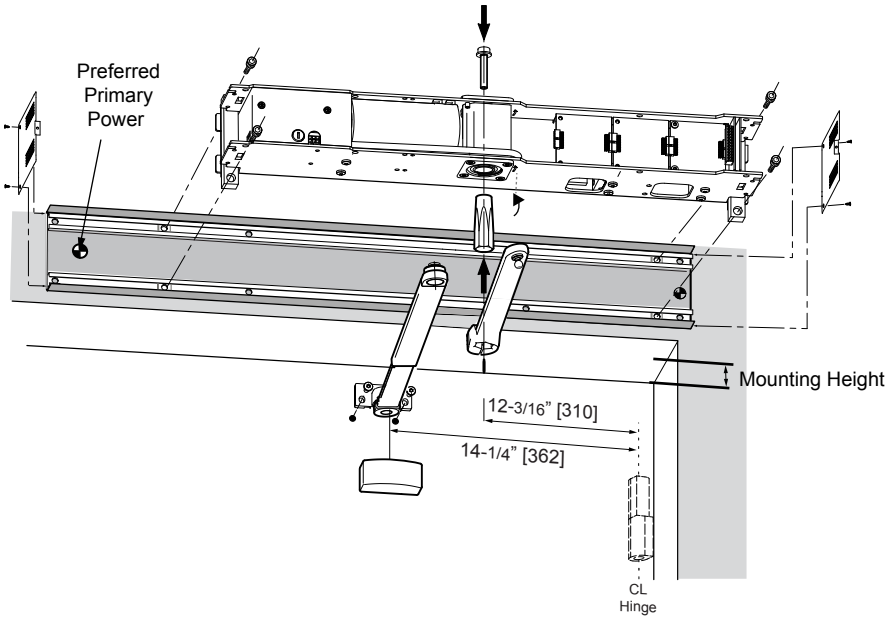


Preferred Primary Power

Mounting Height

12-3/16" [310]

14-1/4" [362]

CL Hinge

1  Push Arm P/N: 408368
   0 - 4-3/16" Reveal
   11.41 in. (290 mm)

2  Push Arm P/N: 408369
   4-1/8" - 9-7/8" Reveal
   13.77 in. (350 mm)

Header backplate

Reveal Dim.

1,2

1) Determine the handing of the operator according to the door. Note that arrow on operator indicates opening direction of rotation.
2) Locate & mark output shaft location 12-3/16" from CL of hinge onto door frame
3) Align header at the bottom of the door frame as shown below.
4) Secure header to the wall with appropriate hardware.
5) For Stainless Steel Arm refer to illustration on page 13 for mounting dimensions.

6) Locate and mount door arm attachment bracket to the door at Y dimension for shaft used and 14-1/4" from CL of hinge as shown below.
7) Insert shaft/ drive arm (6) into the operator perpendicular to the door as shown below. **Tighten shaft bolt to 25 ft/ lbs**.
8) Manually rotate drive arm (8) as shown below 40°-45°, check connection point of the two arms to determine how much of the door portion arm (7) may need to be shortened and/ or cut off to connect the two arms.
9) Proceed to page 12 to perform commissioning.
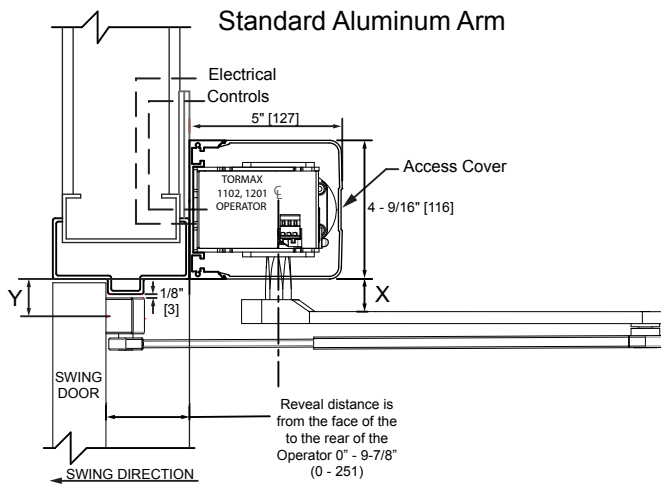
## Standard Aluminum Arm



Electrical Controls

5" [127]

TORMAX 1102, 1201 OPERATOR

Access Cover

4 - 9/16" [116]

1/8" [3]

Y

X

SWING DOOR

Reveal distance is from the face of the to the rear of the Operator 0" - 9-7/8" (0 - 251)

SWING DIRECTION

X: Clearance required (distance bottom of header to top of arm)
Y: Distance between bottom of header back plate and centerline of door mounting shoe

| Part No. | Shaft Length | X | Y |
|---|---|---|---|
| 141032 (STD) | 3-7/32" (82mm) | 1-1/16" (27mm) | 1-7/16" (36mm) |
| 141106 (D.E.) | 3-15/16" (100mm) | 1-25/32" (45mm) | 2-5/32" (55mm) |
| 141205 | 4-27/32" (123mm) | 2-11/16" (68mm) | 3-1/16" (78mm) |

For extended reveals contact TORMAX



14-1/4" [362]

CL Hinge

12-3/16" [310]

Wall

Header

Tighten shaft bolt on top of operator to 25 ft/lbs.

6



7

NOTE: The door portion arm may need to be shortened and/ or cut off to connect the two arms.

8

Rotate Drive Arm (8) 40° - 45°

# Outswing - Low Energy 8 - 10 lbs Commissioning

## Requirements

1. **Shaft should be secured into drive unit during mechanical installation.**
2. **Refer to page 22 to adjust open door stop.**
3. Determine system values for your application based on the illustrations on page 10.

## Commissioning

| | | |
|---|---|---|

Commissioning Example: (3) = 36" door width, (1) = 0-2" reveal, (1) = Standard outswing Arm 11 3/8.

| 3 | 1 | 1 |
|---|---|---|

**Press & Hold** *Programming Button*, **Release** after **1 Green LED** **Flash.** The operator will make 1 beep and immediately begin to flash the **Yellow LED.**

PAUSE

**WHILE LOOKING AT THE YELLOW LED, WAIT FOR THE OPERATOR TO BEEP 1X,** then after 3 yellow flashes, **Press & Release** *Programming Button*

PAUSE

**WHILE LOOKING AT THE YELLOW LED, WAIT FOR THE OPERATOR TO BEEP 2X,** then after 1 yellow flashes, **Press & Release** *Programming Button*

PAUSE

**WHILE LOOKING AT THE YELLOW LED, WAIT FOR THE OPERATOR TO BEEP 3X,** then after 1 yellow flashes, **Press & Release** *Programming Button*

**MADE AN ERROR DON'T WORRY**: To start over Disconnect Power for 10 seconds, Reconnect Power, then **Press & Hold** *Programming Button* and **Release** after **5 Green LED** Flashes.

---

The operator will open 20 degrees stop and beep 2x. **Press & Release** *programming button*. The operator will slowly close and beep 2x, next it will slowly fully open and beep 2x, then close (beep 1x) followed by 5 beeps, and will cycle fully open & close at normal speed.

---

Enter Country Code 7 1: (**Read Entire Step BEFORE attempting to enter Country Code**)

## PERFORM THIS STEP WHILE LOOKING AT BOTH GREEN & YELLOW LEDS.

**Press & Hold** programming button, **Release** after **7 Green** flashes then immediately **Press & Release** programming button after **1 Yellow** flash.

Programming is complete - for further programming enhancements refer to page 23 or Programming Tables

# Outswing Full Pedestrian 18 - 20 lbs Spring Holding Force



1 Push Arm P/N: 408368
0 - 4-3/16" Reveal
11.41 in. (290 mm)

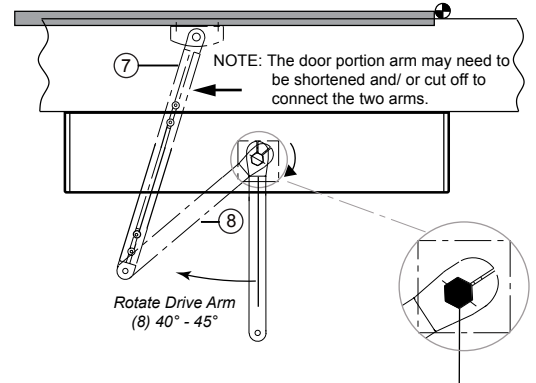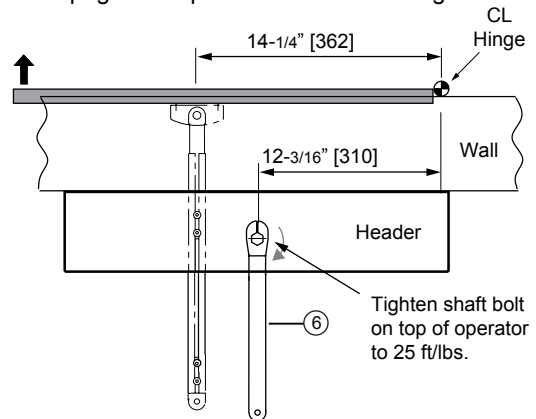2 Push Arm P/N: 408369
4-1/8" - 9-7/8" Reveal
13.77 in. (350 mm)

1) Determine the handing of the operator according to the door. Note that arrow on operator indicates opening direction of rotation.
2) Locate & mark output shaft location 12-3/16" from CL of hinge onto door frame
3) Align header at the bottom of the door frame and CL of the shaft location as shown below.
4) Secure header to the wall with appropriate hardware.

5) Locate and mount door arm attachment bracket to the door at Y dimension for shaft used and 16-1/8" from CL of hinge as shown below.
6) Insert shaft/ drive arm into the operator, *leave shaft bolt loose until appropriate step during commissioning procedure*.
7) Proceed to page 14 to perform commissioning.
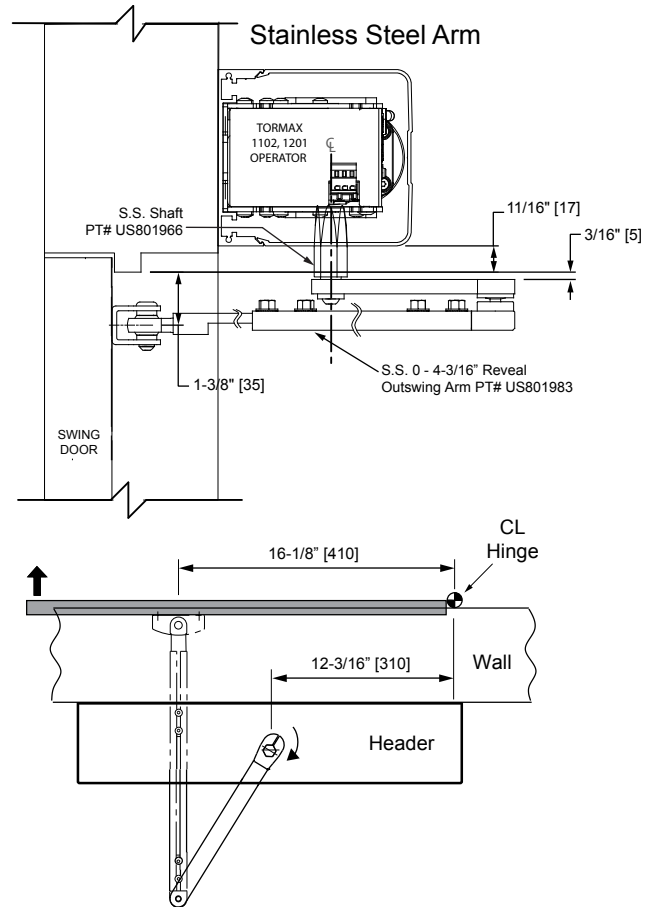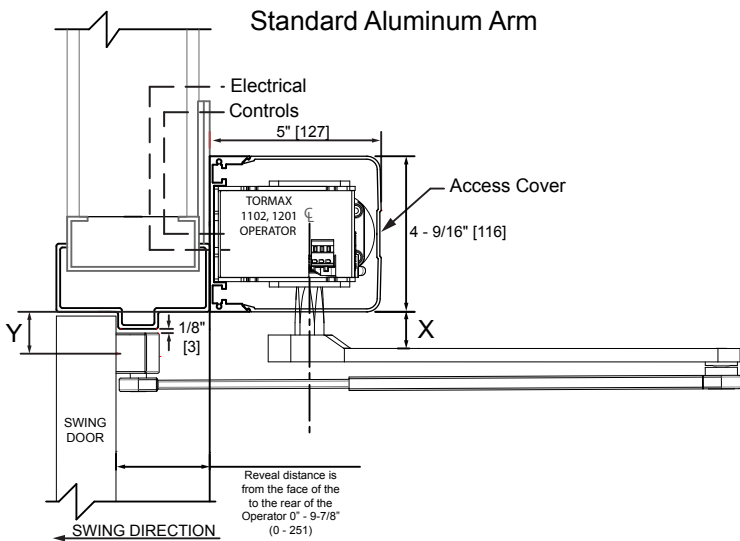
## Standard Aluminum Arm



## Stainless Steel Arm



X: Clearance required (distance bottom of header to top of arm)
Y: Distance between bottom of header back plate and centerline of door mounting shoe

| Part No. | Shaft Length | X | Y |
|---|---|---|---|
| 141032 (STD) | 3-7/32" (82mm) | 1-1/16" (27mm) | 1-7/16" (36mm) |
| 141106 (D.E.) | 3-15/16" (100mm) | 1-25/32" (45mm) | 2-5/32" (55mm) |
| 141205 | 4-27/32" (123mm) | 2-11/16" (68mm) | 3-1/16" (78mm) |

For extended reveals contact TORMAX

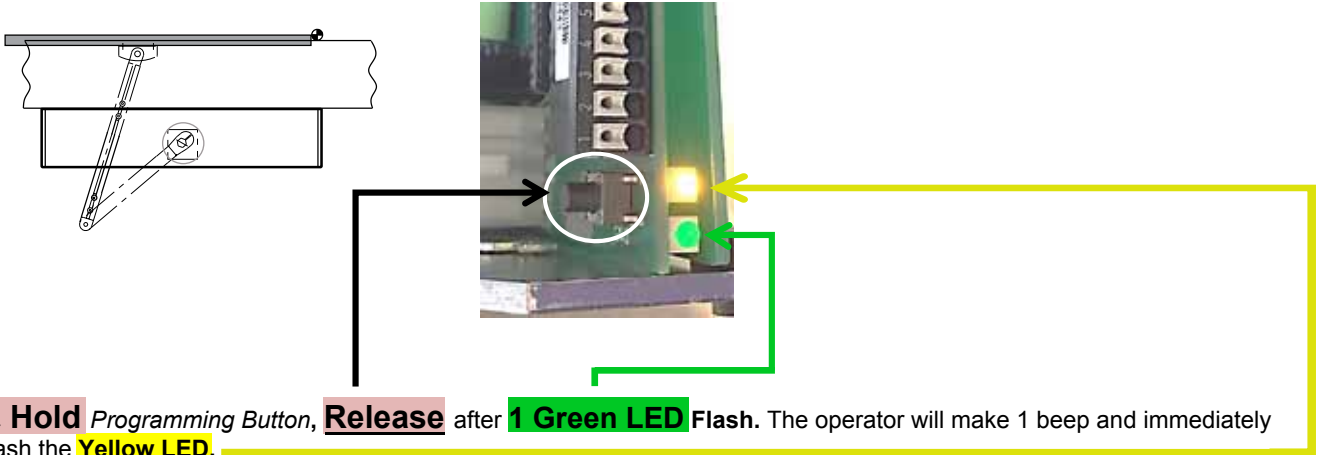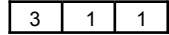# Outswing Full Pedestrian 18 - 20 lbs Commissioning

Requirements

1. **Shaft should be loose in the drive unit. Drive arm connected to door and shaft.**
2. Determine system values for your application based on the illustrations on page 10.

Commissioning

Commissioning Example: (3) = 36" door width, (1) = 0-2" reveal, (1) = Standard outswing Arm 11 3/8. | 3 | 1 | 1 |

**Press & Hold** *Programming Button*, **Release** after 1 Green LED **Flash.** The operator will make 1 beep and immediately begin to flash the Yellow LED.

PAUSE

WHILE LOOKING AT THE YELLOW LED, WAIT FOR THE OPERATOR TO BEEP 1X, then after 3 yellow flashes, **Press & Release** *Programming Button*

PAUSE

WHILE LOOKING AT THE YELLOW LED, WAIT FOR THE OPERATOR TO BEEP 2X, then after 1 yellow flashes, **Press & Release** *Programming Button*

PAUSE

WHILE LOOKING AT THE YELLOW LED, WAIT FOR THE OPERATOR TO BEEP 3X, then after 1 yellow flashes, **Press & Release** *Programming Button*

**MADE AN ERROR DON'T WORRY***:* To start over Disconnect Power for 10 seconds, Reconnect Power, then **Press & Hold** *Programming Button* and **Release** after 5 Green LED Flashes.

> The operator will open 20 degrees stop and beep 2x. Attach Door Arm to Shaft and Door, place the Door in the Closed Position, and NOW Tighten the shaft to the operator at 25 ft-lbs. REMOVE POWER from Operator and adjust open door stop to desired position, refer to page 22 for adjusting internal Open Door Stop.
>
> RECONNECT POWER (operator beeps 1x), then **Press & Hold** *programming button* & **Release** after 6 Green LED Flashes. The operator will open 20 degrees stop and beep 2x. **Press & Release** *programming button*. Operator will slowly close and beep 2x, next slowly fully open & beep 2x, then close (beep 1x) followed by 5 beeps, and will cycle fully open & close at normal speed.

Commissioning is complete for High Energy Applications. For Low Energy application complete the last step below Program the country code into the controller. For additional programming refer to page 23 or Programming Tables.
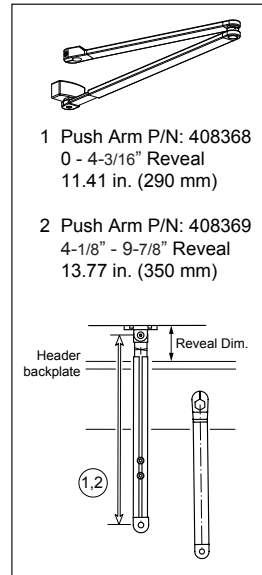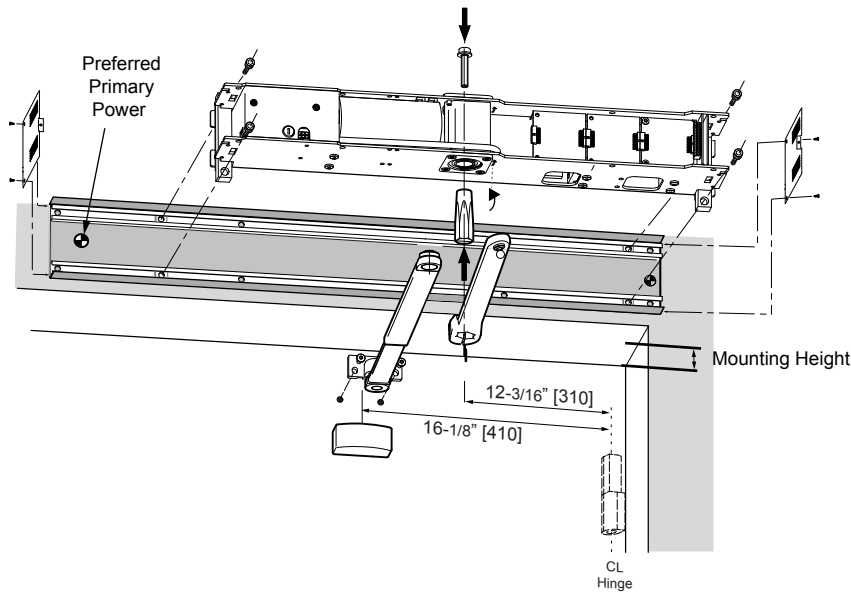
Enter Country Code 7 1: (Read Entire Step BEFORE attempting to enter Country Code)

**PERFORM THIS STEP WHILE LOOKING AT BOTH GREEN & YELLOW LEDS.**
**Press & Hold** programming button, **Release** after 7 Green flashes then immediately **Press & Release** programming button after 1 Yellow flash.

# Inswing (Pull) Arm 0" Reveal Installation

Preferred
Primary
Power

Standard Inswing Arm
0" Reveal, P/N 407456
13.77 in. (350 mm 1) )

4"[102mm]

12-3/16"
[310mm]

1) Determine the handing of the operator according to the door. Note that arrow on operator indicates opening direction of rotation.
2) Locate & mark output shaft location 12-3/16" from CL of hinge onto door frame as
3) Determine header mounting height = X. See below.
4) Bolt header to the wall with appropriate hardware.

5) Locate and mount door arm slide track onto the door at 4" from C/L of pivot, mounting holes 5/8" from top of the door as shown below.
6) Insert shaft/ drive arm into the operator, *leave shaft bolt loose until appropriate step during commissioning procedure.*
7) Proceed to page 16 to perform commissioning.

## Standard Aluminum Arm

Electrical
Controls

5" [127]

ACCESS
COVER

4 9/16" [116]

TORMAX
1102, 1201
OPERATOR

Standard
Shaft 141032
3-7/32" (82mm)

X

SWING
DOOR

0" Reveal
Door Arm
407456

SWING DIRECTION

X: Mounting height (distance bottom of header to top of door)

| Part No. | Shaft Length | X |
|---|---|---|
| 141032 (STD) | 3-7/32" [82mm] | 1-3/4"" (44mm) |
| 141205 | 4-27/32" [123mm] | 3-3/8" [86mm] |
| 141020 | 2-5/8" [67mm] | 1-5/32" [29mm] |

For extended reveals contact TORMAX

## Stainless Steel Arm

TORMAX
1102, 1201
OPERATOR

S.S. Shaft
PT# US801966

1-7/8" [48]

3/16" [5]

S.S. 0" Reveal
Inswing Arm
PT# US801996

Top of
the Door

1/8" [3]

## Butt Hingle or Offset Pivot

Header

5/8" [16]

4"
[102]

12-3/16" [310]

C/L
Pivot

C/L
Shaft
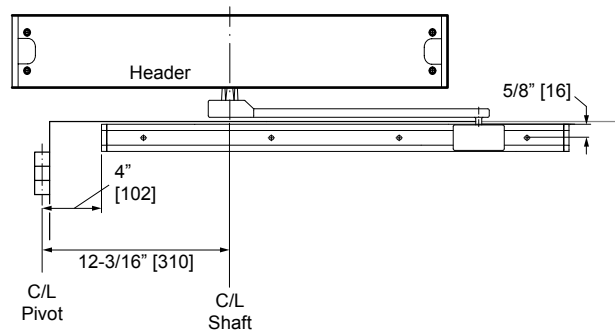
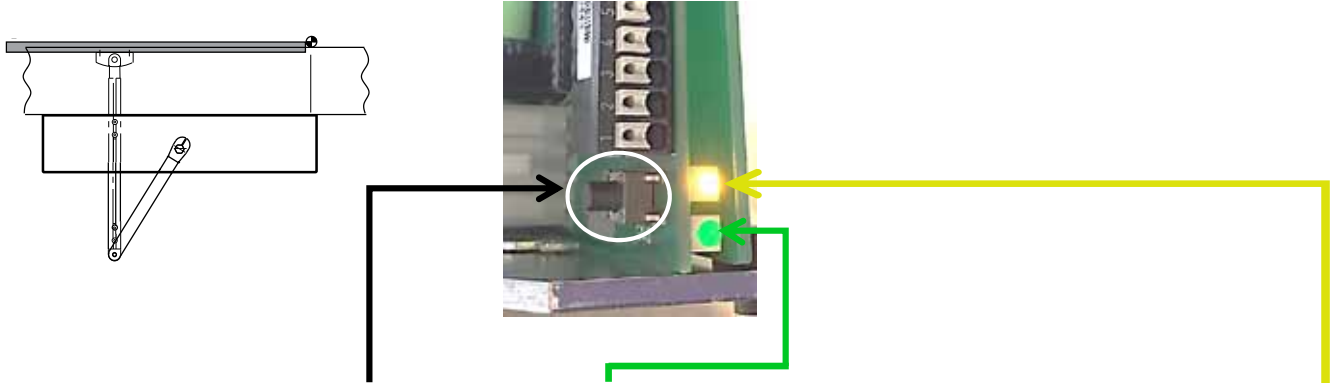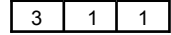# Inswing (Pull) Arm 0" Reveal Commissioning

## Requirements

1. Shaft should be loose in the drive unit. Drive arm connected to slide track and shaft.
2. Determine system values for your application based on the illustrations on page 10.

## Commissioning

Commissioning Example: (3) = 36" door width, (1) = 0-2" reveal, (1) = Standard inswing Arm 11 3/8.
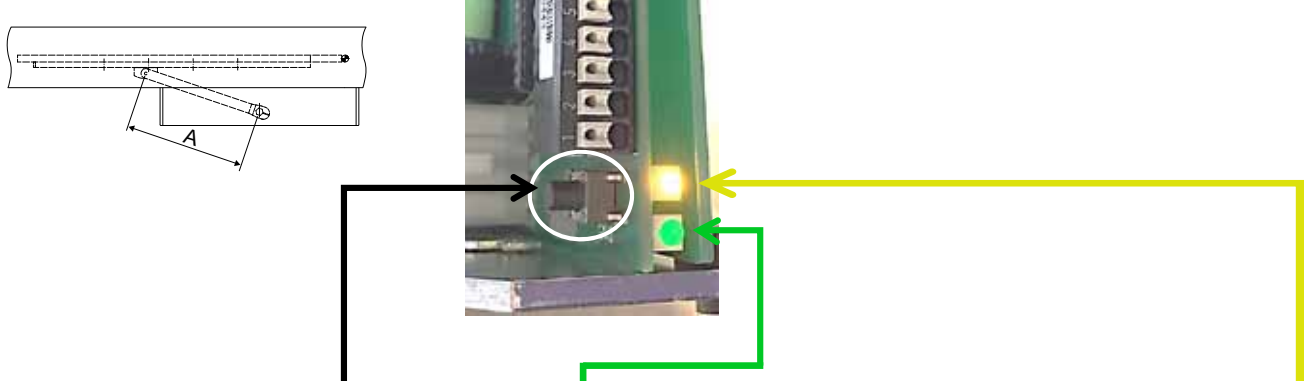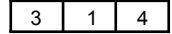
| 3 | 1 | 4 |
|---|---|---|

**Press & Hold** *Programming Button*, **Release** after **1 Green LED** **Flash.** The operator will make 1 beep and immediately begin to flash the **Yellow LED**.

PAUSE

**WHILE LOOKING AT THE YELLOW LED, WAIT FOR THE OPERATOR TO BEEP 1X,** then after 3 yellow flashes, **Press & Release** *Programming Button*

PAUSE

**WHILE LOOKING AT THE YELLOW LED, WAIT FOR THE OPERATOR TO BEEP 2X,** then after 1 yellow flashes, **Press & Release** *Programming Button*

PAUSE

**WHILE LOOKING AT THE YELLOW LED, WAIT FOR THE OPERATOR TO BEEP 3X,** then after 4 yellow flashes, **Press & Release** *Programming Button*

**MADE AN ERROR DON'T WORRY**: To start over Disconnect Power for 10 seconds, Reconnect Power, then **Press & Hold** *Programming Button* and **Release** after **5 Green LED** Flashes.

> The operator will open 20 degrees stop and beep 2x. Attach Door Arm to Slide Track and Shaft, place the Door in the Closed Position, and NOW Tighten the shaft to the operator at 25 ft-lbs. REMOVE POWER from Operator and adjust open door stop to desired position, refer to page 22 for adjusting internal Open Door Stop.
>
> RECONNECT POWER (operator beeps 1x), then **Press & Hold** *programming button* & **Release** after 6 Green LED Flashes. The operator will open 20 degrees stop and beep 2x. **Press & Release** *programming button*. Operator will slowly close and beep 2x, next slowly fully open & beep 2x, then close (beep 1x) followed by 5 beeps, and will cycle fully open & close at normal speed.
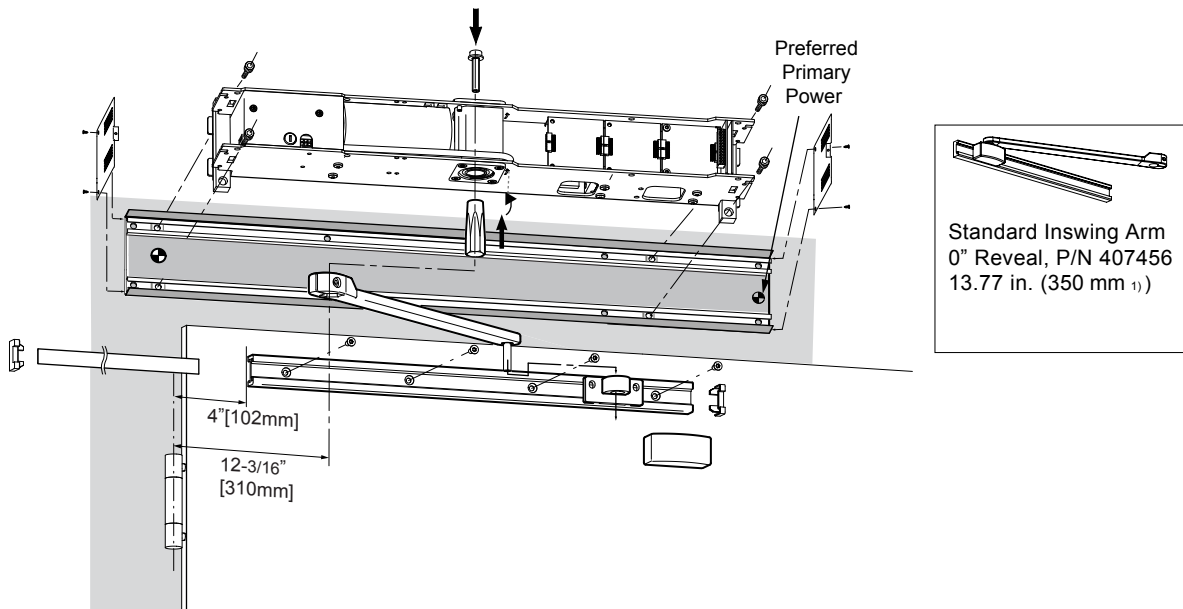
Commissioning is complete for High Energy Applications. For Low Energy application complete the last step below Program the country code into the controller. For additional programming refer to page 23 or Programming Tables.

Enter Country Code 7 1: (Read Entire Step BEFORE attempting to enter Country Code)

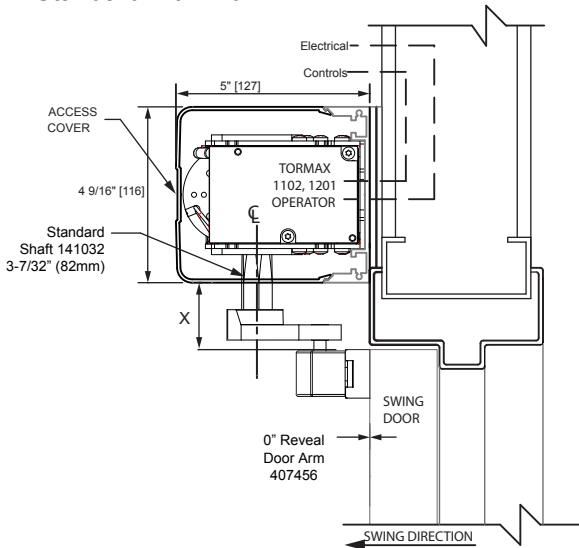**PERFORM THIS STEP WHILE LOOKING AT BOTH GREEN & YELLOW LEDS.**
**Press & Hold** *programming button*, **Release** after **7 Green** flashes then immediately **Press & Release** programming button after **1 Yellow** flash.

# Inswing (Pull) Arm 0 - 6" Reveal Installation
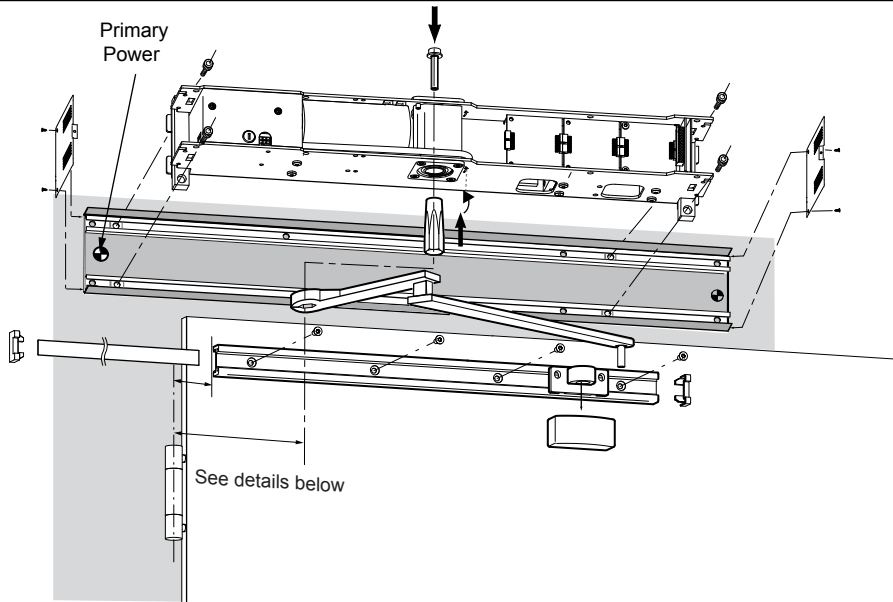


Primary Power

See details below

1) Determine the handing of the operator according to the door. Note that arrow on operator indicates opening direction of rotation.
2) Locate & mark output shaft location as shown below from CL of hinge or pivot onto door frame.
3) Mark header mounting height of 1 1/8" from the top of the door as shown below.
4) Secure header to the wall with appropriate hardware.

5) Locate and mount door arm slide track onto the door at 3 3/4" from bottom of the header and at the dimensions listed below for the application.
6) Insert shaft/ drive arm into the operator, *leave shaft bolt loose until appropriate step during commissioning procedure.*
7) Proceed to page 18 to perform commissioning.



Electrical
Controls
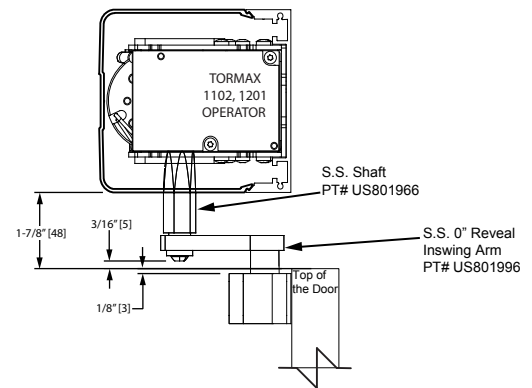5" [127]
Access Cover
4 9/16" [116]
TORMAX 1102, 1201 OPERATOR
1 1/8" [28]
3 3/4" [95]
SWING DOOR
0 - 6"" Reveal Door Arm
141133 R.H.Shown
141134 L.H.Not Shown
REVEAL DISTANCE FROM THE FACE OF THE DOOR TO THE REAR OF OPERATOR 0"-6" (0-152)
SWING DIRECTION

Butt Hinge
Header
2-1/4" [57]
10-5/8" [270]
C/L Pivot
C/L Shaft

Center Pivot
Header
1-1/4" [32]
9-7/16"[240]
C/L Shaft
C/L Pivot

## Inswing (Pull) Arm 0 - 6" Reveal Commissioning

### Requirements

1. **Shaft should be loose in the drive unit. Drive arm connected to door and shaft.**
2. Determine system values for your application based on the illustrations on page 10.

### Commissioning

Commissioning Example: (3) = 36" door width, (1) = 2-4" reveal, (1) = Extended inswing Arm B.
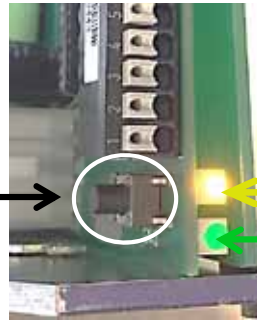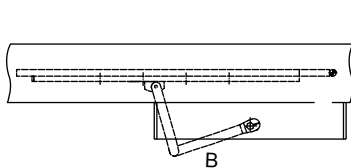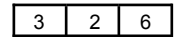
| 3 | 2 | 6 |
|---|---|---|



**Press & Hold** *Programming Button*, **Release** after **1 Green LED** **Flash.** The operator will make 1 beep and immediately begin to flash the **Yellow LED.**

<div align="center">PAUSE</div>

WHILE LOOKING AT THE **YELLOW LED**, **WAIT FOR THE OPERATOR TO** **BEEP 1X,** then after 3 yellow flashes, **Press & Release** *Programming Button*

<div align="center">PAUSE</div>

WHILE LOOKING AT THE **YELLOW LED**, **WAIT FOR THE OPERATOR TO** **BEEP 2X,** then after 2 yellow flashes, **Press & Release** *Programming Button*

<div align="center">PAUSE</div>

WHILE LOOKING AT THE **YELLOW LED**, **WAIT FOR THE OPERATOR TO** **BEEP 3X,** then after 6 yellow flashes, **Press & Release** *Programming Button*

**MADE AN ERROR DON'T WORRY***: To start over Disconnect Power for 10 seconds, Reconnect Power, then **Press & Hold** *Programming Button* and **Release** after **5 Green LED** Flashes.

---

The operator will open 20 degrees stop and beep 2x. Attach Door Arm to Slide Track and Shaft, place the Door in the Closed Position, and NOW Tighten the shaft to the operator at 25 ft-lbs. REMOVE POWER from Operator and adjust open door stop to desired position, refer to page 22 for adjusting internal Open Door Stop.

RECONNECT POWER (operator beeps 1x), then **Press & Hold** *programming button* & **Release** after 6 Green LED Flashes. The operator will open 20 degrees stop and beep 2x. **Press & Release** *programming button*. Operator will slowly close and beep 2x, next slowly fully open & beep 2x, then close (beep 1x) followed by 5 beeps, and will cycle fully open & close at normal speed.

---

Commissioning is complete for High Energy Applications. For Low Energy application complete the last step below Program the country code into the controller. For additional programming refer to page 23 or Programming Tables.

Enter Country Code 7 1: (Read Entire Step BEFORE attempting to enter Country Code)
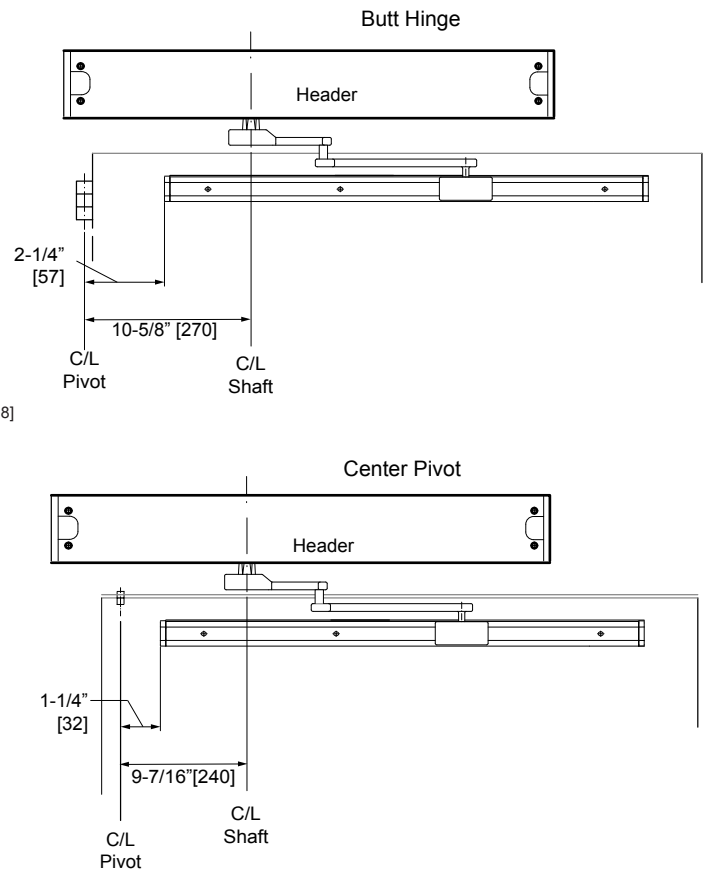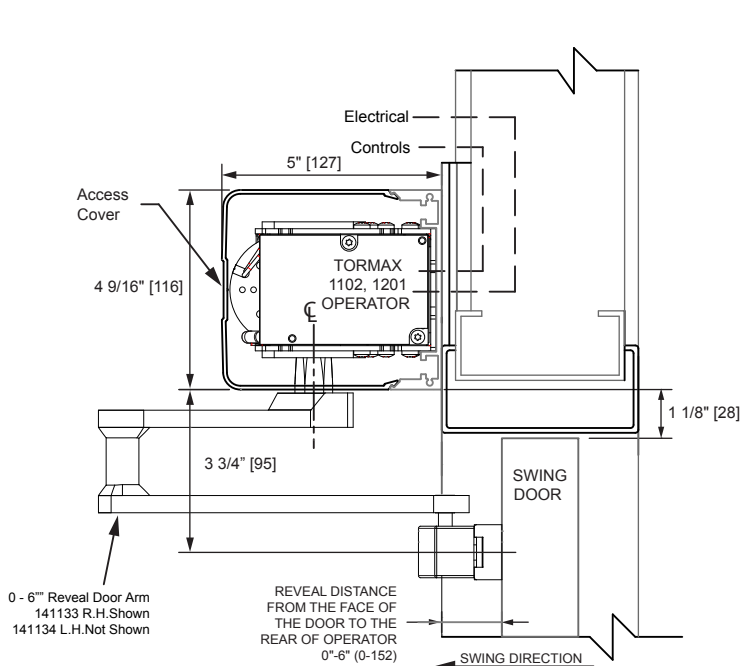
**PERFORM THIS STEP WHILE LOOKING AT BOTH GREEN & YELLOW LEDS.**
**Press & Hold** *programming button*, **Release** after **7 Green** flashes then immediately **Press & Release** programming button after **1 Yellow** flash.

# Double Egress Application Installation

0 5/8"

## Butt Hung & Offset Pivot

16 1/8" [410]

10 5/8" [270]

12 3/16" [310]

2 1/4"

DOOR ⟍    ⟋ DOOR

Header Back Plate

C/L of Pivot
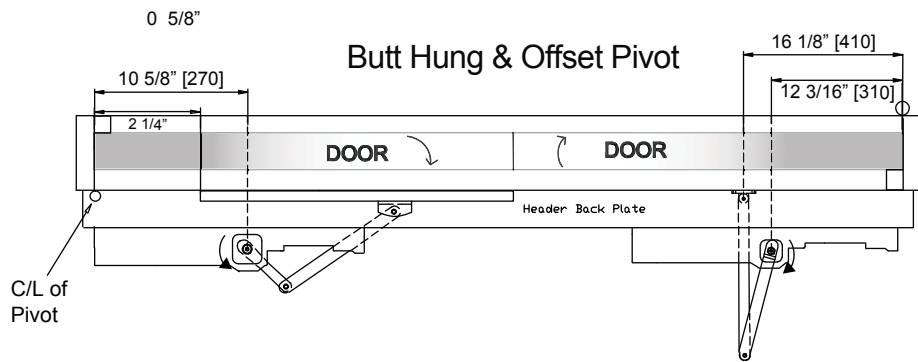
1) Determine the handing of the operators according to the door. Note that arrow on operator indicates opening direction of rotation.
2) Locate & mark output shaft locations as shown above, for both operators.
3) Determine header mounting height. If both operators are in a single header then mount the operators at 1-1/8" from top of the door as shown below for In-Swing operator.

4) Secure header to the wall with appropriate hardware.
5) Locate and mount door arm and slide track onto the doors at dimensions listed above.
6) Insert shaft/ drive arms into the operators, *leave shaft bolts loose until appropriate step during commisioning procedure.*
7) Proceed to page 20 to check or connect sync cable and additional wiring.

## In-Swing Operator

Electrical Controls

5" [127]

Access Cover

4 9/16" [116]

TORMAX 1102, 1201 OPERATOR

Standard Shaft 141032 3 7/32" (82)

0 - 6"" Reveal Door Arm 141133 R.H.Shown 141134 L.H.Not Shown

1 1/8" [29]

3 3/4" [95]

SWING DOOR

REVEAL DISTANCE FROM THE FACE OF THE DOOR TO THE REAR OF OPERATOR 0"-6" (0-152)

SWING DIRECTION

## Out-Swing Operator

Electrical

Controls

5" [127]

TORMAX 1102, 1201 OPERATOR

Access Cover

4 9/16" [116]

Standard D.E. Shaft 141106 3 15/16" (100mm)

1 1/8" [29]

SWING DOOR

3 9/16" [90]

REVEAL DISTANCE FROM THE FACE OF THE DOOR TO THE REAR OF OPERATOR 0"-9 7/8" (0-251)

SWING DIRECTION

# Pair & Double Egress Application Wiring

1. Determine which operator will be the primary drive as this will have the 3-position switch connection.

( ! ) The FCP is an option in place of the 3-position and will be connected to the primary drive with appropriate module, Exterior Door module EDM or Programming Interface module PIM.

2. Check and/ or install jumpers between GND pin 1 - IN1 pin 2 and GND pin 1 - IN2 Pin 3 in place of the 3-position switch on the secondary drive as shown below.



Primary Drive

Base Door Module BDM

Secondary Drive

Base Door Module BDM
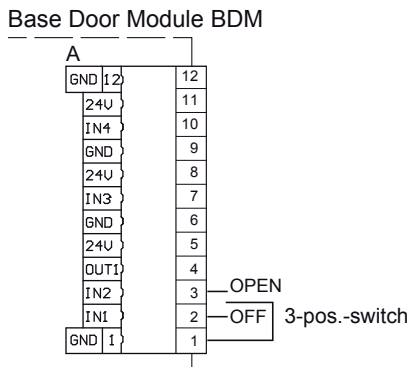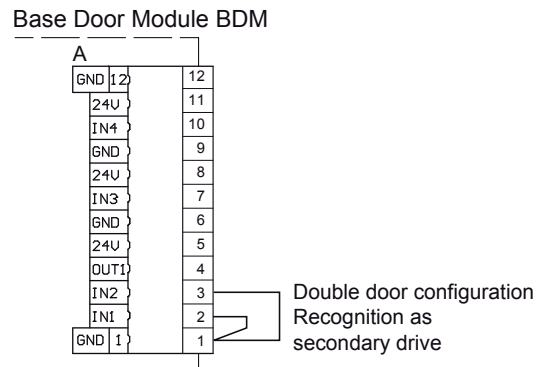
3. Install Multi Door Module MDM-B into each operator.
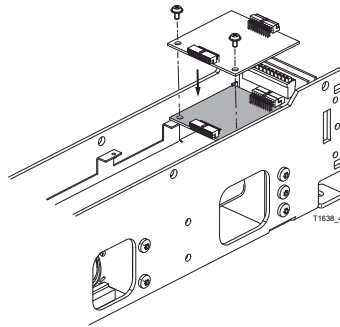


4. Connect Sync cable (US801886) to both drives Multi Door Module MDM - B as shown below.

**Wiring of Sync Cable**
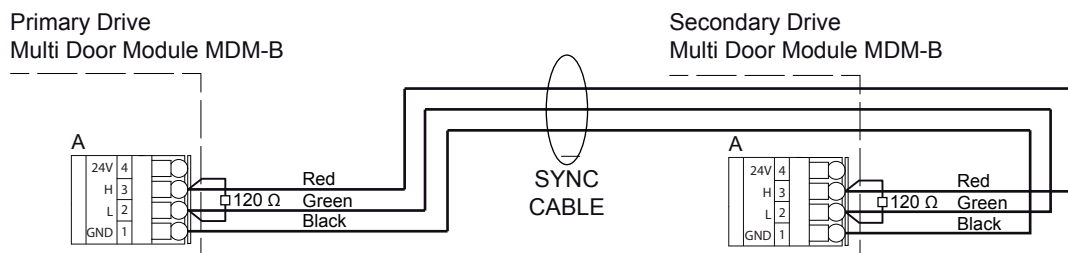


( ! ) **Do not apply primary power to the drive units until the appropriate step.**

# Pair & Double Egress Application Commissioning

Requirements for Both Operator

1. An MDM module Installed in both operators along with optional modules (PIM, EDM, PDM) prior to start-up. Refer to Technical Specifications section.
2. Refer to application's commissioning page to determine shaft condition. (loose or secured)
3. Determine system values based on the illustrations on page 10.


*Primary*
*Secondary*

Commissioning

1. Connect primary power 120vAC to **Primary operator first,** then the Secondary operator this will configure the operators (Primary/ Secondary).
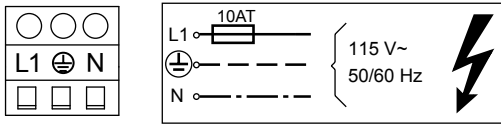


2. Commissioning sequence - **Perform Commissioning of Primary operator first,** then perform Commissioning of Secondary operator.

3. Refer to the applications Commissioning page:

   Outswing 8-10 lbs. Spring Holding force (Low Energy) - Refer to page 11 for securing the Shaft & Arm position, Page 12 for commissioning
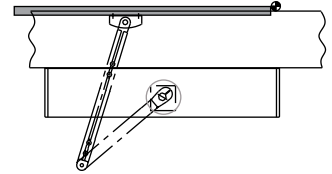
   Outswing 14- 15 lbs. Spring Holding Force (Full Power) - Page14
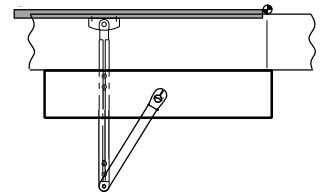
   Inswing 0" Reveal - Page 16
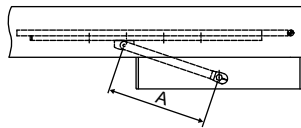
   Inswing 0-6" Reveal - Page 18
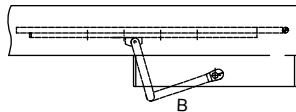
4. Adjustments:

   Double egress/ simultanious pairs - Turn OFF delayed activation of secondary operator = Code 830

   Frequently used adjustments are listed on page 23

# Adjustments - Door Stop/ 1201 Spring Tension

## Adjusting Internal Open Door Stop

Determine opening angle required for application adjust internal stop accordingly.
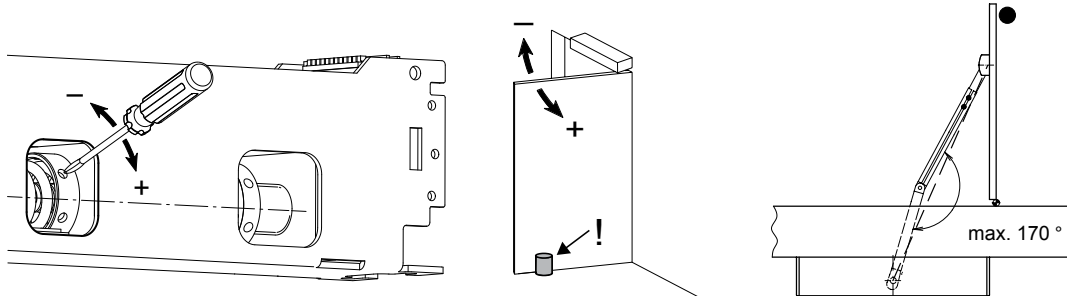


(!) An external door stop may be needed depending on application (abuse, excessive wind...).

## Mechanical Spring Tension Adjustment (Optional ) - *1201 ONLY*

(!) Adjust spring tension to close the door in adverse applications with no primary power applied.
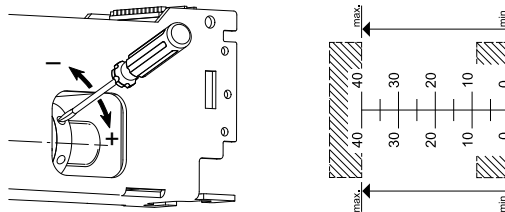


1. Adjust spring tension on the operator, note Code for the adjustment made.
   Example 20mm = Code 5.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | Tension length in mm |
| 1 * | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Code |

Number of Flashes

2. Programming spring tension adjustment with On-Board Button:
   (Read Entire Step BEFORE attempting to enter Country Code)

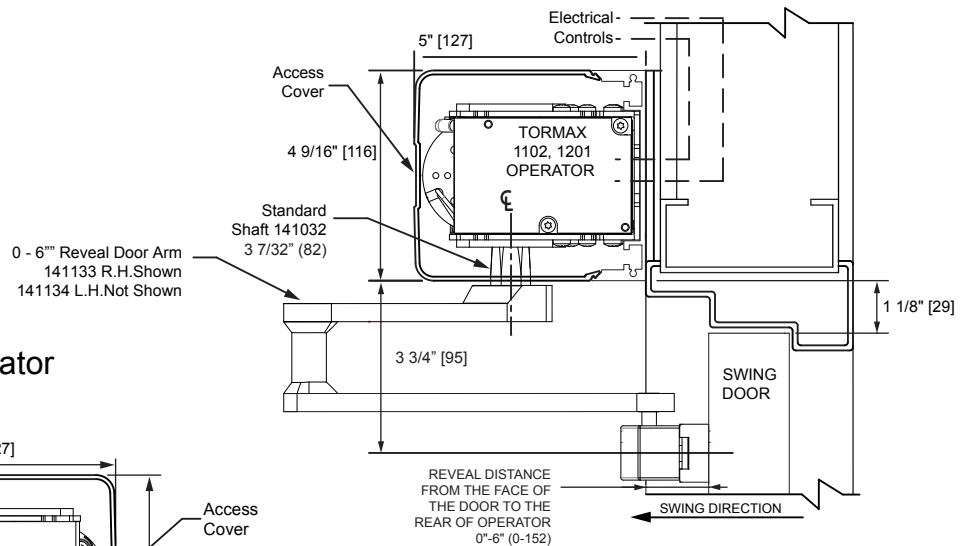**PERFORM THIS STEP WHILE LOOKING AT BOTH GREEN & YELLOW LEDS.**
**Press & Hold** programming button, **Release** after **4 Green** flashes then immediately **Press & Release**
programming button after **# Yellow** flashes for **code value** .

3. Changing the spring tension will require a commissioning process to be performed with
   On-Board button Code 6 Green flashes or entering Code 021 with FCP.

# Adjustments - Frequently Used

## Adjustments

Country Code configures the operator for Low Energy application for more details refer to page 31. To set the Country code 7 with On-Board Button follow the instructions below:

Enter Country Code 7 1: (Read Entire Step BEFORE attempting to enter Country Code)

**PERFORM THIS STEP WHILE LOOKING AT BOTH GREEN & YELLOW LEDS.**
**Press & Hold** programming button, **Release** after **7 Green** flashes then immediately **Press & Release** programming button after **1 Yellow** flash.
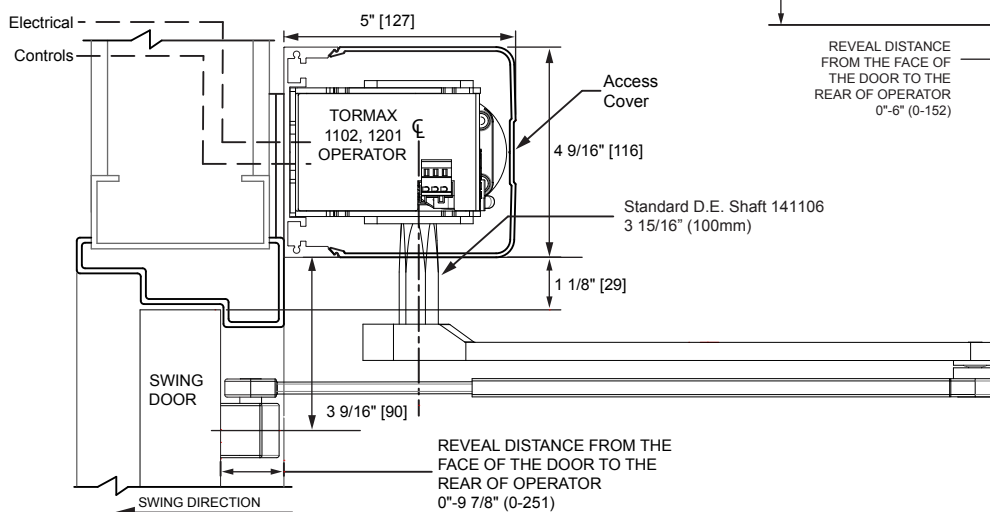
Additional adjustments may be made after commissioning which require a PIM Program Interface module and an FCP. If the door requires or is equipped with an EDM Exterior Door Module then a PIM in not needed.

Listed below are the most common adjustments. For a complete list of adjustments refer to the Programming Charts.

     *Hold open time = Code 10?
     *Push-N-Go OFF = Code 860
     *Close Check Force OFF = Code 320
    **Power Close for Lock Release ON = Code 581
    **Delay Time to Open = Code 591
       Power Pulse when Opening = Code 43?  *Over come wind stack pressure or lock*
     *Double egress/ simultanious pairs = Code 830
          *Turn OFF delayed activation of secondary operator for pair applications.*

   Detecting/ mask out safety functions details on page 31:
          On-Board Button = Code 3
           FCP = Code 023

   Repeat commissioning without system values details on page 31.
          On-Board Button = Code 6

   Power Assist in AUTO ON = Code 862
   Power Assist Hold open Time = Code 150

   * Adjustments have been changed by entering Country code 7.
  ** Adjustment 591 needs to be made in conjunction with 581.

## Testing

⚠ Test the door in accordance with ANSI A156.19 Power Assist and Low Energy Power Operated Doors or ANSI A156.10 Power Operated Pedestrian Doors standards before putting the door into service and handing it over to the End-User.

RH Outswing Shown.

3-3/8"

"C"

11/16"

As Supplied
or
Cut to Length in Field

23-5/8"

12-3/16"

Ⓛ Output

Ⓛ Pivot

11/16"

3/8"

"B"

1-5/8"

3-5/8"

Φ 1-3/16"

1-3/16"

9/16"

Door Width + 3-1/2" - 5/8" = Header Width

"A"
See Chart

RH Out
LH In

| "A" | "B" |
|---|---|
| 13-5/8" - Butt Hinges | 1-1/8" |
| 14-3/8" - 3/4" Offset Pivots | 1-7/8" |
| 17-3/8" - C.P. W/1" F.G. (3-3/4") | 4-7/8" |
| 16-3/8" - C.P. W/O F.G. (2-3/4") | 3-7/8" |
| 13-5/8" - C.P. W/O F.G. (2-3/4") | 1-1/8" |
| 14-5/8" - C.P. W/1" F.G. (3-3/4") | 1-13/16" |
| 12-9/32" - Butt Hinges, Inswing (0-6" Reveal) | 2-1/8" |

**Tormax USA, Inc.**

Description:
**1102 / 1201
Slim Line Swing Door
Header Preparation**

Drawn By: Mario Higuera

Drawing Number: Revision
1102-1201 Header Fabrication Sheet

Date: 5/11/2016

SHEET 1 OF 2

| REV | REVISIONS | | |
|---|---|---|---|
| | DESCRIPTION | DATE | APPROVED |
| A | First Issue | 4/27/2016 | MH |

24
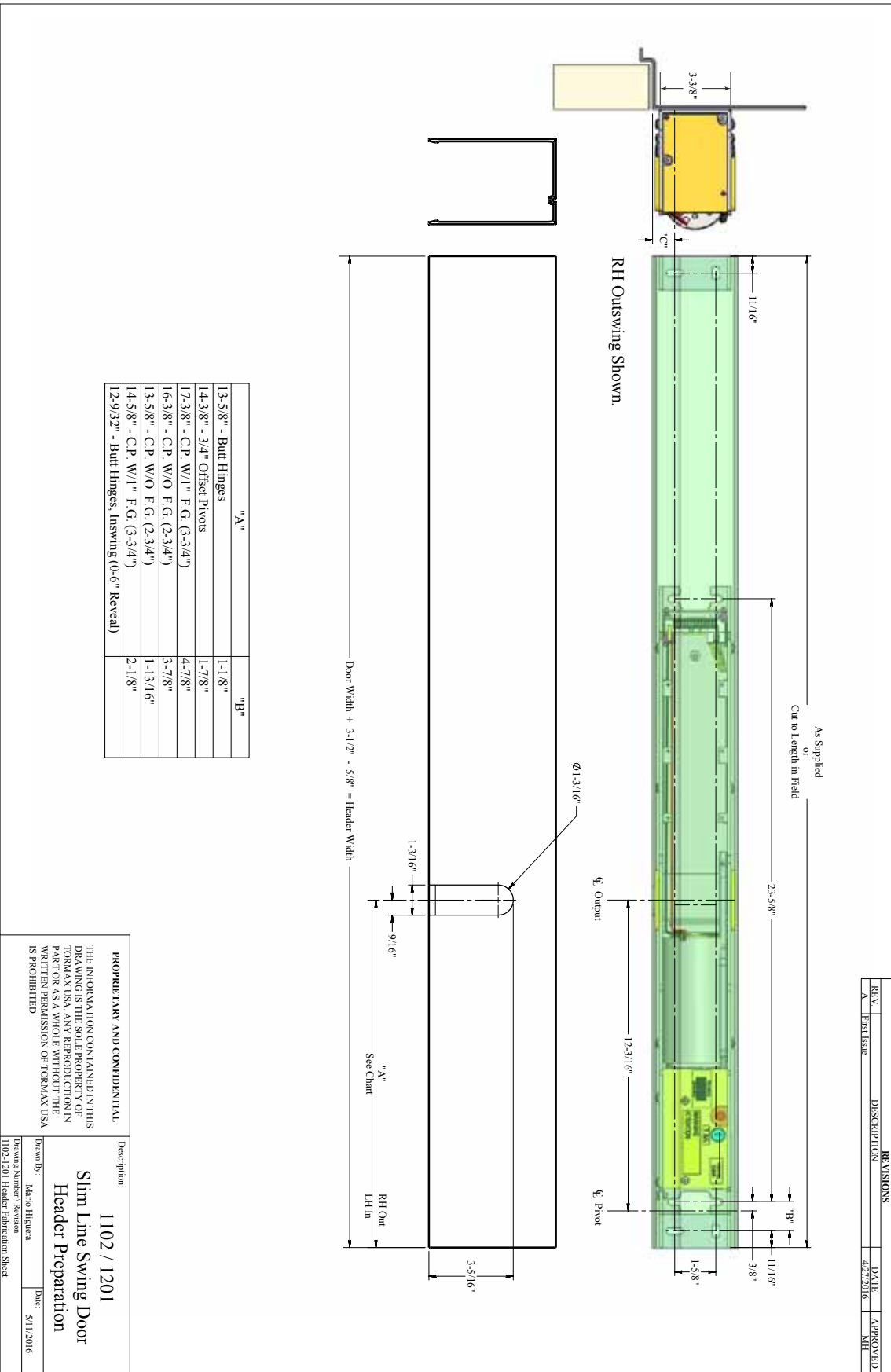
# Slim Line - Application Illustrations



Outswing

14 - 15 lbs. Spring Holding Force

Commissioning and programming page 14.

8 - 10 lbs. Spring Holding Force

Commissioning and programming page 12.

Inswing 0" Reveal

Butt Hingle or Offset Pivot

Inswing 0" – 6" Reveal

Butt Hinge

Center Pivot

Commissioning and programming page 16.

Commissioning and programming page 18.

Inswing 0 - 6" Reveal - Butt Hinge

Inswing

Double Egress Pair

Outswing 14 - 15 lbs. Spring Holding Force

Application Wiring page 20, commissioning and programming page 21.

Reference 1102/ 1201 Installation and Operating manual for commissioning and programming instructions for specific applications listed.

Tormax USA, Inc.

Description:
1102 / 1201
Slim Line Swing Door
Applications

Drawn By: Mario Higuera
Drawing Number: Revision
1102-1201 Header Fabrication Sheet
Date: 5/11/2016

| REV | REVISIONS | | |
|-----|-----------|------|----------|
| | DESCRIPTION | DATE | APPROVED |
| A | First Issue | 4/27/2016 | MH |

# Programming with the FCP - Overview

⚠ **Programming with the Functional Control Panel (FCP) refer to T1757 in Technical Specification section requires at least one of the following modules to be installed PIM shown below refer to T1691 or EDM T1638.**

Symbols for Operating Modes

Key (1) increase value of code (0....9)
**OR**
selects operating mode

OFF

AUTOMATIC

REDUCED OPEN

EXIT

OPEN

TORMAX
AUTOMATIC

www.tormaxusa.com

Electric lock output indicator

Mode P Manual Operation

Key (2) confirm code digit
**OR**
selects operating mode
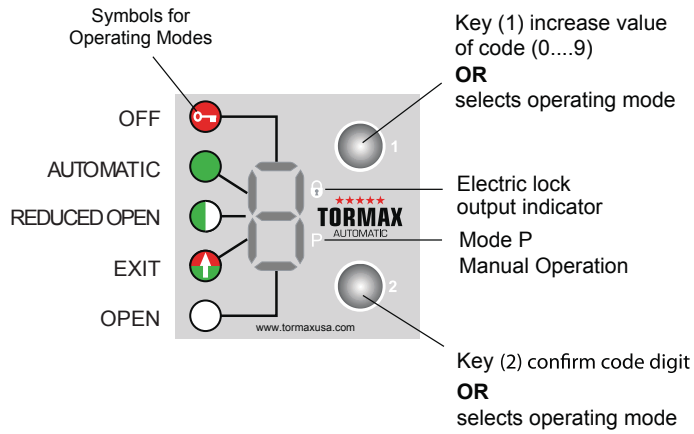
## The Functional Control Panel (FCP) has 2 function levels:

Level 1 - End user

- Select operating modes

- Display three-digit fault codes.

- Access protected eliminates unauthorized programming.

Level 2 - AAADM Certified Technician

- "U" = User readable parameter - allows technician to read specific parameters. See programming chart for parameters.

- Access protection, access code (111)

- Programming door system to comply with the current ANSI A156.10 or ANSI A156.19 standard.

- Displays currently set parameter.

- 10 min time out after the last programming entry is made. The technician will be required to enter the access code (111) to make further adjustments.

PIM MODULE

T1691_1
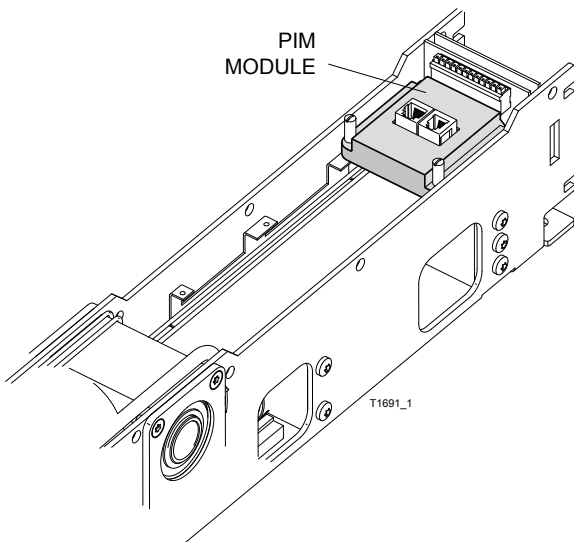
# Programming with the FCP - Overview

( ! ) Button 1 - Changes the number or letter by increments of one (0,1,2,3 - 9,a,b,c,...back to 0)
Button 2 - Confirms/ enter displayed number or letter into the control.

## 1) Start Access Code

Indication of operating mode

Press button 1 and 2 simultaneously a "U" appears, continue to press until a "C" appears.

Letter U is shown (= User)

Letter C is shown (= Code)

Release both buttons Immediately Press button 2 a "0" will display.

## 2) Entering Access Code 111

"0" appears

Press button 1 to display 1

Then

Press button 2 to comfirm/ enter 1st number

"0" re-appears

Press button 1 to display 1

Then

Press button 2 to comfirm/ enter 2nd number

"0" re-appears

Press button 1 to display 1

Then

Press button 2 to comfirm/ enter 3rd number

Letter P is shown ( = programming)

Press button 2 before P goes out you will be able to enter a parameter.
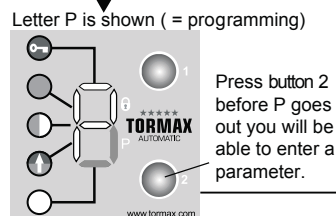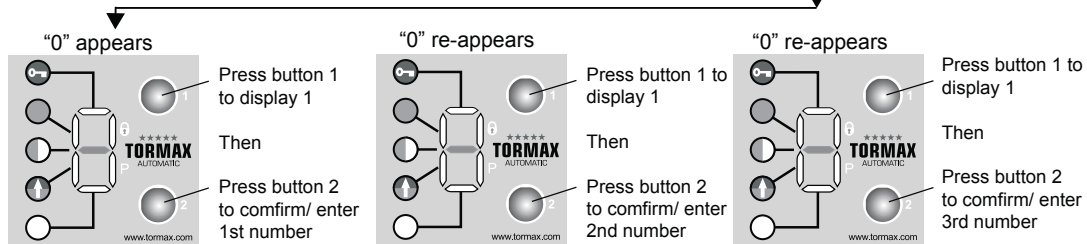
## 3) Start Programming Level
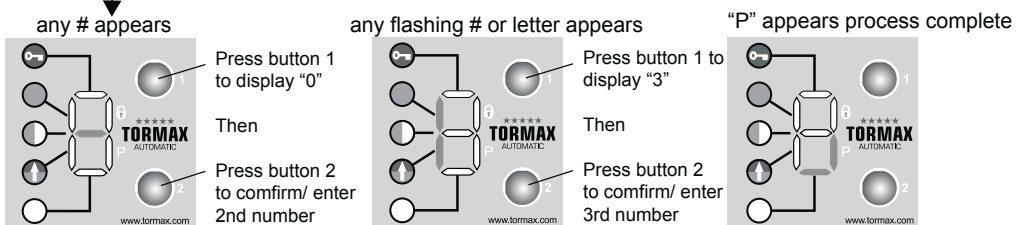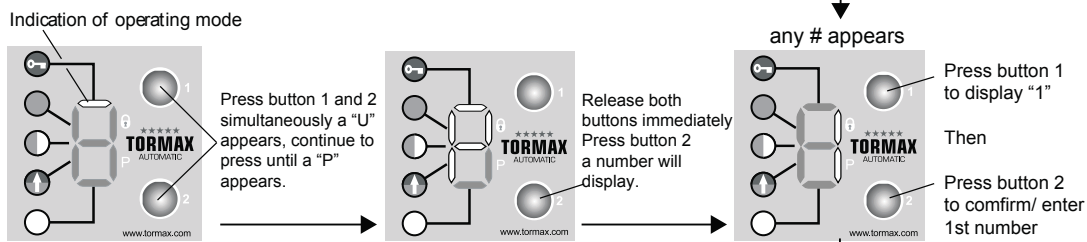
## 4) Entering Parameter Code 103

Indication of operating mode

Press button 1 and 2 simultaneously a "U" appears, continue to press until a "P" appears.

Release both buttons immediately Press button 2 a number will display.

any # appears

Press button 1 to display "1"

Then

Press button 2 to comfirm/ enter 1st number

any # appears

Press button 1 to display "0"

Then

Press button 2 to comfirm/ enter 2nd number

any flashing # or letter appears

Press button 1 to display "3"

Then

Press button 2 to comfirm/ enter 3rd number

"P" appears process complete

( ! ) If a number is entered incorrectly, stop and let the process time out. (no change made)

# Programming with the FCP

Example 1: Enter access code 111

**Display on FCP**

| | | |
|---|---|---|
| Press both buttons simultaneously a | U | will display |
| continue to press both buttons and a | C | will display, release both buttons |
| *Press button 2 and | 0 | will display |
| Press button 1 to display | 1 | Press button 2 to confirm/ enter |
| | 0 | Will display |
| Press button 1 | 1 | Press button 2 to confirm/ enter |
| | 0 | Will display |
| Press button 1 | 1 | Press button 2 to confirm/ enter |
| | P | Will display,operator is ready to be programmed |

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

**Display on FCP**

| | | |
|---|---|---|
| Press both buttons simultaneously a | U | |
| continue to press both buttons and a | P | will display, release both buttons, |
| Press button 2 and | ? | a number will be displayed, |
| Press button 1 to display | 1 | Press button 2 to confirm/ enter, |
| | ? | A number will be displayed, |
| Press button 1 to display | 0 | Press button 2 to confirm/ enter, |
| a slow flashing | ? | number or letter is displayed, |
| Press button 1 to display | 3 | Press button 2 to confirm/ enter |
| | 3 | Will rapidly flash for 1 sec |
| | P | Will display for 10 sec then operating mode will display. |

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 time out and require access code re-entry. Repeat example 1.

(!) After confirming/ entering the 2nd number of the code, the 3rd flashing value (number or letter) of the code is the parameter setting. If the value is confirmed the FCP will rapidly flash for 1 sec then display "P" again.

(!) Quickly pressing and releasing both buttons simultaneously the FCP will return to displaying the mode of operation.

# Commissioning with FCP

### Requirements:

1. Programming with the Functional Control Panel (FCP) requires at least one of the following modules to be installed PIM refer to T1691 or EDM T1638. If optional modules (MDM, PDM) are required install prior to start-up.
2. The drive arm is connected to the door and the drive arm shaft has not been tightened, *exception outswing 8 - 10 lbs .*
3. Pair of doors - the sync cable and additional wiring outlined on page 20 has been completed.
4. Connect safety sensors to door control, adjust in accordance to manufacturer's specifications.

### Start-up:

(!) **Double egress/ simultanious pairs applying power in the wrong sequence will cause configuration problems.**

1. Apply primary power to the operator, for pair of doors apply power to the Primary operator first, then to the Secondary operator.
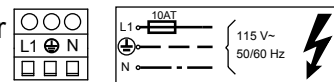
2. Enter System Parameters - Refer to page 10 to determine values. Complete sequence for Primary operator first.

   Enter **Code 06?**  Door width

   Enter **Code 07?**  Distance of drive arm

   Enter **Code 08?**  Sliding lever length

3. Arm Preload

   Enter **Code 021** operator will rotate 20 degrees, with the door arm connected to the door, place the door in the closed position, tighten shaft retaining bolt to 25 ft.lbs.

   Remove primary power plug from operator, door will close.
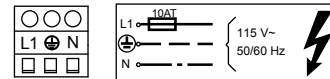
4. For pair applications - repeat process for secondary operator beginning at step 2.

5. Adjusting Open door stop

   Determine opening angle required for application adjust internal stop accordingly.
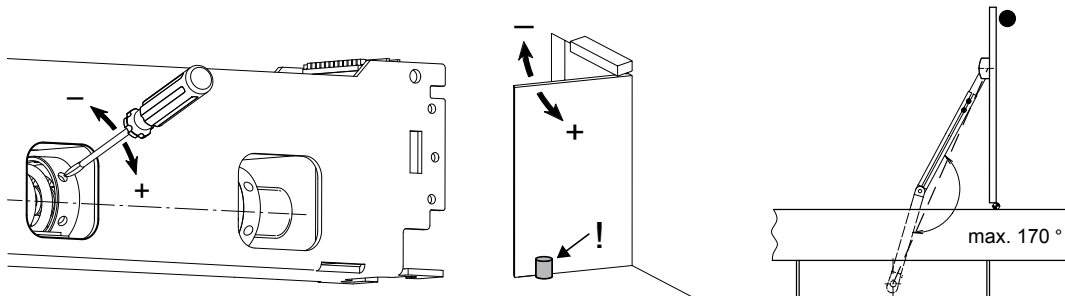


(!)   An external door stop may be needed depending on application (abuse, excessive wind ).

   Proceed to page 30

# Commissioning with FCP

## Commissioning

1. Apply primary power to the operator, for pair of doors apply power to the Primary operator first, then to the Secondary operator.
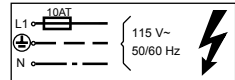
2. Commissioning - Enter **Code 021** Start commissioning, for pairs complete primary operator sequence first.

3. Door will automatically open and hold open at 20 degrees. 2 Audible Tones

4. Exit Preload - Enter **Code 020** door closes.

5. Door will automatically begin opening until the open door stop is reached, door will immediately close.(Checking door weight/ momentum)

   2 Audible Tones
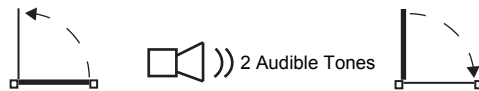
6. Escalating 6 tones will occur before door begins opening. (Door mounted safety sensor inhibiting)

   6 Audible Tones → This ends the programming step.

7. For pair applications, repeat sequence for secondary operator, begin at step 2. Primary operator will go to the open position until commissioning is completed.

## Additional Adjustments

Additional adjustments may need to be made after commissioning. Listed below are the most common adjustments. For additional adjustments refer to the Programming Charts.

*Hold open time = Code 10?
    *Push-N-Go OFF = Code 860
    *Close Check Force OFF = Code 320
   **Power Close for Lock Release ON = Code 581
   **Delay Time to Open = Code 591
    Power Pulse when Opening = Code 43?  *Over come wind stack pressure*
   *Double egress/ simultanious pairs = Code 830
       *Turn OFF delayed activation of secondary operator for pair applications.*

Detecting/ mask out safety functions details on page 31 = Code 023
Power Assist in AUTO ON = Code 862
Power Assist Hold open Time = Code 150
Repeat commissioning without system values details on page 31.
      On-Board Button = Code 6

  * Adjustments have been changed by entering Country code 7.
 ** Adjustment 591 needs to be made in conjunction with 581.

## Testing

⚠ Test the door in accordance with ANSI A156.19 Power Assist and Low Energy Power Operated Doors or ANSI A156.10 Power Operated Pedestrian Doors standards before putting the door into service and handing it over to the End-User.

# Code Descriptions/ BDM LED Displays

## Country Code

The Country code is available in firmware V3.02 and above. The country code provides preset values to aid the technician in installing the door to comply with ANSI Standard A156.19. Country code can be set with On-board button Code 7/1 or FCP code 031. To remove the country code adjustments perform a factory reset. Functions changed are listed below:

| | | |
|---|---|---|
| Hold Open Time=105 | Opening Speed=203 | Closing Speed=214 |
| Closing Force=311 | Close Check Force=320 | Safety Function BDM IN4=602 |
| Safety Function PDM IN4=651 | Pair without Overlap=830 | Push N Go OFF=860 |

## Detecting safety features (optional)

If the safety sensors in the opening and/or closing direction were not detected correctly or have been connected for the first time, they can be subsequently detected. Detect and save safety features 1–2

Code 3 on-board configuration  (FCP code = 023 )

| Procedure according to Code 023 or OB Code 3 | Conditions | Result |
|---|---|---|
| Waiting time 5 seconds (rising motor signal tone). The safety sensor connection type is detected. The door opens and closes again.<br><br>After the door reaches the open position, the number of testable safety sensors is indicated by the number of times the green LED (0–2 times). | Sensors must be correctly connected. Do not enter the detection area of the moving safety sensors. | If the testing of the safety feature "open" is successful, the door opens at full power.If the testing of the safety feature "close" is successful, the door closes at full power. The safety feature "open" is automatically suppressed if the door moves against a wall. |

## Repeat commissioning (without system values)

If the door arm or shaft position was changed or glass was installed in the door after commissioning.

Code 6 on-board configuration

| Procedure according to OB Code 6 | Conditions | Result |
|---|---|---|
| Operator rotates 20°, beeps 2x, Press & Release the OB button, operator will close slowly, automatically opens slowly & fully open & beeps 2X, close (beep 1x) followed by 5 beeps. and will fully open & close at normal speed. | Door travel path un-obstructed, no physical contact with the door during the learn cycles. Minimal wind load. | Door open & closed positions detected. Door weight detected.<br><br>Safety functions detection according to Code 023, OB Code 3. |

## Displays

Troubleshooting codes displays as E / H on the user interface. See the Troubleshooting Codes Chart in this manual for their meaning.

**LED displays on the base door module BDM**

| | |
|---|---|
| Yellow LED off | OK |
| Yellow LED on | Error (E). See the user interface or Skipper for the error display. See the Trouble shooting chart in this manual. |
| Green LED on | Power supply and module OK |
| Green LED off | No power supply or power supply overloaded. |
| Green LED flashes | A programming step was started via the on-board programming button. The process is on going. Press the button briefly to stop the process. |
| The Green LED flashes after the open position is reached | 0 × = No testable safety feature available. Door moves with low energy.<br>1 × = 1 testable safety feature available. Door moves with low energy.<br>2 × = 2 testable safety features available. Door moves with full energy. |

# Programming Table

| Code | | Function | Note |
|---|---|---|---|
| 01 | 1 | UR Door operator type 1102 | Remains after factory reset |
| 01 | 2 | UR Door operator type 1201 | Remains after factory reset |
| 02 | 0 | End procedure "Spring preload" | |
| 02 | 1 | Start commissioning | Only possible after entering system parameters 06x, 07x, 08x |
| 02 | 2 | Start Teach-In | |
| 02 | 3 | Detecting and storing of safety functions | Safety functions on terminals in3+4 PDM" and in4 BDM |
| 02 | 4 | Delete registration of unplugged modules MDM, PDM, EDM | The modules will be registered automatically at power-up |
| 03 | 1 | Preset 1=Handicap Function (=OB code 7/1) (=P105,203,214,311,320,602,651,830,860,870) | Reverse with factory reset |
| 04 | 0 | UR Reset | Starts program with calibration run |
| 04 | 1 | Factory Reset | All adjustments back to default values (see *) |
| 04 | 2 | UR Display firmware version | Example: r06_00 = V06.00 |
| 04 | 3 | UR Display number of cycles | Example: c10_302 = 10'302 cycles (max. 99?999?999) |
| 04 | 4 | UR Display number of operating hours | Example: h4_002 = 4002 hours (max.99'999'999) |
| 04 | 5 | Delete fault protocol | |
| 05 | 0 | Display registration module EDM | A0 =not registered,  A1 =registered |
| 05 | 1 | Display registration module PDM | A0 =not registered,  A1 =registered |
| 05 | 2 | Display registration module MDM | A0 =not registered, A1 =MDM-A registered, A2 =MDM-B registered |
| 05 | 3 | Display registration secondary door operator | A0 =Single door, A1 =primary door, A2 =secundary door |
| 05 | 4 | Display voltage intermediate circuit 40VDC | Example: u22_8 = 22,8V |
| 05 | 5 | Display voltage 24VDC supply | Example: u22_8 = 22,8V |
| 05 | 8 | Display temperature transformer (calculated) (from FW V03.10) | Example: t39_5 = 39,5 degree C |
| 05 | 9 | Display temperature motor (calculated) (from FW V03.10) | Example: t39_5 = 39,5 degree C |

| 06 | 1...8 | Door width  (=OB code 1/1) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 * | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | code |
| | | 0 | 28" | 32" | 36" | 40" | 44" | 48" | 52" | 56" | | | | | inches |

| 07 | 1...6 | Reveal  (=OB code 1/2) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 * | 1 | 2 | 3 | 4 | 5 | 6 | | | | | | code |
| | | 0 | 1-2" | 2-4" | 4-6" | 6-8.5" | 8.5-10.5" | 10.5-12.5" | | | | | | inches |

| 08 | 1...6 | Drive Arm Length  (=OB code 1/3) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 * | 1 | 2 | 3 | 4 | 5 | 6 | | | | | code |
| | | 0 | 11-3/8" | Custom | 13-3/4" | 13-3/4" | Custom | Custom | | | | | inches (Out-Swing Arm/ Push 1,2,3) (In-Swing Arm/ Pull 4,5,6) |

| 09 | 0...9 | Spring tension (=OB code 4) ONLY APPLIES to 1201 Operator | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 * | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | | |
| | | 0 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | | | mm |

| 10 | 0...F | UP Hold-open time for Auto Mode | | | | | | | | | | | | | | | | Is also determined by the teach-in. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 * | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | b | C | d | E | F | code |
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 15 | 20 | 40 | 60 | >/> | sec.  (>/>=step control) |

| 11 | 0...F | UP Hold-open time of activator for Beds | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 * | 9 | A | b | C | d | E | F | code |
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 15 | 20 | 40 | 60 | >/> | sec.  (>/>=step control) |

| 12 | 0...F | UP Key Switch Hold-open time | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 * | 4 | 5 | 6 | 7 | 8 | 9 | A | b | C | d | E | F | code |
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 15 | 20 | 40 | 60 | >/> | sec.  (>/>=step control) |

| 13 | 0...9 | UP Delay time Mode of op. OFF | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 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 | UP out3 EDM: Bell active time | | | | | | | | | | | | | 0 = Off |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 * | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | | code |
| | | 0 | 0.5 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | | | sec. |

| 15 | 0...9 | Power Assist Hold- open time after opening | | | | | | | | | | | | | | | | 0 = Off |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 * | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | b | C | d | E | F | code |
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12.5 | 15 | 17.5 | 20 | 40 | 60 | >/> | sec. |

UP=(P) Program mode. UR=(R) Read parameter mode

* = Default value

# Programming Table

| Code | | Function | Note |
|---|---|---|---|

**20  0...9  UP Opening speed**

| Code | 0 | 1 | 2 | 3 | 4 | 5 | 6 * | 7 | 8 | 9 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | 10 | 25 | 40 | 55 | 70 | 85 | 100 | 110 | 120 | 130 | | | | | | |

**21  0...9  UP Closing speed**

| Code | 0 | 1 | 2 | 3 | 4 | 5 | 6 * | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| % | 10 | 25 | 40 | 55 | 70 | 85 | 100 | 110 | 120 | 130 |

**22  0...9  Close check speed** — Note: Low Energy max 67N / F (+0 to -30%)

| code | 0 * | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| N  (no= no limit) | 2 | 5 | 8 | 11 | 14 | 17 | 20 | 23 | 26 | 30 |

**30  1...9  UP Motor force opening** — Note: Low Energy max 67N / F (+0 to -30%)

| code | 1 | 2 | 3 | 4 | 5 | 6 * | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| N  (no= no limit) | 40 | 55 | 67 | 80 | 95 | 120 | 150 | 175 | no |

**31  0...9  UP Motor force closing** — Note: Low energy max 67N / F (+0-30%) / S= only force of spring

| code | 0 | 1 | 2 | 3 | 4 | 5 | 6 * | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| N  (no = no limit) | S | 40 | 55 | 67 | 80 | 95 | 120 | 150 | 175 | no |

**32  0...8  UP Motor force at close check** — Note: Low energy max 67N / F (+0-30%) / S= only force of spring

| code | 0 | 1 | 2 | 3 | 4 | 5 | 6 * | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| N  (max) | S | 40 | 55 | 67 | 80 | 95 | 120 | 150 | 175 |

**33  0...6  Motor holding closed force    (New commissioning required! >H14)** — Note: % of the set spring force.

| code | 0 | 1 | 2 | 3 * | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| % | -90 | -60 | -30 | 0 | +30 | +60 | +90 |

**34  1...5  Power Assist closing force after opening** — Note: Force on door edge

| code | 0 * | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| N (S=Spring force) | S | 5 | 10 | 15 | 20 | 25 |

**35  0...9  Reversing time obstacle opening**

| code | 0 | 1 | 2 | 3 | 4 | 5 | 6 * | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| sec. | 5 | 4.5 | 4 | 3.5 | 3 | 2.5 | 2 | 1.5 | 1 | 0.5 |

**36  0...9  Reversing time obstacle closing**

| code | 0 | 1 | 2 | 3 | 4 | 5 | 6 * | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| sec. | 5 | 4.5 | 4 | 3.5 | 3 | 2.5 | 2 | 1.5 | 1 | 0.5 |

**37  1...5  Power Assist opening resistance**

| code | 0 | 1 | 2 | 3 * | 4 |
|---|---|---|---|---|---|
| N | 5 | 10 | 15 | 20 | 25 |

**38  0...6  UP Push-and-Go/ Power Assist start angle**

| code | 0 | 1 | 2 | 3 * | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| degree | 1 | 2 | 3 | 5 | 8 | 12 | 16 |

**39  0...5  UP Push-and-Close start angle** — Note: 0 = 5 degrees before the closed position

| code | 0 | 1 | 2 | 3 | 4 | 5 * |
|---|---|---|---|---|---|---|
| degree | - | 8 | 10 | 12 | 14 | 16 |

**40  0...9  Correction open position** — Note: Stop = open against endstop (not if H17 is displayed)

| code | 0 | 1 | 2 | 3 | 4 * | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| % | 95 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 105 | Stop |

**41  1...9  Advance angle for unlocking** — Note: Valid only from FW V02.10

| code | 1 | 2 | 3 | 4 | 5 | 6 | 7 * | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| degree | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 |

**42  0...9  Angle for close & open check** — Note: Note the context of the parameters P22x, P32x, P42x

| code | 0 * | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| degre | 0 | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 |

**43  0 *...3  Power pulse when opening** — Note: 0 = off,  3 = maximum

UP=(P) Program mode. UR=(R) Read parameter mode                                        * = Default value

## Programming Table

| Code | | Function | Note |
|---|---|---|---|
| **50** | 0 | No switch off safety sensors | |
| **50** | 1 | Switch off safety sensors in: P | Connect power of sensor to GNDct (PDM) |
| **50** | 2 * | Switch off safety sensors in: P, OFF if door closed >60s, OPEN >60s | Connect power of sensor to GNDct (PDM) |
| **51** | 0 | No switch off activator sensors | |
| **51** | 1 | Switch off sensor in: P | Connect power of sensor to GNDct (EDM) |
| **51** | 2 * | Switch off sensor in: P, OFF if door closed, OPEN | Connect power of sensor to GNDct (EDM) |
| **51** | 3 | Switch off sensor in: P, OFF and EXIT if door closed, OPEN | Connect power of sensor to GNDct (EDM) |
| **52** | 0 | No switch off of LED on User Interface USIN-7 | |
| **52** | 1 * | Switch off LEDs on user interface USIN-7 1 min. after use | LEDs switch on when needed |
| **55** | 0 | Locks in operating mode OFF | When using electric. strikes: 100% duty ratio required |
| **55** | 1 | Locks in operating mode OFF, EXIT | When using electric. strikes: 100% duty ratio required |
| **55** | 2 | Locks in operating mode OFF, AUTO, EXIT | When using electric. strikes: 100% duty ratio required |
| **55** | 3 * | Locks in operating mode OFF, AUTO, EXIT, P | |
| **56** | 0 * | out2 EDM: Without holding magnet function | |
| **56** | 1 | out2 EDM: Holding magnet active in closed position | |
| **56** | 2 | out2 EDM: Holding magnet active in open position | |
| **57** | 0 * | out1B EDM: Electric strike: current-free locked - fail secure | |
| **57** | 1 | out1B EDM: Electric strike/ Maglock: current-free unlocked - fail safe | Only for electric strike with 100% duty ratio |
| **57** | 2 | out1B EDM: No lock | |
| **57** | 3 | out1B EDM: Motorised lock | With return signal: Programm P59A or B |
| **58** | 0 * | No power close for electric strike release | |
| **58** | 1 | Power close for electric strike release | Requires min. unlocking time of 0,2s (P591) |
| **59** | 0...b | Delay time to open (or until response "R" for motorised lock) | Only valid if electric strike has to unlock |

| | 0 * | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | b | | | | code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,1 | 0.2 | 0.4 | 0.8 | 1.2 | 1.6 | 2 | 2.5 | 3 | 4 | R/NO | R/NC | | | | sec. / Response |

| Code | | Function | Note |
|---|---|---|---|
| **60** | 0 | in4 BDM: No function | Safety functions use only once with 60x, 64x, 65x! |
| **60** | 1 * | in4 BDM: Safety swing area | Contact type NO, NC detect with code P023 or OB 3 |
| **60** | 2 | in4 BDM: Safety closing with reversing function | Contact type NO, NC detect with code P023 or OB 3 |
| **60** | 3 | in4 BDM: Safety closing with creeping function | Contact type NO, NC detect with code P023 or OB 3 |
| **60** | 4 | in4 BDM: Safety opening with stop function | Contact type NO, NC detect with code P023 or OB 3 |
| **60** | 5 | in4 BDM: Safety opening with creeping function | Contact type NO, NC detect with code P023 or OB 3 |
| **60** | 6 | in4 BDM: Power-assistance pre-triggering | Function depending of op. mode and P85x-87x, x>=2 |
| **61** | 0 | out1 BDM: No function | |
| **61** | 1 * | out1 BDM: Message "General fault" | |
| **61** | 3 | out1 BDM: Message "door closed" | |
| **61** | 4 | out1 BDM: Message "door closed and locked" | Only with response of motorised lock |
| **61** | 5 | out1 BDM: Message "door open" | |
| **61** | 6 | out1 BDM: Message "Mode of operation OFF" | |
| **62** | 0 * | in1 PDM: No function | |
| **62** | 1 | in1 PDM: Emergency closing | Contact type NC |
| **62** | 2 | in1 PDM: Emergency opening | Contact type NC |
| **64** | 0 * | in3 PDM: Safety opening with stop function | Contact type NC+test, NC, NO detect with P023 or OB 3 |
| **64** | 1 | in3 PDM: Safety opening with function "Low-Energy" | Contact type NC+test, NC, NO detect with P023 or OB 3 |
| **64** | 2 | in3 PDM: Safety stop | Contact type NC+test, NC, NO detect with P023 or OB 3 |
| **64** | 3 | in3 PDM: Safety swing area | Contact type NC+test, NC, NO detect with P023 or OB 3 |
| **65** | 0 * | in4 PDM: Safety closing with reversing function | Contact type NC+test, NC, NO detect with P023 or OB 3 |
| **65** | 1 | in4 PDM: Safety closing with function "Low-Energy" | Contact type NC+test, NC, NO detect with P023 or OB 3 |
| **65** | 2 | in4 PDM: Safety stop | Contact type NC+test, NC, NO detect with P023 or OB 3 |
| **65** | 3 | in4 PDM: Safety swing area | Contact type NC+test, NC, NO detect with P023 or OB 3 |

UP=(P) Program mode. UR=(R) Read parameter mode

* = Default value

## Programming Table

| Code | | Function | Note |
|---|---|---|---|
| 70 | 0 * | out1 MDM: Message "door open" | MDM- A (Non Stocking part, special order) |
| 70 | 1 | out1 MDM: Battery in service | MDM- A (Non Stocking part, special order) |
| 71 | 0 * | out2 MDM: Message "door closed" | MDM- A (Non Stocking part, special order) |
| 72 | 0 * | out3 MDM: Message "door closed and locked" | MDM- A (Non Stocking part, special order) |
| 72 | 1 | out3 MDM: Message "General fault" | MDM- A (Non Stocking part, special order) |
| 73 | 0 * | out4 MDM: Door ready for operation | MDM- A (Non Stocking part, special order) |
| 73 | 1 | out4 MDM: Mode of operation OFF | MDM- A (Non Stocking part, special order) |
| 74 | 0 | in1 MDM: no function | MDM- A (Non Stocking part, special order) |
| 74 | 1 * | in1 MDM: Mode of operation OFF | MDM- A (Non Stocking part, special order) |
| 75 | 0 | in2 MDM: no function | MDM- A (Non Stocking part, special order) |
| 75 | 1 * | in2 MDM: Mode of operation OPEN | MDM- A (Non Stocking part, special order) |
| 76 | 0 | in3 MDM: no function | MDM- A (Non Stocking part, special order) |
| 76 | 1 * | in3 MDM: Mode of operation EXIT | MDM- A (Non Stocking part, special order) |
| 77 | 0 | in4 MDM: no function | MDM- A (Non Stocking part, special order) |
| 77 | 1 * | in4 MDM: Passage for beds | MDM- A (Non Stocking part, special order) |
| 77 | 2 | in4 MDM: Operation mode MANUAL | MDM- A (Non Stocking part, special order) |
| 80 | 0 * | UP  out3 EDM: Bell trigger: Activator outside | |
| 80 | 1 | UP  out3 EDM: Bell trigger: Activator inside | |
| 80 | 2 | UP  out3 EDM: Bell trigger: Key switch | |
| 81 | 0...4 | UP  Button pressed time for handicapped | Valid for inside/outside and key switch activations |

| 0 * | 1 | 2 | 3 | 4 | | | | | | | | | | code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 5 | | | | | | | | | | sec. |

| Code | | Function | Note |
|---|---|---|---|
| 82 | 0 * | Emergency operation in case of faulty safety > for low risk | At E31-36: Creep speed with force <67N |
| 82 | 1 | Safety operation in case of faulty safety > for high risk | At E31-36: Manual operation |
| 83 | 0 | Double wing door without overlapping, synchronous | Application see T-1763, T1753 |
| 83 | 1 * | Double wing door with overlapping | Application see T-1763, T1753 |
| 83 | 2 | Double wing door with "Door coordinator device" MDC | Application see T-1763, T1753 |
| 84 | 0 * | Battery switches off after 10s | |
| 84 | 1 | Battery operation in all modes of operation | |
| 84 | 2 | Battery operation in AUTO, EXIT, OPEN | In all other modes, the battery switches off after 10s |
| 84 | 3 | Opens with battery in OFF, AUTO, EXIT, OPEN | In all other modes, the battery switches off after 10s |
| 84 | 4 | Opens with battery in AUTO, EXIT, OPEN | In all other modes, the battery switches off after 10s |
| 85 | 0 * | No opening assistance in MANUAL | |
| 85 | 2 | Power-assistance in MANUAL incl. pre-trigger by activator in-/outside | + Triggered by angle or in4 BDM  (in4 only with P510) |
| 85 | 3 | Power-assistance in MANUAL | Triggered by angle or pre-release by IN4 BDM |
| 86 | 0 | No opening assistance in AUTO | |
| 86 | 1 * | Push & Go in AUTO | |
| 86 | 2 | Power-assistance in AUTO | Triggered by angle or pre-release by IN4 BDM |
| 87 | 0 | No opening assistance in EXIT | |
| 87 | 1 * | Push & Go in EXIT | |
| 87 | 2 | Power-assistance in EXIT | Triggered by angle or pre-release by IN4 BDM |
| 90 | 0 * | Programming button (BDM) released | |
| 90 | 1 | Programming button (BDM) disabled | |
| 91 | 0...4 | UP  Access code lock for control unit | 0 = off |

| 0 * | 1 | 2 | 3 | 4 | | | | | | | | | | code |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -- | 111 | 222 | 333 | 123 | | | | | | | | | | code |

| Code | | Function | Note |
|---|---|---|---|
| 92 | 0 * | User parameter enabled | |
| 92 | 1 | User parameter disabled | |

UP=(P) Program mode. UR=(R) Read parameter mode          * = Default value
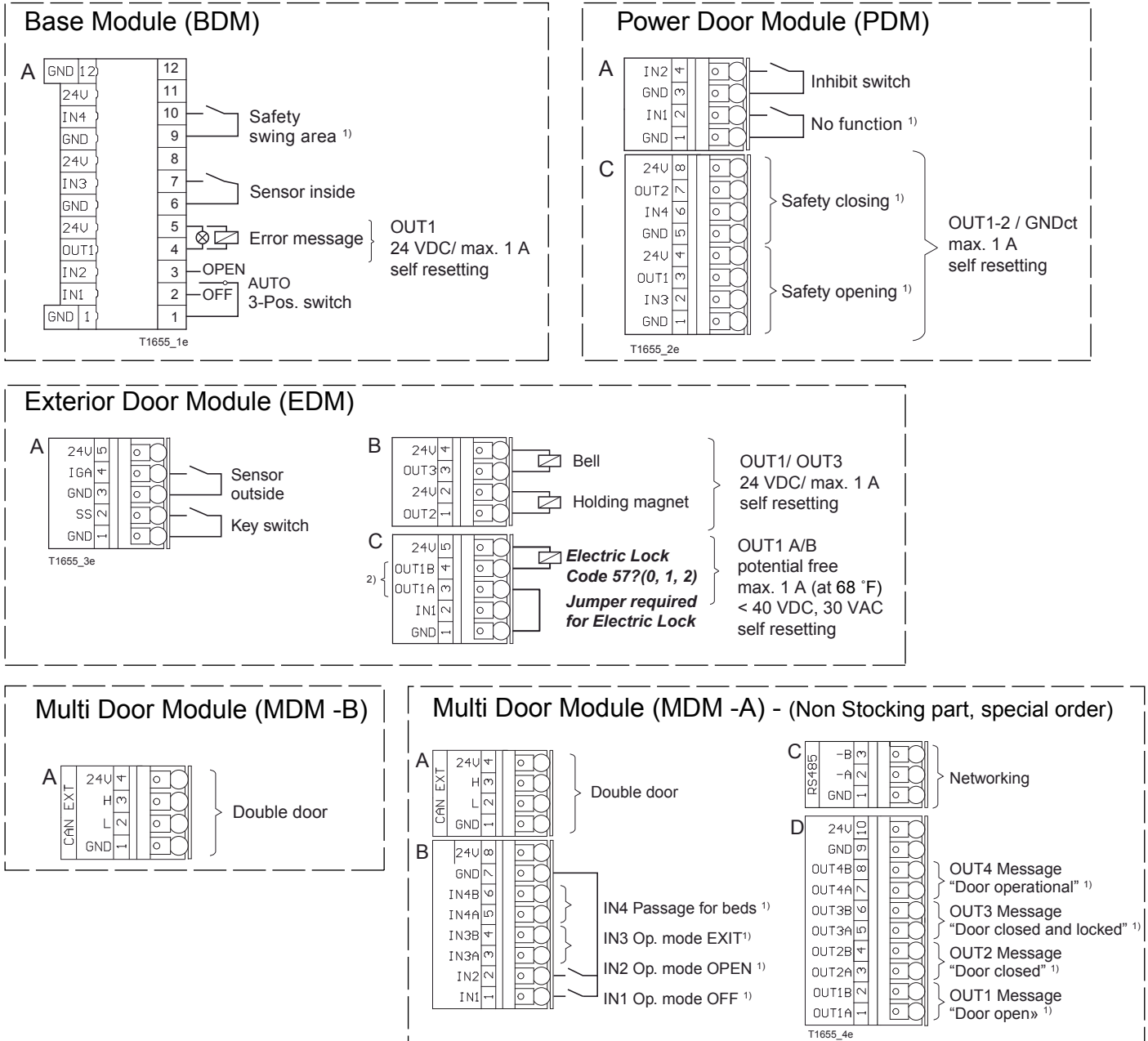
# Troubleshooting Codes

* E = Error | H = Hint

| * No. | Fault | Behaviour of System | Reset |
|---|---|---|---|
| E0x | Internal test negative. Fatal error. | Safety operating | Power OFF-ON. Possibly press button 5s |
| E11 | Motorised lock not unlocked | Door blocked | Automatically if OK |
| E12 | Motorised lock not locked | | Automatically if OK |
| E23 | CAN connection EDM interrupted | Safety operating mode | |
| E24 | CAN connection PDM interrupted | Safety operating mode | |
| E25 | CAN connection MDM interrupted | Safety operating mode | |
| E26 | CAN connection primary - second. interrupted | Primary continues, second. stays closed | |
| E31 | Safety open > 1 min. active, test neg. | According safety function | Automatically if OK |
| E32 | Safety closing > 1 min. active,  test neg. | According safety function | Automatically if OK |
| E33 | Safety stop > 1 min. active, test neg. | According safety function | Automatically if OK |
| E34 | Safety swing area > 1 min. active,  test neg. | According safety function | Automatically if OK |
| E35 | Safety open creep > 1 min. active, test neg. | According safety function | Automatically if OK |
| E36 | Safety close creep > 1 min. active, test neg. | According safety function | Automatically if OK |
| E37 | Safety open Low En. > 1min. active, test neg. | According safety function | Automatically if OK |
| E38 | Safety clos. Low En. >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 |
| E45 | Emergency open > 1 min. active | Door remains open | Automatically if OK |
| E46 | Emergency close > 1 min. active | Door closes and remains closed | Automatically if OK. |
| E47 | Inhibit switch > 1 min. active | Door closes without hold open time | Automatically if OK. |
| E48 | Activator bed passage > 1min. active | Door remains open | Automatically if OK |
| E51 | Encoder not working | Safety operating  mode | Reset |
| E61 | Power supply 40V outside of admissible range | Safety operating mode | Automatically if OK |
| E62 | Power Supply 24V outside of permissible range | Safety op. mode | Automatically if OK |
| E63 | Power Supply 24V  short circuit | Safety op. mode | Automatically after 20s  if OK |
| E64 | Motor hot | Safety operating  mode | Automatically after cooling down |
| E66 | Motor faulty. Interruption of motor control. | Safety operating  mode. No braking! | Replace motor |
| E68 | Power failure   (Power on) | | |
| E99 | Error at secondary drive unit | | |
| H01 | System was started | Safety op. mode | Reset |
| H02 | Factory reset required (VEE unreadable) | Safety mode | Factory reset |
| H11 | Parameter 06... not yet programmed | Safety operation | Enter parameter |
| H12 | Parameter 07... not yet programmed | Safety operation | Enter parameter |
| H13 | Parameter 08... not yet programmed | Safety operation | Enter parameter |
| H14 | Commissioning not executed | Safety operation | Start commissioning |
| H15 | Timeout moving. Door blocked. Motor faulty | Commissioning is canceled | Restart commissioning |
| H16 | Mass detection faulty (wind, opening angle) | Autom. detection is terminated | Restart automatic detection |
| H17 | Open endstop too soft. Motor may overheat | | |
| H18 | Safety function is used more than once | | See P60x, P64x, P65x |
| H19 | Detection of safety functions pending | | P023 or OB code 3 |
| H21 | Teach-In: Door moves >25 s before start | Abort Teach-In | New Teach-In |
| H22 | Teach-In: No start within 60s | Abort Teach-In | New Teach-In |
| H23 | Teach-In: Movement to slow. >60 s | Abort Teach-In | New Teach-In |
| H31 | Obstacle detection at opening | Door reverses | Automatically, Display 20s. |
| H32 | Obstacle detected at closing | Door reverses | Automatically, Display 20s. |
| H33 | Permanent obstacle at opening | Safety operation | Reset |
| H34 | Permanent obstacle at closing | Safety operation | Reset |
| H46 | FW missmatch in primary and secondary | | |
| H62 | Calibration run in closing direction | Searches closed position | At the end of movement |
| H67 | Absolute position not found yet | Slow opening movement | |
| H71 | Battery mode | Door moves slowly | Power supply return |
| H74 | Motor current in open position too high | E64 can trigger later | P404. Avoid wind load. Install HM |

# Control Connection Diagram

⚠ Connect components only with primary power removed (current-less).

## Terminal Allocation in Default Programming

### Base Module (BDM)

| A | | |
|---|---|---|
| GND | 12 | 12 |
| 24U | | 11 |
| IN4 | | 10 — Safety swing area [1] |
| GND | | 9 |
| 24U | | 8 |
| IN3 | | 7 — Sensor inside |
| GND | | 6 |
| 24U | | 5 — ⊗ Error message — OUT1 24 VDC/ max. 1 A self resetting |
| OUT1 | | 4 |
| IN2 | | 3 — OPEN |
| IN1 | | 2 — AUTO 3-Pos. switch / OFF |
| GND | 1 | 1 |

T1655_1e

### Power Door Module (PDM)

| A | | |
|---|---|---|
| IN2 | 4 | Inhibit switch |
| GND | 3 | |
| IN1 | 2 | No function [1] |
| GND | 1 | |

| C | | |
|---|---|---|
| 24U | 8 | |
| OUT2 | 7 | |
| IN4 | 6 | Safety closing [1] |
| GND | 5 | |
| 24U | 4 | OUT1-2 / GNDct max. 1 A self resetting |
| OUT1 | 3 | |
| IN3 | 2 | Safety opening [1] |
| GND | 1 | |

T1655_2e

### Exterior Door Module (EDM)

| A | | |
|---|---|---|
| 24U | 5 | |
| IGA | 4 | Sensor outside |
| GND | 3 | |
| SS | 2 | Key switch |
| GND | 1 | |

T1655_3e

| B | | |
|---|---|---|
| 24U | 4 | |
| OUT3 | 3 | Bell |
| 24U | 2 | OUT1/ OUT3 24 VDC/ max. 1 A self resetting |
| OUT2 | 1 | Holding magnet |

| C | | |
|---|---|---|
| 24U | 5 | |
| OUT1B | 4 | *Electric Lock Code 57?(0, 1, 2)* |
| OUT1A | 3 | |
| IN1 | 2 | *Jumper required for Electric Lock* |
| GND | 1 | |

2) OUT1 A/B potential free max. 1 A (at 68 °F) < 40 VDC, 30 VAC self resetting

### Multi Door Module (MDM -B)

| A | | |
|---|---|---|
| CAN EXT | 24U | 4 |
| | H | 3 | Double door |
| | L | 2 | |
| | GND | 1 | |

### Multi Door Module (MDM -A) - (Non Stocking part, special order)

| A | | |
|---|---|---|
| CAN EXT | 24U | 4 |
| | H | 3 | Double door |
| | L | 2 | |
| | GND | 1 | |

| B | | |
|---|---|---|
| 24U | 8 | |
| GND | 7 | |
| IN4B | 6 | IN4 Passage for beds [1] |
| IN4A | 5 | |
| IN3B | 4 | IN3 Op. mode EXIT [1] |
| IN3A | 3 | |
| IN2 | 2 | IN2 Op. mode OPEN [1] |
| IN1 | 1 | IN1 Op. mode OFF [1] |

| C | | |
|---|---|---|
| RS485 | -B | 3 |
| | -A | 2 | Networking |
| | GND | 1 | |

| D | | |
|---|---|---|
| 24U | 10 | |
| GND | 9 | |
| OUT4B | 8 | OUT4 Message "Door operational" [1] |
| OUT4A | 7 | |
| OUT3B | 6 | OUT3 Message "Door closed and locked" [1] |
| OUT3A | 5 | |
| OUT2B | 4 | OUT2 Message "Door closed" [1] |
| OUT2A | 3 | |
| OUT1B | 2 | OUT1 Message "Door open» [1] |
| OUT1A | 1 | |

T1655_4e

1) Function programmable
2) OUT 1A & OUT 1B are Normally Open dry contact
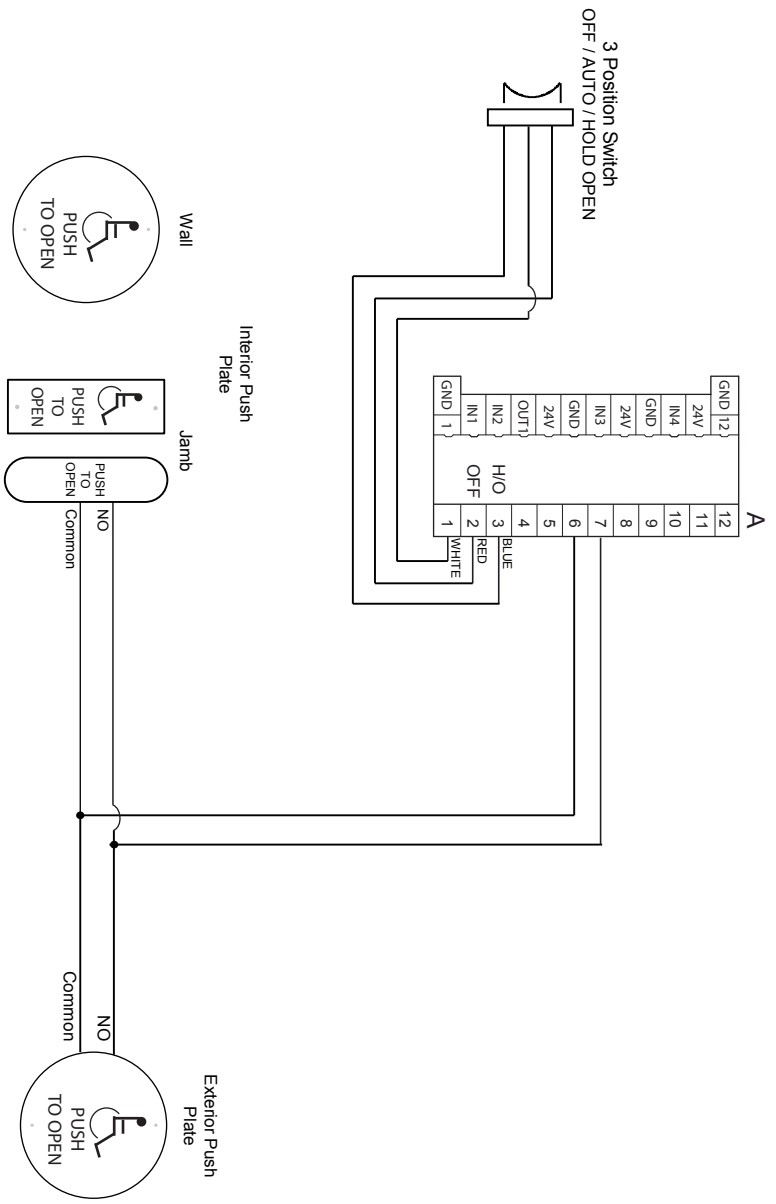Load on power supply 24 VDC max. 1.5 A/36 W

# Connection Diagram
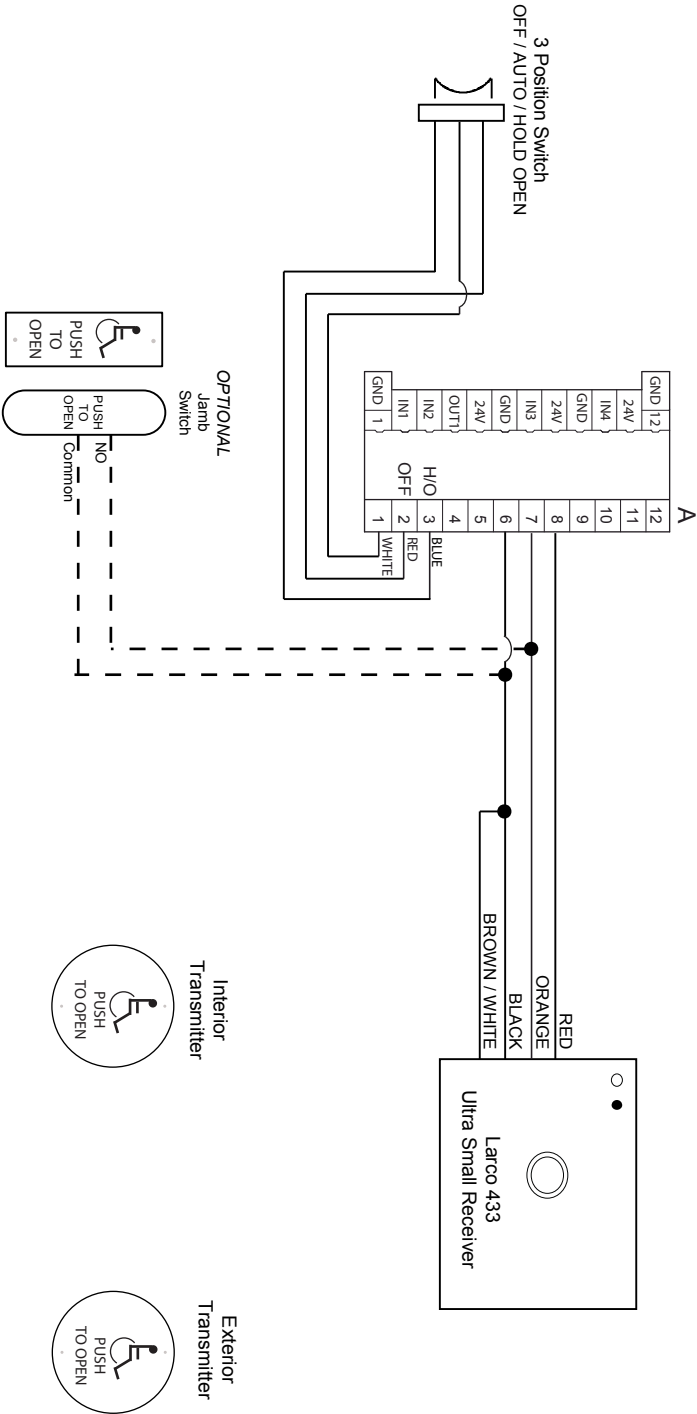
NOTE:
1) Enter the Country Code (OBC=7/1) or (FCP=031) as this will limit/ reduce your opening and closing speeds, forces, turns Push n Go function OFF and sets Hold Open time to 5 seconds.
2) To make additional adjustments an FCP - Functional Control Panel will be needed.
3) Adjust operator to be in accordance with ANSI A156.19
4) Refer to Larco Ultra-Small Receiver Installation Guide for proper setup and adjustments.

1102/ 1201 Basic Board (BDM)

3 Position Switch
OFF / AUTO / HOLD OPEN

OPTIONAL Jamb Switch

PUSH TO OPEN

PUSH TO OPEN Common
NO

Interior Transmitter
PUSH TO OPEN

Exterior Transmitter
PUSH TO OPEN

Larco 433 Ultra Small Receiver

RED
ORANGE
BLACK
BROWN / WHITE

RED
BLUE
WHITE

GND 12 | 12
24V | 11
24V | 10
GND | 9
IN4 | 8
24V | 7
IN3 | 6
GND | 5
OUT1 | 4
IN2 | 3
IN1 | 2
GND 1 | 1

H/O OFF

A

**TORMAX USA Inc.**
*12859 Wetmore Rd. San Antonio, Tx 78247*

| Title: | 1201/ 1102 Single with Larco 433 Activation |
|---|---|
| Drawn by: Jerry Morgan | Revised by: GDM |
| Date: 8/29/17 | |
| Drawing #: 1201002 | Revision #: 02 |

# Connection Diagram



NOTE:
1) Enter the Country Code (OBC=7/1) or (FCP=031) as this will limit/ reduce your opening and closing speeds, forces, turns Push n Go function OFF and sets Hold Open time to 5 seconds.
2) To make additional adjustments an FCP - Functional Control Panel will be needed.
3) Adjust operator in accordance with ANSI A156.19.

3 Position Switch
OFF / AUTO / HOLD OPEN

Wall

PUSH TO OPEN

Interior Push Plate

PUSH TO OPEN

Jamb

PUSH TO OPEN

Common  NO

1102/ 1201 Basic Board (BDM)

A

| GND | 12 | 12 |
| --- | --- | --- |
| | 24V | 11 |
| | 24V | 10 |
| IN4 | GND | 9 |
| | 24V | 8 |
| IN3 | GND | 7 |
| | 24V | 6 |
| OUT1 | | 5 |
| IN2 | | 4 | BLUE |
| IN1 | | 3 | RED |
| GND | 1 | 2 | WHITE |
| | | 1 | |

H/O
OFF

Common  NO

Exterior Push Plate

PUSH TO OPEN

**TORMAX USA Inc.**
*12859 Wetmore Rd. San Antonio, Tx 78247*

Title: 1201/ 1102 LE Single with hard wired push plates

| Drawn by: Jerry Morgan | Revised by: GDM |
| --- | --- |
| Date: 8/29/17 | |
| Drawing #: 1201001 | Revision #: 02 |
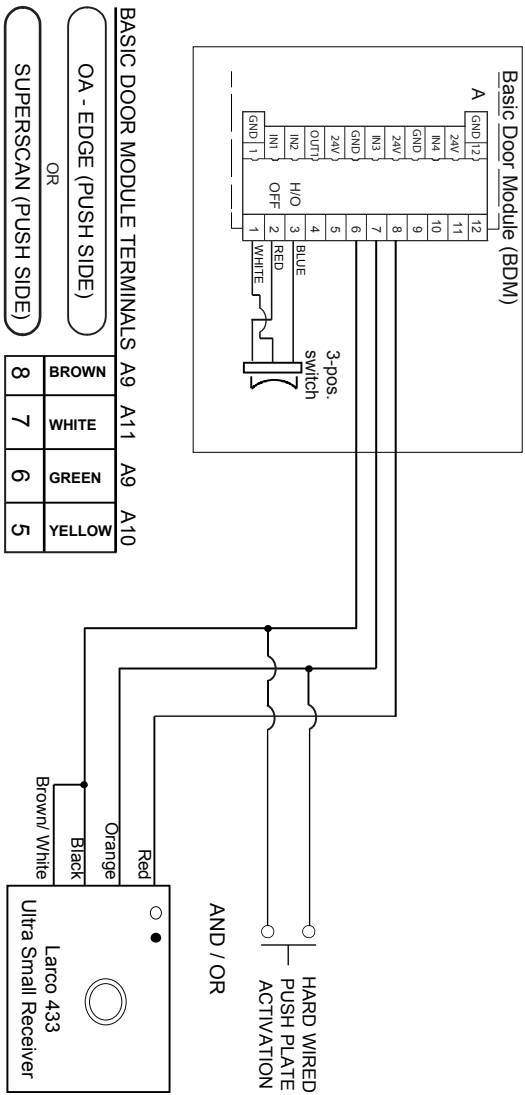
39

NOTE:
1) Determine which door mounted sensor is being installed reference wiring connections listed to the right.
2) Enter Code 602 to program IN4 for Safety Closing with Reversing Function.
3) Adjust operator and sensors to be in accordance with ANSI A156.19.
4) Refer to manufacturers Installation/ Users guides to setup and adjust the OA - EDGE, SuperScan, and Larco Receiver.

Basic Door Module (BDM)

3-pos. switch

H/O
OFF

WHITE
RED
BLUE

BASIC DOOR MODULE TERMINALS

| | | A9 | A11 | A9 | A10 |
|---|---|---|---|---|---|

OA - EDGE (PUSH SIDE)

OR

SUPERSCAN (PUSH SIDE)

| 8 | BROWN |
| 7 | WHITE |
| 6 | GREEN |
| 5 | YELLOW |

Brown/ White

Black

Orange

Red

AND / OR

HARD WIRED
PUSH PLATE
ACTIVATION

Larco 433
Ultra Small Receiver

# Connection Diagram

NOTE:
1) Do not enter the Country Code (OBC=7/1) or (FCP=031) as this will limit/ reduce your opening and closing forces.
2) Reference wiring connections listed to the right for door mounted sensor being installed.
3) If installing an OA-EDGE sensor on both sides of the door the Brown & White wires will be connected to pins C1 & C4 only.
4) The OA-EDGE monitoring settings should be Dipswitch A7=OFF, A8=OFF, B3=ON.
5) Adjust operator and sensors to be in accordance with ANSI A156.10.
6) Refer to manufacturers Installation/ Users guides to setup and adjust the OA - Edge, SuperScan, Eagle and/ or Larco Receiver.

**POWER DOOR MODULE TERMINALS C5  C6  C7  C8**

OA - EDGE (PUSH SIDE)

| 7 | 6 | 5 | 8 |
|---|---|---|---|
| BROWN | YELLOW | GREEN | WHITE |

OR

SUPERSCAN (PUSH SIDE)

**POWER DOOR MODULE TERMINALS C1  C2  C3  C4**

OA - EDGE (PULL SIDE)

| 7 | 6 | 5 | 8 |
|---|---|---|---|
| BROWN | PINK | BLUE | WHITE |

OR

SUPERSCAN (PULL SIDE)

Basic Door Module (BDM)

Power Door Module -(PDM)

Safety opening (Pull)
Safety closing (Push)
No function
Inhibit switch
3-pos. switch
OFF
H/O
WHITE
RED
BLUE

EAGLE SENSOR

Brown/ White
Black
Orange
Red

AND / OR

Larco 433
Ultra Small Receiver

AND / OR

HARD WIRED
PUSH PLATE
ACTIVATION

NOTE:
1) Do not enter the Country Code (OBC=7/1) or (FCP=031) as this will limit/ reduce your opening/ closing speeds and forces.
2) Install jumper into PDM C terminal pin 6,7 as shown above for power assist close functionality.
3) Adjust operator and sensors to be in accordance with ANSI A156.10.
3) Refer to manufacturers Installation/ Users guides to setup and adjust the LZR Microscan, Eagle and/ or Larco Receiver.

BASIC DOOR MODULE TERMINALS

LZR Microscan (ACTIVATION) (OVERHEAD PRESENCE)

| | |
|---|---|
| WHITE | A6 |
| GREEN | A7 |
| WHITE BLACK | A9 |
| GREEN BLACK | A10 |

POWER DOOR MODULE TERMINALS C1 C2 C3 C4

LZR Microscan (PULL SIDE)

| | |
|---|---|
| BLACK | C1 |
| YELLOW RED | C2 |
| WHITE RED | C3 |
| RED | C4 |

Basic Door Module (BDM)

A
GND 12
24V 11
IN4 10
GND 9
24V 8
IN3 7
GND 6
24V 5
OUT1 4
IN2 3
IN1 2
GND 1

H/O
OFF
3-pos. switch

1 WHITE
2 RED
3 BLUE

Power Door Module-(PDM)

A
IN2 4
GND 3
IN1 2
GND 1

C
24V 8
OUT2 7
IN4 6
GND 5
24V 4
OUT1 3
IN3 2
GND 1

Inhibit switch
No function
Jumper
Safety closing (Push)
Safety opening (Pull)

EAGLE SENSOR

1 2 3 4 5

AND / OR

Brown/ White
Black
Orange
Red

AND / OR

HARD WIRED PUSH PLATE ACTIVATION

Larco 433 Ultra Small Receiver

Closed Door Position Switch

LZR Microscan GREY GREY GREY

LZR Microscan ORANGE ORANGE ORANGE

**TORMAX USA Inc.**
*12859 Wetmore Rd. San Antonio, Tx 78247*

Title: FE 1201 / 1102 Single with LZR Microscan Sensors, Larco Receiver, Eagle, F/W 3.00

Drawn by: Jerry Morgan

Date: 8/22/17 | Revised by:

Drawing #: 1201013 | Revision #:

# Connection Diagram
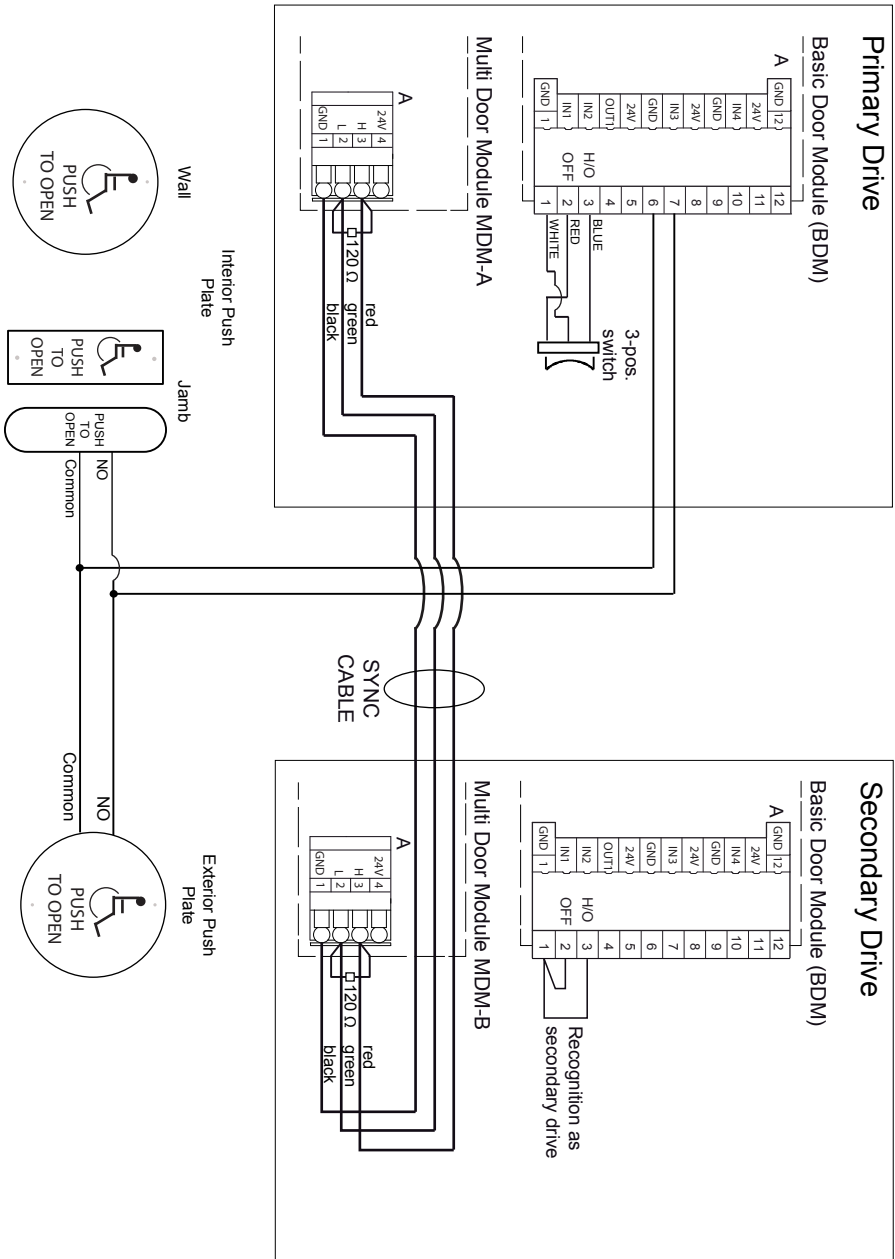
NOTE:
1) Enter the Country Code (OBC=7/1) or (FCP=031) as this will limit/ reduce your opening and closing speeds, forces, turns Push n Go function OFF and sets Hold Open time to 5 seconds.
2) To make additional adjustments an FCP - Functional Control Panel will be needed.
3) Adjust operators to be in accordance with ANSI A156.19
4) Sync cable has a 120 ohm resistor at both ends.
5) Jumpers must be connected to Secondary operator A Terminals 1 to 2, 1 to 3.

Primary Drive

Basic Door Module (BDM)

Multi Door Module MDM-A

Wall

Interior Push Plate

Jamb

PUSH TO OPEN

PUSH TO OPEN Common

NO

3-pos. switch

WHITE
RED
BLUE

red
green
black

120 Ω

Secondary Drive

Basic Door Module (BDM)

Recognition as secondary drive

Multi Door Module MDM-B

SYNC CABLE

Exterior Push Plate

PUSH TO OPEN

Common

NO

red
green
black

120 Ω

**TORMAX USA Inc.**
12859 Wetmore Rd, San Antonio, Tx 78247

| | |
|---|---|
| Title: 1201/ 1102 LE Pair with Hard Wired Push Plates | |
| Drawn by: Jerry Morgan | |
| Date: 8/29/17 | Revised by: GDM |
| Drawing #: 1201003 | Revision #: 02 |

# Connection Diagram
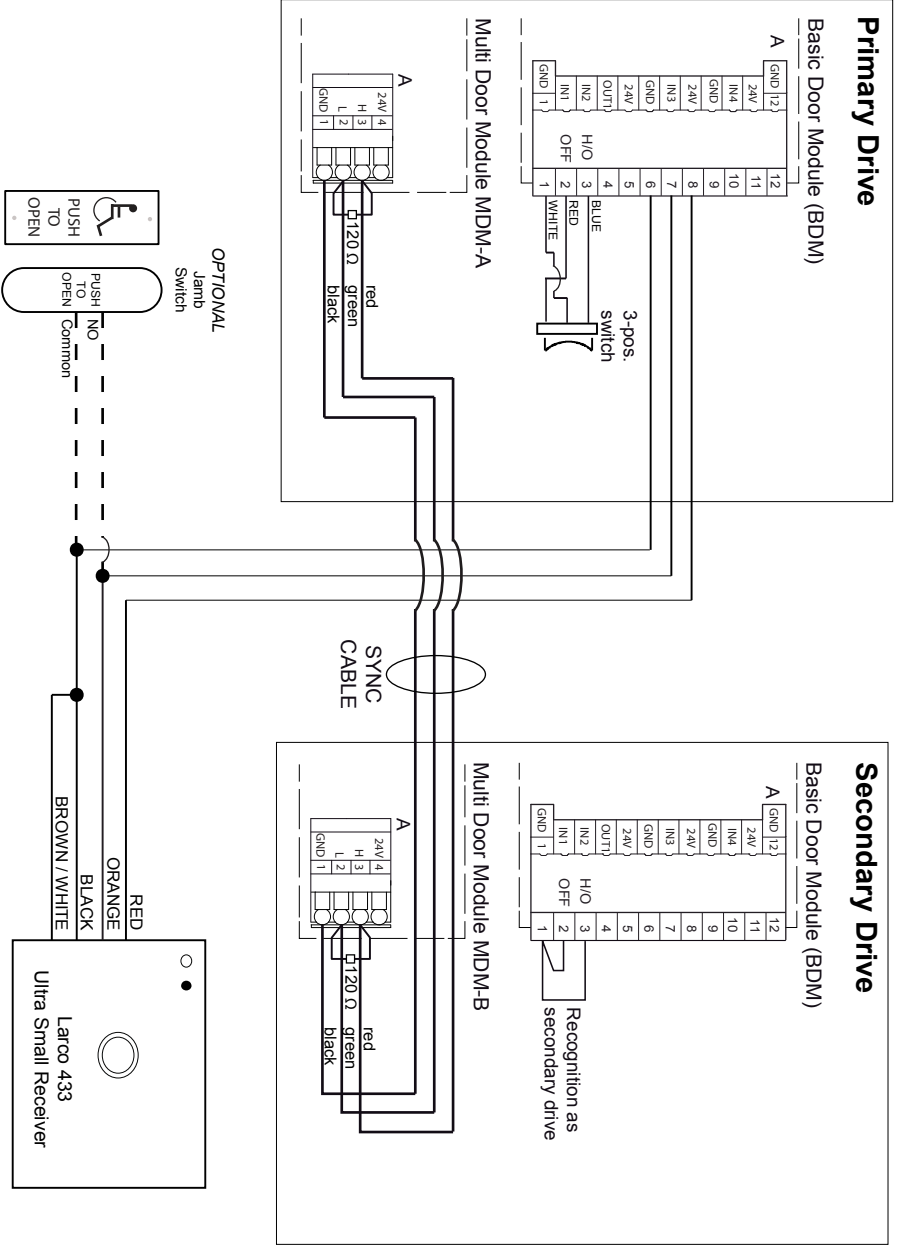


**Primary Drive**

Basic Door Module (BDM)

Multi Door Module MDM-A

OPTIONAL
Jamb
Switch

PUSH
TO
OPEN

3-pos.
switch

120 Ω
red
green
black

SYNC
CABLE

**Secondary Drive**

Basic Door Module (BDM)

Multi Door Module MDM-B

Recognition as
secondary drive

120 Ω
red
green
black

PUSH
TO
OPEN    Common
NO

Larco 433
Ultra Small Receiver

BROWN / WHITE
BLACK
ORANGE
RED

Interior
Transmitter

PUSH
TO OPEN

Exterior
Transmitter

PUSH
TO OPEN

NOTE:
1) Enter the Country Code (OBC=7/1) or (FCP=031) as this will limit/ reduce your opening and closing speeds,
   forces, turns Push n Go function OFF and sets Hold Open time to 5 seconds.
2) To make additional adjustments an FCP - Functional Control Panel will be needed.
3) Adjust operators to be in accordance with ANSI A156.19
4) Sync cable has a 120 ohm resistor at both ends.
5) Refer to Larco Ultra-Small Receiver Installation Guide for proper setup and adjustments.

TORMAX USA Inc.
12859 Wetmore Rd. San Antonio, Tx. 78247

Title: 1201/ 1102 LE Pair with Larco 433 Receiver
Activation, Optional Jamb Switch

| | |
|---|---|
| Drawn by: Jerry Morgan | |
| Date:  8/30/17 | Revised by:  GDM |
| Drawing #:  1201004 | Revision #:  02 |
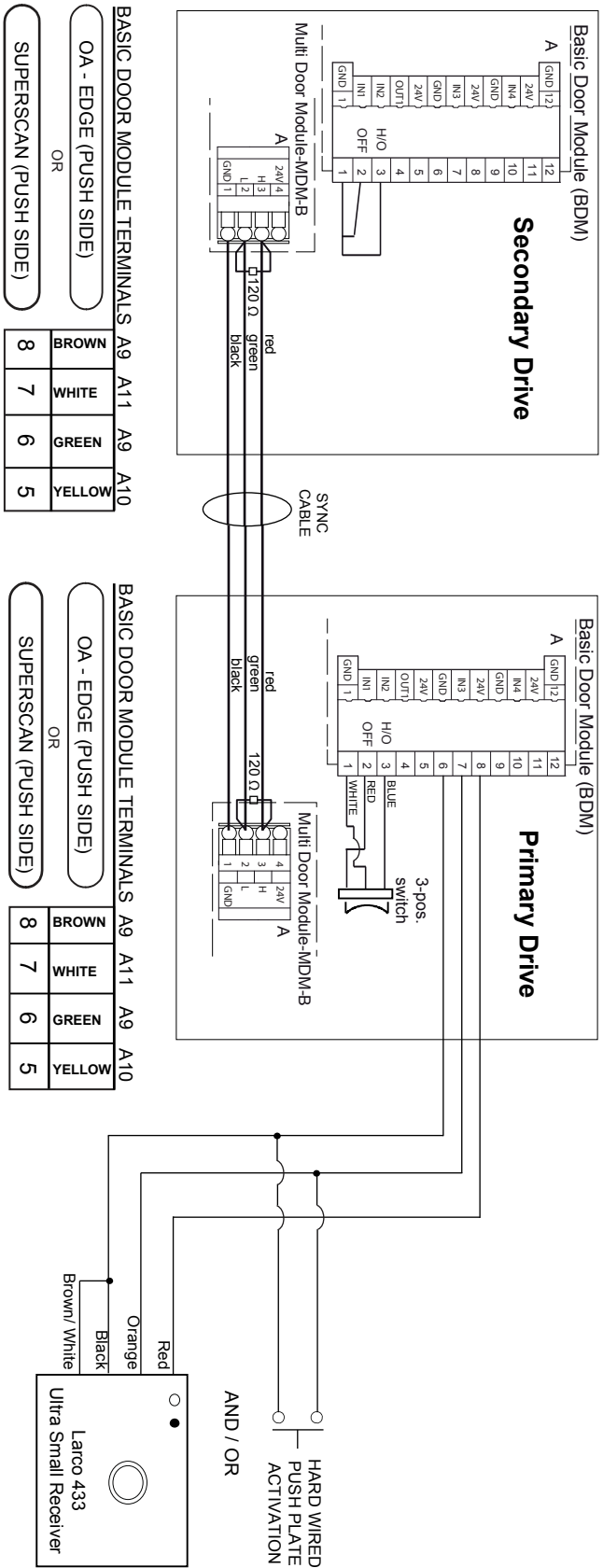
NOTE:
1) Determine which door mounted sensor is being installed reference wiring connections listed to the right.
2) Reference 1201/1102 Installation & Service manual for details of dual operator installation and commissioning.
3) Enter Code 602 to program IN4 for Safety Closing with Reversing Function.
4) Adjust operator and sensors to be in accordance with ANSI A156.19.
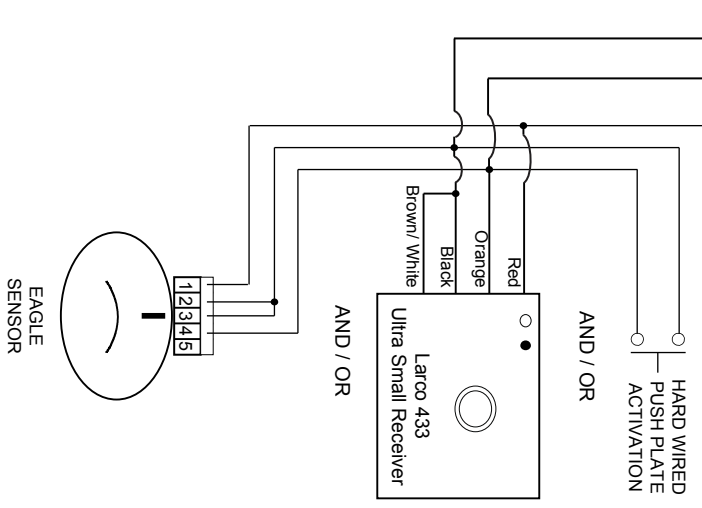5) Refer to manufacturers Installation/ Users guides to setup and adjust the OA - EDGE, SuperScan and Larco Receiver.

**Secondary Drive**
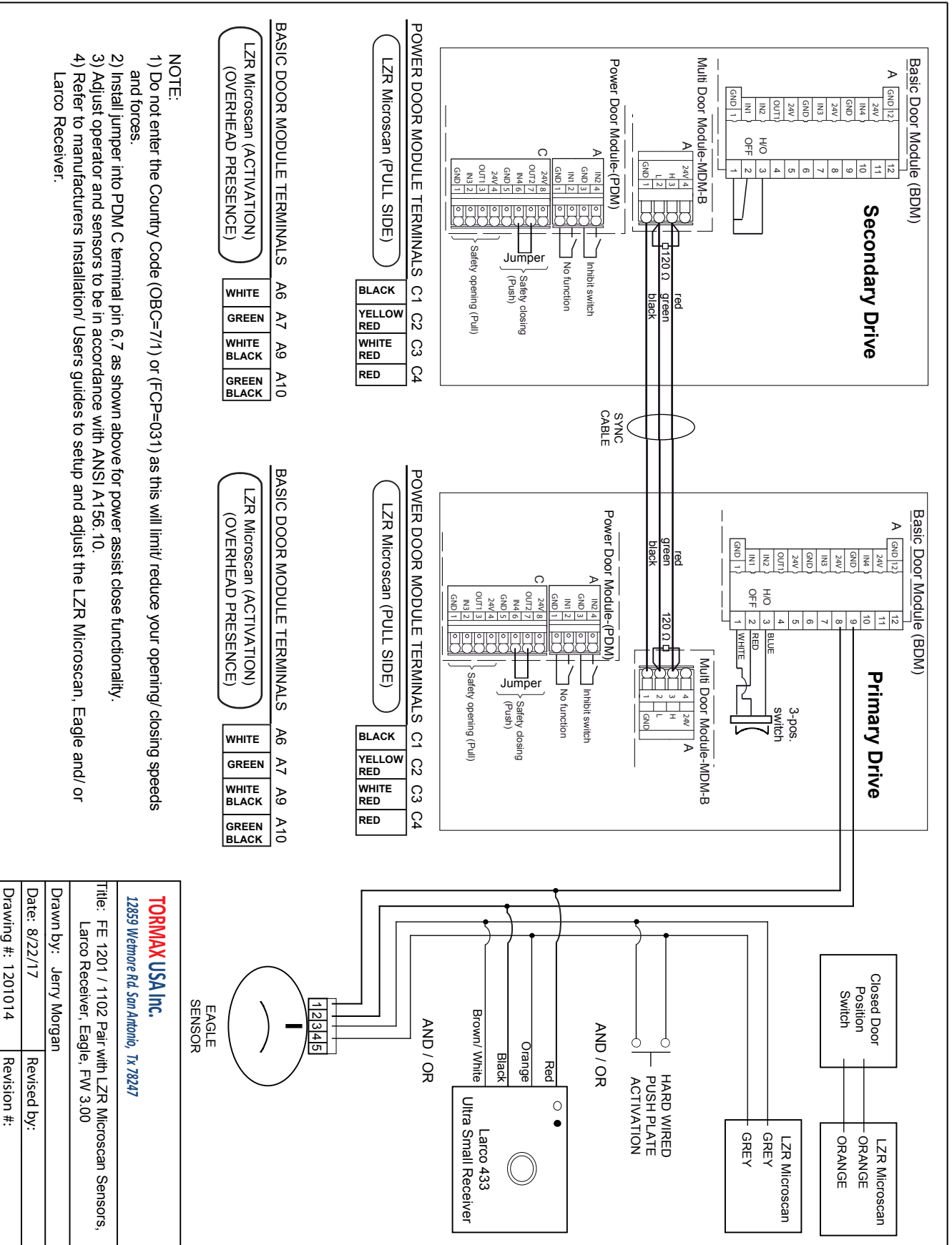
Basic Door Module (BDM)

Multi Door Module-MDM-B

BASIC DOOR MODULE TERMINALS A9  A11  A9  A10

OA - EDGE (PUSH SIDE)

OR

SUPERSCAN (PUSH SIDE)

| 8 | BROWN |
| 7 | WHITE |
| 6 | GREEN |
| 5 | YELLOW |

SYNC CABLE

**Primary Drive**

Basic Door Module (BDM)

Multi Door Module-MDM-B

3-pos. switch

BASIC DOOR MODULE TERMINALS A9  A11  A9  A10

OA - EDGE (PUSH SIDE)

OR

SUPERSCAN (PUSH SIDE)

| 8 | BROWN |
| 7 | WHITE |
| 6 | GREEN |
| 5 | YELLOW |

Larco 433 Ultra Small Receiver

Brown/ White
Black
Orange
Red

HARD WIRED PUSH PLATE ACTIVATION

AND / OR

TORMAX USA Inc.
12859 Wetmore Rd, San Antonio, Tx 78247

Title: 1201 / 1102 Pair LE with Door Mounted Sensors
Push Side, Larco Receiver FW 3.00

| | |
|---|---|
| Drawn by: Jerry Morgan | Revised by: |
| Date: 8/29/17 | Revised by: GDM |
| Drawing #: 1201009 | Revision #: 02 |

45

# Connection Diagram

Basic Door Module (BDM)

**Secondary Drive**

A | GND 12
24V 11
IN4 10
GND 9
24V 8
GND 7
IN3 6
24V 5
OUT1 4
IN2 3
IN1 2
GND 1

Multi Door Module-MDM-B

H/O 3
OFF 2
1

Power Door Module-(PDM)

A | 24V 4
H 3
L 2
GND 1

120 Ω
red
green
black

C | GND 1
IN3 2
OUT1 3
24V 4
GND 5
IN4 6
OUT2 7
24V 8

A | IN2 4
GND 3
IN1 2
GND 1

Safety opening (Pull)
Jumper
Safety closing (Push)
No function
Inhibit switch

POWER DOOR MODULE TERMINALS  C1 C2 C3 C4

LZR Microscan (PULL SIDE)

BLACK | C1
YELLOW RED | C2
WHITE RED | C3
RED | C4

BASIC DOOR MODULE TERMINALS  A6 A7 A9 A10

LZR Microscan (ACTIVATION)
(OVERHEAD PRESENCE)

WHITE | A6
GREEN | A7
WHITE BLACK | A9
GREEN BLACK | A10

SYNC CABLE

---

Basic Door Module (BDM)

**Primary Drive**

A | GND 12
24V 11
IN4 10
GND 9
24V 8
GND 7
IN3 6
24V 5
OUT1 4
IN2 3
IN1 2
GND 1

H/O 3
OFF 2
1
WHITE
RED
BLUE

3-pos. switch

Multi Door Module-MDM-B

4 24V
3 H
2 L
1 GND

A

Power Door Module-(PDM)

green
red
black
120 Ω

A | IN2 4
GND 3
IN1 2
GND 1

C | GND 1
IN3 2
OUT1 3
24V 4
GND 5
IN4 6
OUT2 7
24V 8

Safety opening (Pull)
Jumper
Safety closing (Push)
No function
Inhibit switch

POWER DOOR MODULE TERMINALS  C1 C2 C3 C4

LZR Microscan (PULL SIDE)

BLACK | C1
YELLOW RED | C2
WHITE RED | C3
RED | C4

BASIC DOOR MODULE TERMINALS  A6 A7 A9 A10

LZR Microscan (ACTIVATION)
(OVERHEAD PRESENCE)

WHITE | A6
GREEN | A7
WHITE BLACK | A9
GREEN BLACK | A10

---

EAGLE SENSOR

1 2 3 4 5

AND / OR

Brown/ White
Black
Orange
Red

Larco 433
Ultra Small Receiver

AND / OR

HARD WIRED
PUSH PLATE
ACTIVATION

LZR Microscan
GREY
GREY

Closed Door
Position
Switch

LZR Microscan
ORANGE
ORANGE

NOTE:
1) Do not enter the Country Code (OBC=7/1) or (FCP=031) as this will limit/ reduce your opening/ closing speeds and forces.
2) Install jumper into PDM C terminal pin 6,7 as shown above for power assist close functionality.
3) Adjust operator and sensors to be in accordance with ANSI A156.10.
4) Refer to manufacturers Installation/ Users guides to setup and adjust the LZR Microscan, Eagle and/ or Larco Receiver.

# TECHNICAL SPECIFICATIONS

| 1000009 | **Mechanical Documentation** | ★★★★★ |
| | | **TORMAX** |
| | Shaft Removal | AUTOMATIC |
| Area of application | iMotion 1301, 1201, 1102 Swing Door Operator | 12859 Wetmore Road<br>San Antonio, TX 78247 |
| Release | August 2016 | 1-888-685-3707<br>WWW.TORMAXUSA.COM |
| Use | Technician Reference | |

## Purpose
Provide guidance in the removal of the drive arm shaft for a 1301,1201, 1102 operator. Removal of the shaft will require the extraction bolt part# US801643.

## Removal

1. Remove power from the operator, remove the arm assembly from the shaft.

2. Remove the shaft retaining bolt part# US801528 as shown in illustration #1.

3. Insert the shaft extraction bolt into the operator & shaft as shown in illustration #2

4. Using a 6 mm hex head allen wrench turn the bolt in a clockwise direction, screwing in the extraction bolt. The bolt pushes the shaft out of the operator as shown in illustration #3.



Operator Steel retaining collar — Shaft Bolt

Illustration #1

Operator Steel retaining collar

Illustration #2

Operator Steel retaining collar

Illustration #3
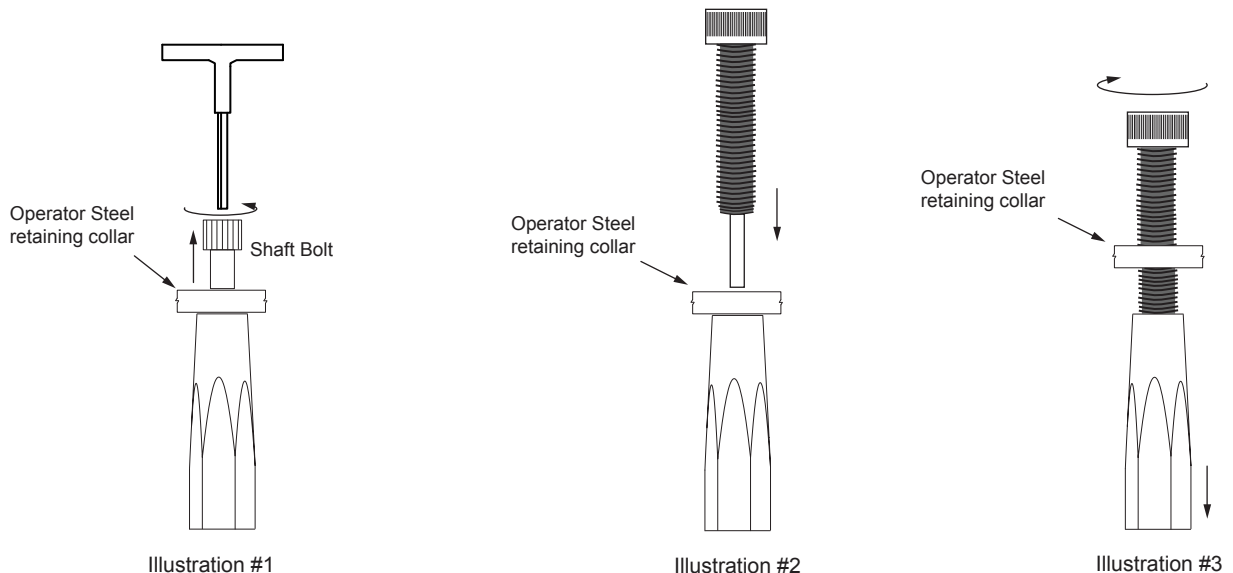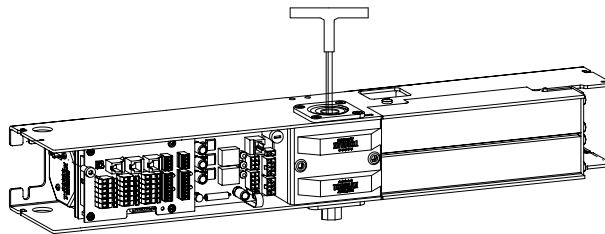
# TECHNICAL SPECIFICATIONS

## T1253e Cable Plan
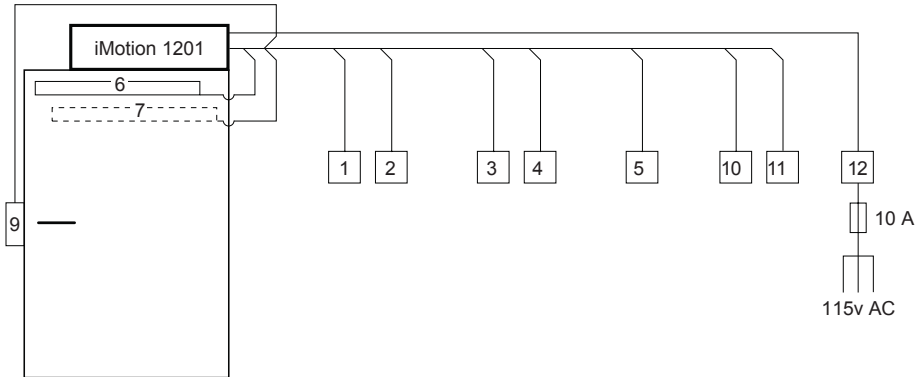


| No. | | Control Components | Notes | Cable | Length (ft) without screen | Length (ft) with screen |
|-----|---|---|---|---|---|---|
| 1 | | Activator/Push-button inside | Stranded wire recommended | 4 × 20 AWG | < 98 | < 328 |
| 2 | | Activator/Push-button outside | Stranded wire recommended | 4 × 20 AWG | < 98 | < 328 |
| 3 | | Key-switch | Stranded wire recommended | 2 × 20 AWG | < 98 | < 328 |
| 4 | | Input | Stranded wire recommended | … × 20 AWG | | < 328 |
| 5 | | User interface iMotion Connected with FCC-connector | | Phone ribbon cable 6 x 0.14 mm$^2$ RJ12,6P,6C | < 98 | |
| | | User interface iMotion Connected with LIN-Adapter | | 3 × 0.25 mm$^2$ | < 98 | < 100 |
| 6 | | Safety activator closing | | 4 × 20 AWG | < 98 | < 328 |
| 7 | | Safety activator opening | Stranded wire recommended | 4 × 20 AWG | < 98 | < 328 |
| 8 | | | | | | |
| 9 | | Door lock | Stranded wire recommended | 4 × 20 AWG | < 82 | < 328 |
| 10 | | Message 1 … | Stranded wire recommended | 2 × 20 AWG | < 98 | < 328 |
| 11 | | Message 2 … | Stranded wire recommended | 2 × 20 AWG | < 98 | < 328 |
| 12 | | Mains main switch | | 3 × 14 AWG | | |

# TECHNICAL SPECIFICATIONS

## T-1633e 1201 Technical Information

| | |
|---|---|
| Drive type | TORMAX 1201 Swing Door Drive |
| Drive system | Electro-mechanical drive with DC-motor, extensible with modules, spring activated closing or opening. |
| Control System | MCU42 |
| Door leaf width and mass | 28" – 56", up to 551 lbs. according to diagram |



Door leaf mass [lbs.] vs. Door leaf width [inches]

T1633_1e

| | |
|---|---|
| Opening angle | 70°…110° max. |
| Speed | 5°…60°/s max. |
| Mains connection | 230/115 VAC, 50/60 Hz |
| Dimensions | 3-11/32" x 5-3/64" x 25-13/64"<br>2 leaves with mechanical door coordinator: 100 × 135 × door width |
| Power consumption | 3 … 200 W |
| Automatic reset in the event of a power failure | In the closing and opening direction; capable of an infinitely variable setting: 60–100 % of maximum force according to DIN 1154 corresponds to closer parameter 4-6 with the linkage pushing and closer parameter 3 when the linkage is pulling. |
| Protective class | IP 20 |
| Ambient temperature | –68… 122° F |
| Weight: | 26 lbs |
| Emitted noise level | < 70 dBA |
| Sensor supply | 24 VDC (+0.5–1.5 V) Pmax. 36 W, Imax. 1.5 A |
| Inputs | 24 VDC or potential-free (Multi Door Module MDM-A) |
| Outputs | Holding magnet 24 VDC, <0.25 A (Exterior Door Module EDM)<br>Bell 24 VDC, <1 A, (Exterior Door Module EDM)<br>El. door opener 24 VDC, <1 A, (Exterior Door Module EDM)<br>Potential-free 24 VDC, <1 A, (Multi Door Module MDM-A)<br>Test-out 24 VDC, <1 A, (Power Door Module PDM) |
| Interfaces | CAN for double door and air lock (MDM-A/MDM-B)<br>RS232 for Skipper (EDM, Programming Interface Module PIM)<br>RS485 (MDM-A)<br>LIN-Bus (EDM, Programming Interface Module PIM)) |
| Approvals and standards | CE<br>EN 16005 (TÜV)<br>UL 325<br>UL 228<br>EN 61000-6-2, EN 61000-6-3, EN 60335-1 |
| Durability | DIN 18650 (TÜV) – 1 Million test cycles at 4000 cycles per day |

# TECHNICAL SPECIFICATIONS

## T-1634e 1102 Technical Information

| | |
|---|---|
| Drive type | TORMAX 1102 Swing Door Drive |
| Drive system | Electro-mechanical drive with DC-motor, extensible with modules, spring activated closing or opening. |
| Control System | MCU42 |
| Door leaf width and mass | 28" – 48", up to 275 lbs. according to diagram |



T1634_1e

| | |
|---|---|
| Opening angle | 70°…110° max. |
| Speed | 5°…60°/s max. |
| Mains connection | 230/115 VAC, 50/60 Hz |
| Dimensions | 3-11/32" x 5-3/64" x 25-13/64"<br>2 leaves with mechanical door coordinator: 100 × 135 × door width |
| Power consumption | 3 … 140 W |
| Automatic reset in the event of a power failure | In the closing and opening direction corresponds according to DIN 1154 to closer parameter 4 with the linkage pushing. |
| Protective class | IP 20 |
| Ambient temperature | −68… 122° F |
| Weight: | 11,2 kg |
| Emitted noise level | < 70 dBA |
| Sensor supply | 24 VDC (+0,5–1,5 V) Pmax. 36 W, Imax. 1,5 A |
| Inputs | 24 VDC or potential-free (Multi Door Module MDM-A) |
| Outputs | Holding magnet 24 VDC, < 0,25 A (Exterior Door Module EDM)<br>Bell 24 VDC, < 1 A, (Exterior Door Module EDM)<br>El. door opener 24 VDC, < 1 A, (Exterior Door Module EDM)<br>Potential-free 24 VDC, < 1 A, (Multi Door Module MDM-A)<br>Test-out 24 VDC, < 1 A, (Power Door Module PDM) |
| Interfaces | CAN for double door and air lock (MDM-A/MDM-B)<br>RS232 for Skipper (EDM, Programming Interface Module PIM)<br>RS485 (MDM-A)<br>LIN-Bus (EDM, Programming Interface Module PIM) |
| Approvals and standards | CE<br>EN 16005 (TÜV)<br>UL 325<br>EN 61000-6-2, EN 61000-6-3, EN 60335-1 |
| Durability | DIN 18650 (TÜV) – 1 Million test cycles at 4000 cycles per day |

# TECHNICAL SPECIFICATIONS

## Electrical Requirements for Installation Personnel

Have a licensed electrician:

- Make all mains primary power connections in accordance to federal, state and local regulations.

- Route mains primary power from power distribution panel (10 amp circuit breaker minimum per operator) to the operator.

- Install a service switch or emergency shut OFF switch, if required by customer or per regulations. This is in addition to the mains circuit breaker to interrupt power, switch must be rated @ 10 amp minimum.

## Mains Connection

Connection: N + L1 + PE protected on site with 10 AT, protective earth necessary
Power rating: 1 x 230 / 1 x 115 V AC (+5 %/ – 10 %) 50– 60 Hz, max. 200 W
Supply cable: Type H05VV-F, H05RR-F or flexible cord of type S, SO, SJ, SJO, ST, STO, SJT, SJTO or AFS
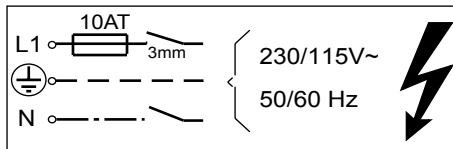


Before beginning the work described below, check that the mains primary power is switched off. If required place "Out of Service" tag on circuit breaker or service switch.

- Route the mains connection to the operator along the side of the power supply.

- The edges must be rounded off on all bushings for the mains connection.

- Route mains cable either through the header end cap or through header back plate.

- Use only cable bushings made from synthetic materials Metallic bushings must be grounded.

- Connect mains cable to terminal (1) as shown in the illustration.
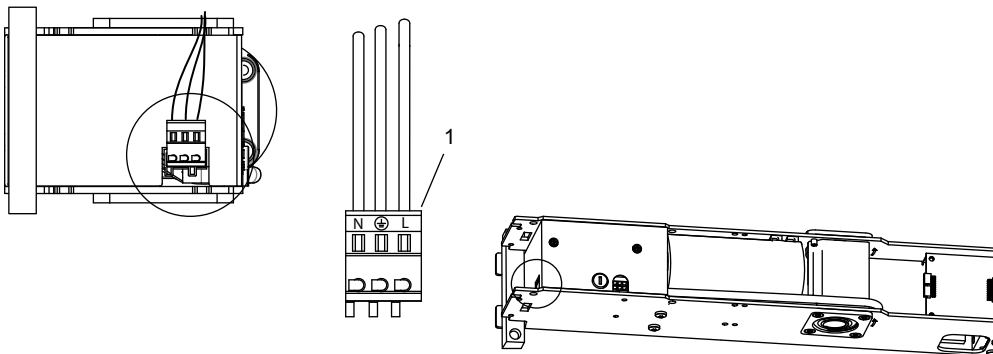


- Secure mains cable with a cable strap at a synthetic lug on the base plate.

- Do not apply power to the door until ready for commissioning.

- A system switch (FCP or 3-position switch) must be on site.

Secure mains cable properly to prevent it from getting into the moving parts of the operator or door system.

# TECHNICAL SPECIFICATIONS

| T-1753 e | Application |
|---|---|
|  | Double Door Hospital |
| Area of application | TORMAX 1102, 1201 Swing Door Drive |
| Release | 10 October 2014 |
| Use | Planning, installation, maintenance |

★★★★★
**TORMAX**
AUTOMATIC

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

## Purpose

The purpose of the application is to coordinate double-leaved doors using Type 1201 or 1102 swing door drives with each other in such a manner that non-overlapping double doors open at the same time as each other and that overlapping double doors open with a brief time interval between each leaf and close in the right order. Fire doors may only be operated with the proven mechanical door coordinator system MDC.

## Function
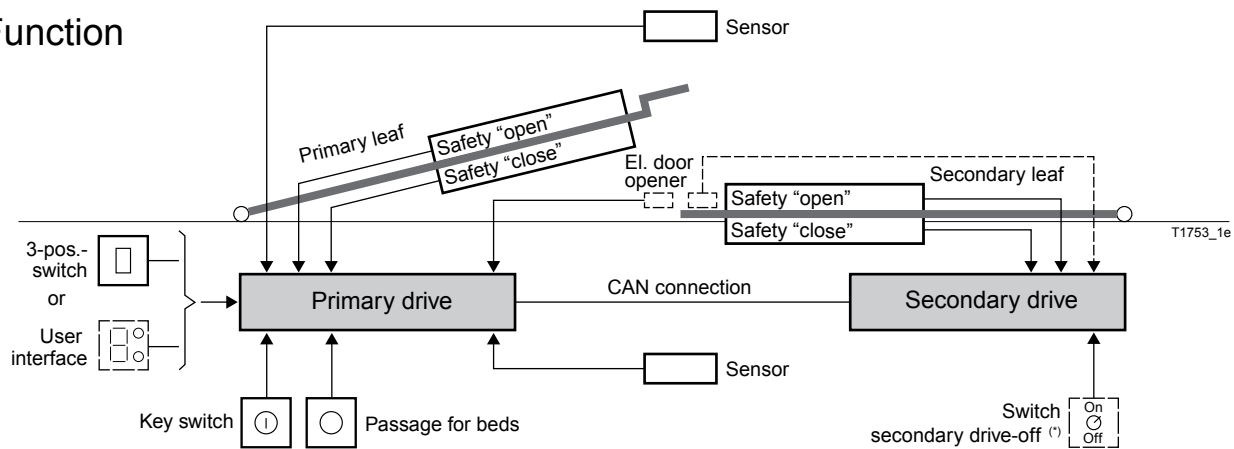


## Door Opening Sequence

Movement without overlapping (P830). Synchronous
When an opening command is given both door leaves start to open at the same time. The door leaves move independently of each other according to a pre-set motional sequence.
At the end of the hold-open time on the primary leaf (commences as soon as both door leaves have reached the open position), both leaves begin to close independently of each other according to a pre-set motional sequence.
Reverse commands are transmitted to both drives. However, an obstruction on opening only affects the door leaf encountering the obstruction.

Movement with overlapping (P831, P832). Asynchronous
When an opening command is given the primary leaf starts to open. When an opening angle of 7 degrees is reached, the secondary leaf starts to open. The door leaves move independently of each other according to a pre-set motional sequence.
At the end of the hold-open time on the primary leaf (commences as soon as both door leaves have reached the open position) both leaves begin to close independently of each other according to a pre-set motional sequence.
The primary leaf then stands still at an angle of 10 degrees / 40 degrees (P831, P832) and waits in this position until the secondary leaf is completely closed. The primary leaf does not close until the secondary leaf is completely closed.
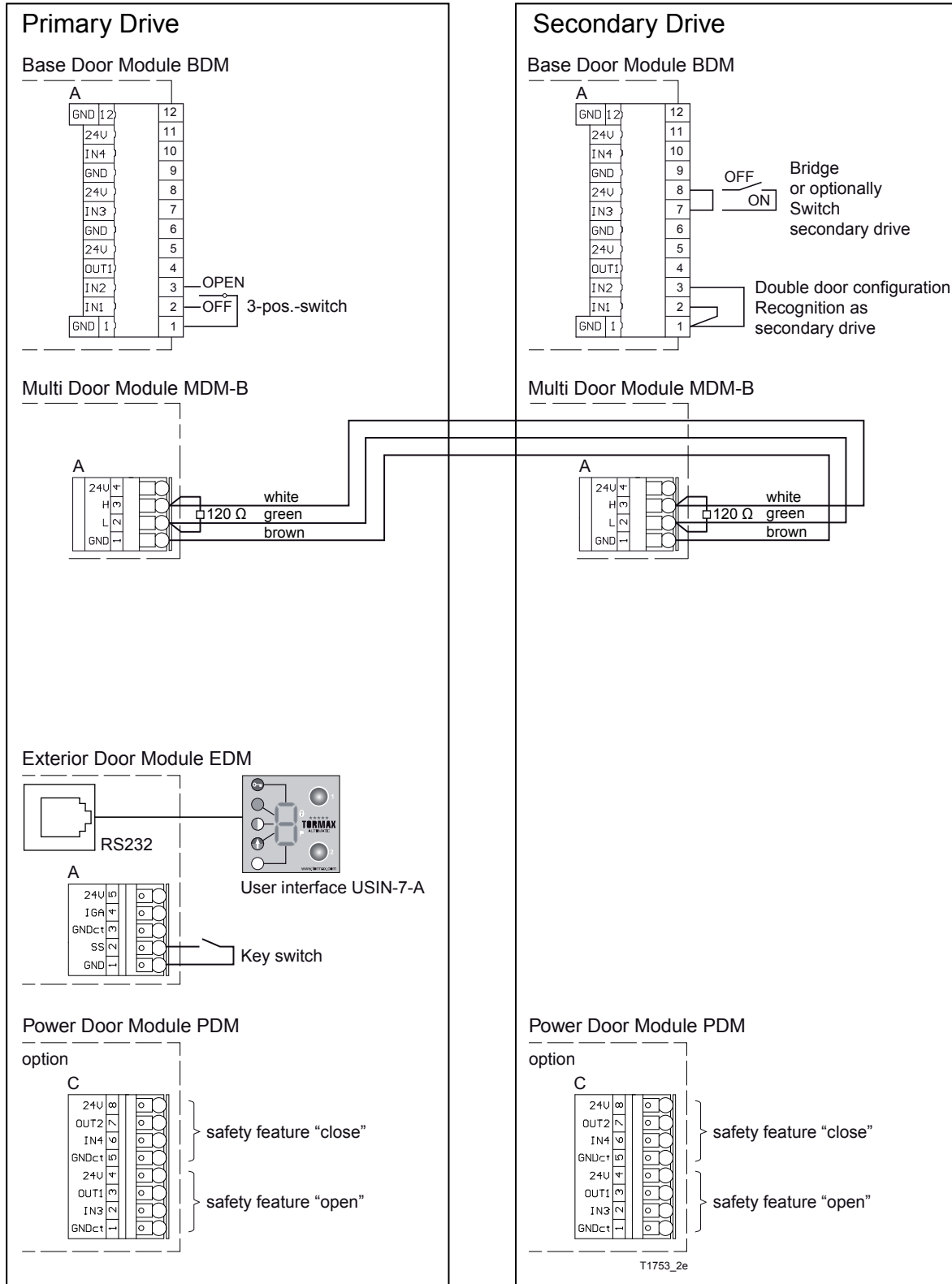Reverse commands are transmitted to both drives.

## Operating Mode Control and Operation

The operating modes and the reset function are entered on the primary drive. These then apply automatically for both drives. Single leaf operation is entered on the secondary leaf.

# TECHNICAL SPECIFICATIONS

## Connection

See T-1688 for cable diagram for double-leaf system

### Primary Drive

Base Door Module BDM

A

| | | |
|---|---|---|
| GND | 12 | 12 |
| 24U | | 11 |
| IN4 | | 10 |
| GND | | 9 |
| 24U | | 8 |
| IN3 | | 7 |
| GND | | 6 |
| 24U | | 5 |
| OUT1 | | 4 |
| IN2 | | 3 |
| IN1 | | 2 |
| GND | 1 | 1 |

OPEN
OFF    3-pos.-switch

Multi Door Module MDM-B

A

| | | |
|---|---|---|
| 24U | 4 | |
| H | 3 | |
| L | 2 | |
| GND | 1 | |

120 Ω

white
green
brown

Exterior Door Module EDM

RS232

User interface USIN-7-A

A

| | | |
|---|---|---|
| 24U | 5 | |
| IGA | 4 | |
| GNDct | 3 | |
| SS | 2 | |
| GND | 1 | |

Key switch

Power Door Module PDM

option

C

| | | |
|---|---|---|
| 24U | 8 | |
| OUT2 | 7 | |
| IN4 | 6 | |
| GNDct | 5 | |
| 24U | 4 | |
| OUT1 | 3 | |
| IN3 | 2 | |
| GNDct | 1 | |

safety feature "close"

safety feature "open"

### Secondary Drive

Base Door Module BDM

A

| | | |
|---|---|---|
| GND | 12 | 12 |
| 24U | | 11 |
| IN4 | | 10 |
| GND | | 9 |
| 24U | | 8 |
| IN3 | | 7 |
| GND | | 6 |
| 24U | | 5 |
| OUT1 | | 4 |
| IN2 | | 3 |
| IN1 | | 2 |
| GND | 1 | 1 |

OFF
ON

Bridge
or optionally
Switch
secondary drive

Double door configuration
Recognition as
secondary drive

Multi Door Module MDM-B

A

| | | |
|---|---|---|
| 24U | 4 | |
| H | 3 | |
| L | 2 | |
| GND | 1 | |

120 Ω

white
green
brown

Power Door Module PDM

option

C

| | | |
|---|---|---|
| 24U | 8 | |
| OUT2 | 7 | |
| IN4 | 6 | |
| GNDct | 5 | |
| 24U | 4 | |
| OUT1 | 3 | |
| IN3 | 2 | |
| GNDct | 1 | |

safety feature "close"

safety feature "open"

T1753_2e

# TECHNICAL SPECIFICATIONS

| T-1637 e | Module Documentation | ★★★★★ |
| | Base Door Module MCU42-BDM-A | **TORMAX** |
| | | AUTOMATIC |
| Area of application | TORMAX 1102, 1201 Swing Door Drive | 12859 Wetmore Road |
| | | San Antonio, Tx 78247 |
| Release | 22 December 2014 | 1-888-685-3707 |
| | | www.tormaxusa.com |
| Use | Planning, installation, maintenance | |

## Purpose

Central control component for the TORMAX 1102 and 1201 swing door drives.

## Function

The base door module (BDM) provides all the essential basic functions for the operation of a swing door system (see also installation overview T-1660). Additional functions and interfaces can be added with the additional modules (EDM, PDM, MDM). The BDM and additional modules communicate with each other via the internal CAN-BUS. The BDM is able to recognize the additional modules automatically via the CAN-BUS after their connection and then to initialize/configure them appropriately.

Base Module MCU42-BDM-A
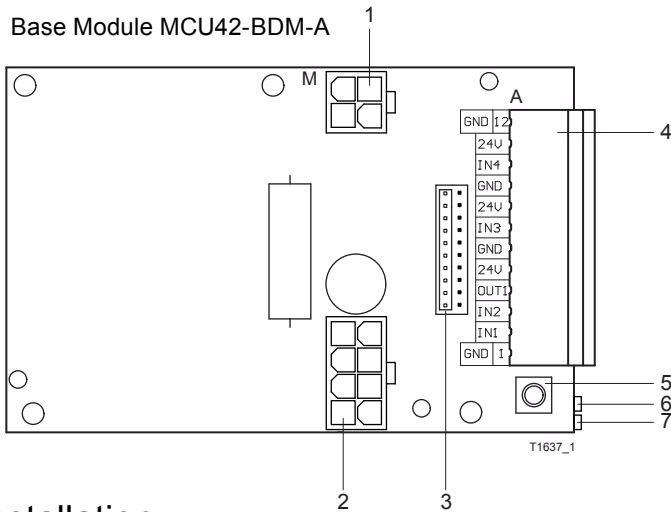


1 Motor connection

2 Power supply module

3 Connector plugs for additional modules

4 Terminal A for 3 position switch, internal activator, programmable IN4 and OUT1

5 Push button SW1 for configuration or opening impulse (push twice)

6 Orange LED for error display or configuration

7 Green LED for status display (ready for operation) or configuration

## Installation

⚠ If the module is touched it must be protected against electrostatic discharge (ESD). Other components must not be touched.

- Only connect the basic module (8) and secure it to the points provided when the power is switched off.
- Do not switch on the power until any additional MCU4 modules (10) which are required are connected.
- Place the cover plate (9) in position.
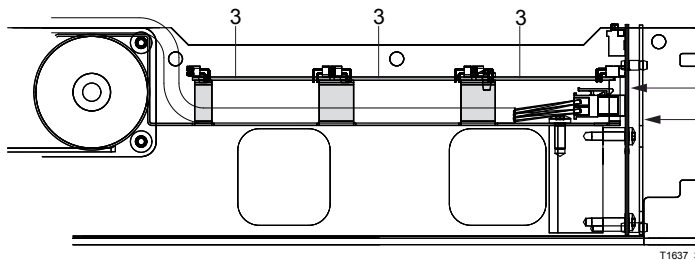


1 Base door module BDM

2 Cover plate

3 Additional modules EDM, PDM, MDM, PIM
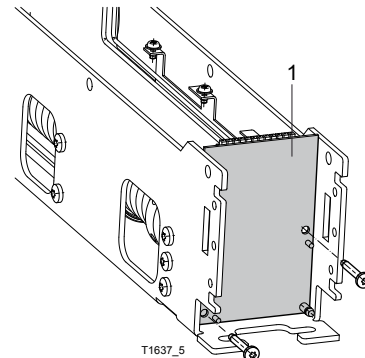
# TECHNICAL SPECIFICATIONS

## Module Connections

The additional modules EDM, PDM, MDM may be arranged in any order. The programming interface module PIM can be connected at the end of the row. Standard assignment for terminal connections - see T-1655.

| Base Door Module BDM MCU42-BDM-A | Exterior Door Module EDM MCU42-EDM-A | Power Door Module PDM MCU42-PDM-A | Multi Door Module MDM MCU42-MDM-A or MCU42-MDM-B | Programming Interface Module PIM MCU42-PIM-A |
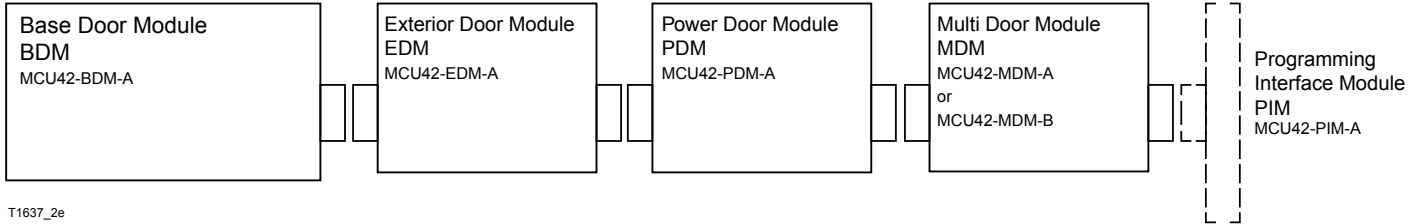
T1637_2e

## Commissioning

The system may be configured either by means of the on-board configuration tool (SW1 and LEDs) or the MCU32-USIN-7 user interface or iMotion Skipper software.

iMotion Skipper is used for firmware updates (see TORMAX Extranet). Firmware updates install the latest software versions on the modules which are connected.
Programming using the user interface - see T-1248.

## Technical Data

| | |
|---|---|
| Processor: | 32 bit, 100 MHz |
| System monitoring: | Complies with the requirements of DIN 18650 |
| Ambient temperature: | – 4 … +122 ˚F |
| Over temperature protection: | +167 ˚F |
| Dimensions: | 2.519” × 3.858” |
| Output OUT 1: | max. load 1 amp (at 68 ˚F) Thermal overload protection, slef resetting |
| Inputs IN 1 - 4: | 24 VDC / 3mA pull up |
| Serial interfaces: | 1 x CAN (internal) 1 x LIN (connection only via EDM or PIM) 1 x RS485 (connection only via MDM) 1 x RS232 (connection only via EDM or PIM) |
| Module interfaces: | MCU42-EDM-A (T-1638) MCU42-PDM-A (T-1639) MCU42-MDM-A (T-1640) MCU42-MDM-B (T-1640) MCU42-PIM-A (T-1691) |

# TECHNICAL SPECIFICATIONS

| T-1638 e | Module Documentation | ★★★★★ |
| | Exterior Door Module MCU42-EDM-A | TORMAX |
| | | AUTOMATIC |
| Area of application | TORMAX 1102, 1201 Swing Door Drive | 12859 Wetmore Road |
| | | San Antonio, Tx 78247 |
| Release | 9 January 2015 | 1-888-685-3707 |
| | | www.tormaxusa.com |
| Use | Planning, installation, maintenance | |

## Purpose

Additional module for the TORMAX 1102 and 1201 Swing Door Drive for external doors.

## Function

The exterior door module (EDM) contains all connections needed for an external door. The inputs and outputs which supplement the BDM are not programmable.

External door module MCU42-EDM-A
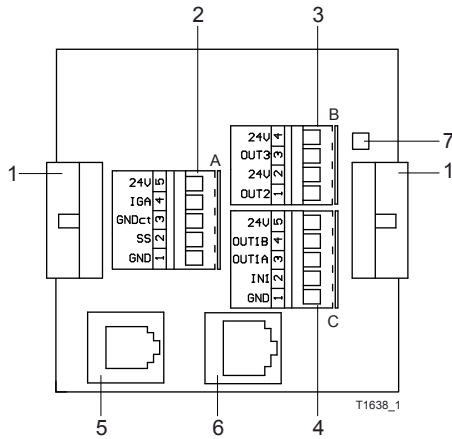


1 Connector plugs for additional modules
2 Inputs (IGA: external activator, SS: key switch)
3 Outputs (OUT2: holding magnet, OUT3: bell)
4 Output OUT1 potential-free (door opener, motor lock),
  Input IN1 (motor lock feed-back)
5 RS232 (Skipper)
6 LIN (user interface)
7 Status display

## Installation

⚠ The module must be protected against electrostatic discharge (ESD) when touching it.
Other components must not be touched.

- Only plug in the module and secure it to the points provided when the power is switched off.

# TECHNICAL SPECIFICATIONS

## Module Connections

The additional modules EDM, PDM, MDM may be arranged in any order. Standard assignment for terminal connections see T-1655.

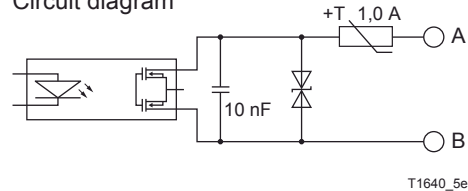| Base Door Module<br>BDM<br>MCU42-BDM-A | Exterior Door Module<br>EDM<br>MCU42-EDM-A | Power Door Module<br>PDM<br>MCU42-PDM-A | Multi Door Module<br>MDM<br>MCU42-MDM-A<br>or<br>MCU42-MDM-B |
|---|---|---|---|

T1637_2e

Programming
Interface Module
PIM
MCU42-PIM-A
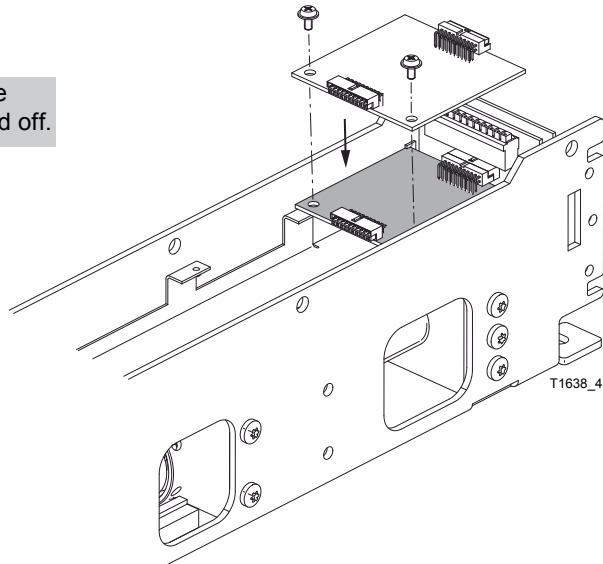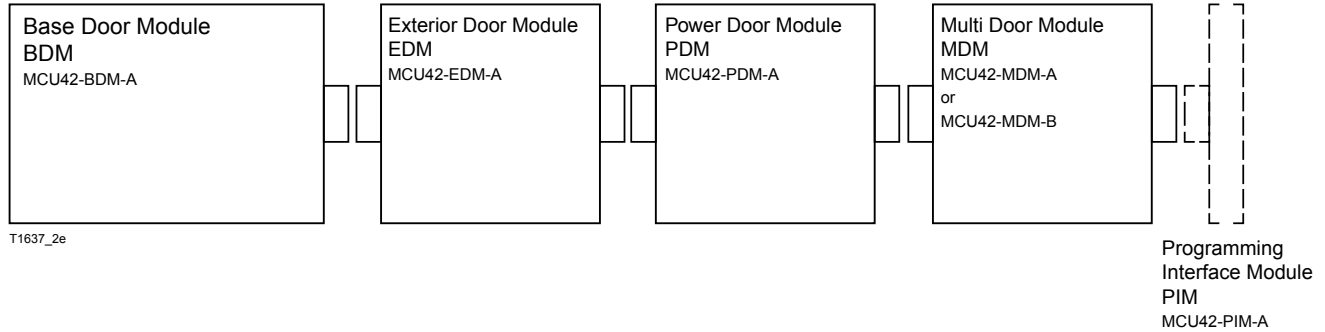
## Commissioning

The module is automatically recognized by the basic module BDM as soon as the power is switched on. The LED status display is illuminated when the module is ready for operation.

## Technical Data

| | |
|---|---|
| Processor: | 32 bit, 100 MHz |
| System monitoring: | Complies with the requirements of DIN 18650 |
| Ambient temperature: | – 4 … +122 ˚F |
| Dimensions: | 2.519" × 2.519" |
| Outputs OUT 2-3: | max. load 1 A (at 68 ˚F)<br>Thermal overland protection, self resetting |
| Outputs OUT 1 A/B: | Potential-free<br>max. load 1 A (at 68 ˚F)<br>Thermal overland protection, self resetting<br>Voltage max. 40 VDC/ 30 VAC<br>Potential relative to earth max. 75 VDC/ 50 VAC |
| GNDct: | max. load 1 A (at 68 ˚F)<br>Thermal overload protection, self resetting |
| Inputs IN 1/SS/IGA: | 24 VDC/ 3mA. pull up |
| Serial interfaces: | 1 x CAN (internal) |
| Module interfaces: | 1 x LIN |
| | 1 x RS232 (Skipper) |
| | MCU42-BDM-A (T-1637)<br>MCU42-PDM-A (T-1639)<br>MCU42-MDM-A (T-1640)<br>MCU42-MDM-B (T-1640) |

## TECHNICAL SPECIFICATIONS

| T-1640 e | Module Documentation<br>Multi Door Module MCU42-MDM-A   / B | ★★★★★<br>**TORMAX**<br>AUTOMATIC |
|---|---|---|
| Area of application | TORMAX 1102, 1201 Swing Door Drive | 12859 Wetmore Road<br>San Antonio, Tx 78247<br>1-888-685-3707<br>www.tormaxusa.com |
| Release | 9 January 2015 | |
| Use | Planning, installation, maintenance | |

## Purpose

Additional module for the TORMAX 1102 and 1201 swing door drives for operating double leaved doors or air locks. The module is also used for networking via RS485 or if additional potential-free inputs and outputs become necessary.

## Function

In the case of double doors and/or air locks, communication between the drives is via the CAN-BUS on the MDM.
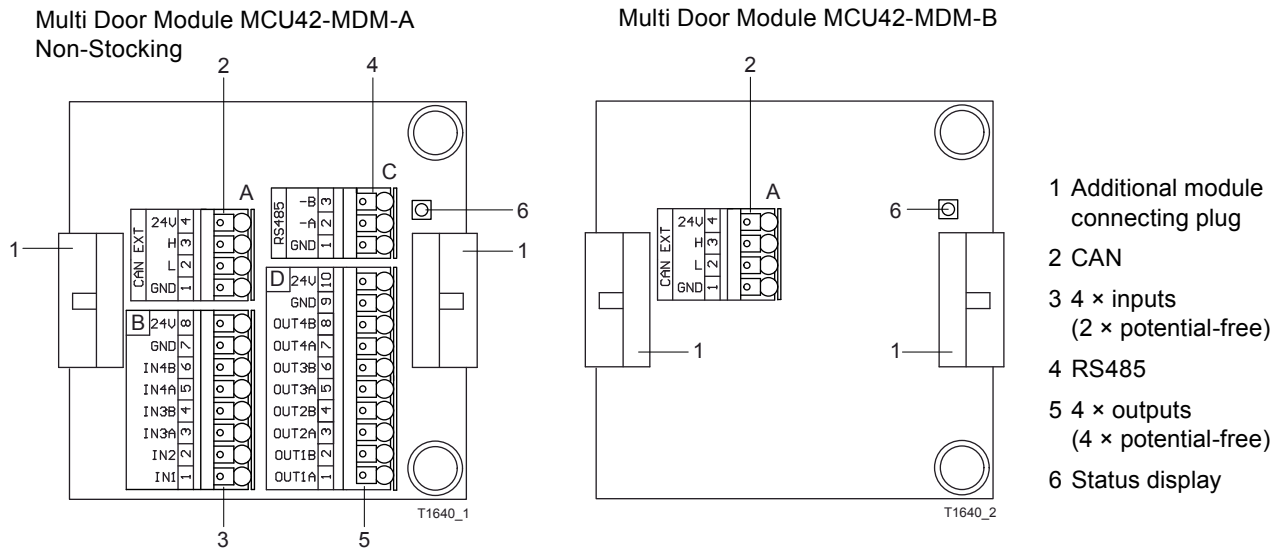


Multi Door Module MCU42-MDM-A
Non-Stocking

Multi Door Module MCU42-MDM-B

1 Additional module connecting plug

2 CAN

3 4 × inputs (2 × potential-free)

4 RS485

5 4 × outputs (4 × potential-free)

6 Status display

## Installation

⚠️ If the module is touched it must be protected against electrostatic discharge (ESD). Other components must not be touched.

• Only connect the module and secure it to the points provided when the power is switched off.
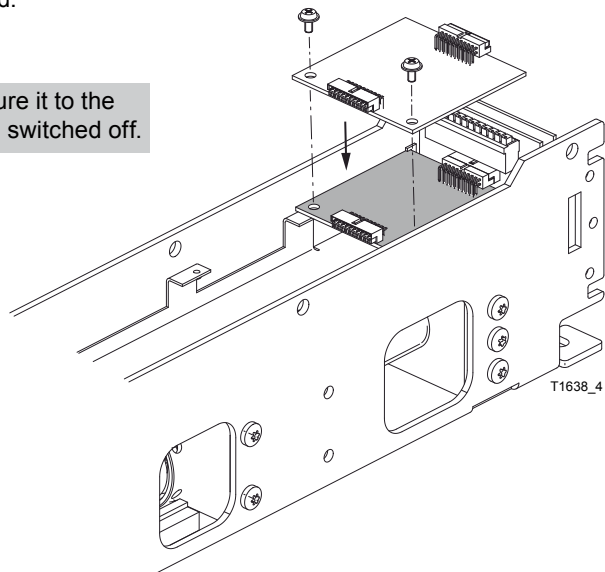
# TECHNICAL SPECIFICATIONS

## Module Connections

The additional modules EDM, PDM, MDM may be arranged in any order. Standard assignment for terminal connections see T-1655.
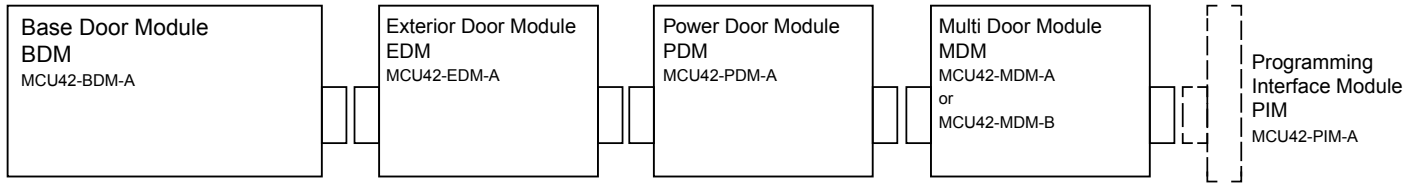


T1637_2e

Potential-free inputs
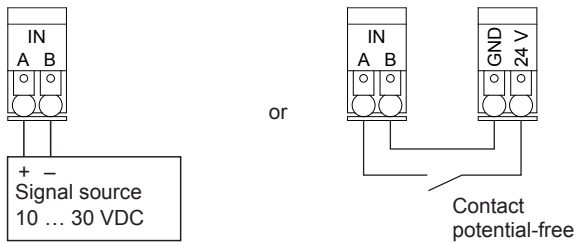
Circuit diagram
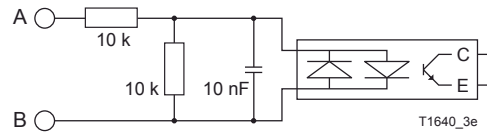


Potential-free outputs
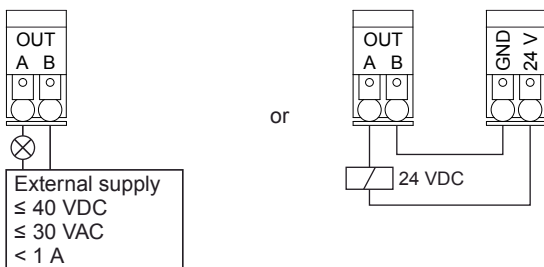
Circuit diagram



## Commissioning

The module is automatically recognised by the basic module BDM as soon as the power is switched on.
The LED status display is illuminated when the module is ready for operation.

## Technical Data

| | |
|---|---|
| Processor: | 32 bit, 100 MHz |
| System monitoring: | Complies with the requirements of DIN 18650 |
| Ambient temperature: | – 4 … +122 ˚F |
| Dimensions: | 2.519" × 2.519" |
| CAN ext.: | CAN open, 125 kbit/s, 500 m in a line (max. 22 m from transmission line) |
| RS485: | For details see T-1531 (RS485-network) |
| Outputs OUT 1-4 A/B: | Potential-free, max. load 1 A (at -4 °F), Thermal overload protection, self resetting Voltage max. 40 VDC / 30 VAC, Potential relative to earth max. 24 VDC/ 50VAC |
| Inputs IN 1-2: Inputs IN 3-4 A/B: | 24 VDC / 3 mA Pull up, Potential-free, Signal source 10–30 VDC Potential relative to earth max. 75 VDC/ 50 VAC |
| Module interfaces: | MCU42-BDM-A (T-1637) MCU42-EDM-A (T-1638) MCU42-PDM-A (T-1639) MCU42-PIM-A (T-1691) |

# TECHNICAL SPECIFICATIONS

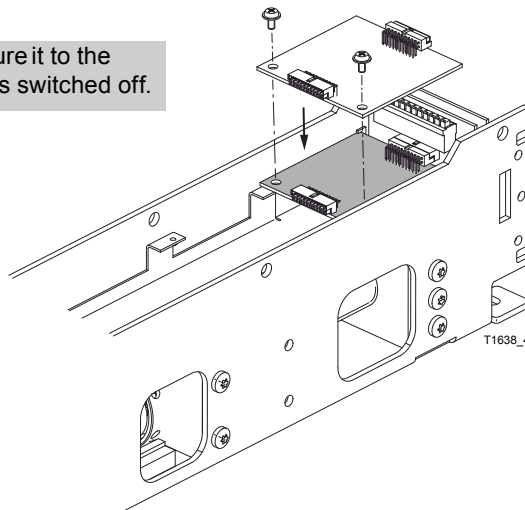| T-1639 e | Module Documentation | ★★★★★ |
| | Power Door Module MCU42-PDM-A | **TORMAX** AUTOMATIC |
| Area of application | TORMAX 1102, 1201 Swing Door Drive | 12859 Wetmore Road |
| | | San Antonio, Tx 78247 |
| Release | 7 January 2015 | 1-888-685-3707 |
| | | www.tormaxusa.com |
| Use | Planning, installation, maintenance | |

## Purpose

Additional module for the TORMAX 1102 and 1201 swing door drive for full energy operation.

## Function

Two testable safety features can be connected to the PDM. If a testable safety feature is recognised when the door is opening, the door is automatically opened at full power. If a testable safety feature is recognised in the closing direction, the door is automatically closed at full power. The door moves at low power if there are no testable working safety features.

Power Module MCU42-PDM-A
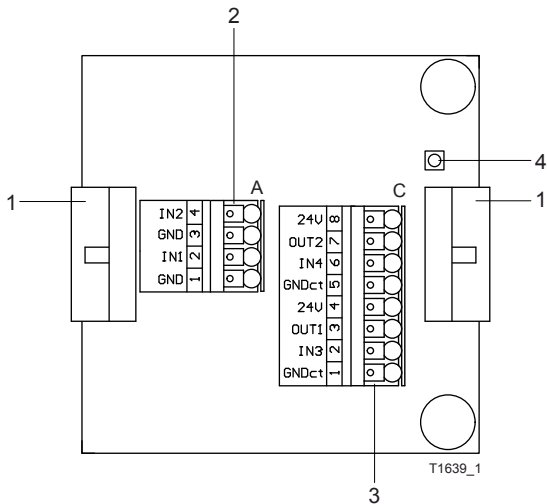


1 Additional module connecting plug

2 Inputs
 - IN1: emergency movement
 - IN2: inhibit switch

3 Testable safety features
 - OUT2 / IN4: S2 safety, opening
 - OUT1 / IN3: S1 safety, closing

4 Status display

## Installation

⚠ If the module is touched it must be protected against electrostatic discharge (ESD). Other components must not be touched.
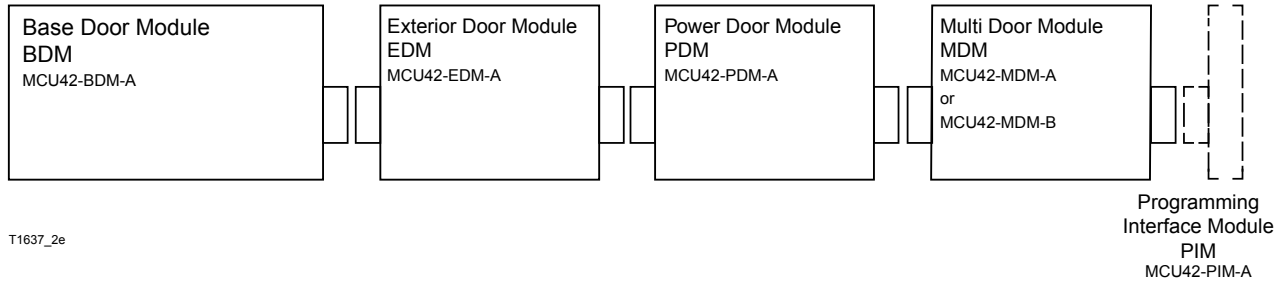
| • | Only plug in the module and secure it to the points provided when the power is switched off. |

# TECHNICAL SPECIFICATIONS

## Module Connections

The additional modules EDM, PDM, MDM may be arranged in any order. Standard assignment for terminal connections see T-1655.

| Base Door Module BDM<br>MCU42-BDM-A | Exterior Door Module EDM<br>MCU42-EDM-A | Power Door Module PDM<br>MCU42-PDM-A | Multi Door Module MDM<br>MCU42-MDM-A<br>or<br>MCU42-MDM-B | Programming Interface Module PIM<br>MCU42-PIM-A |

T1637_2e

## Commissioning

The module is automatically recognised by the basic module BDM as soon as the power is switched on.
The LED status display is illuminated when the module is ready for operation.

## Technical Data

| | |
|---|---|
| Processor: | 32 bit, 100 MHz |
| System monitoring: | Complies with the requirements of DIN 18650 |
| Ambient temperature: | – 4 … +122 ˚F |
| Dimensions: | 2.519" × 2.519" |
| Outputs OUT 2-3: | max. load 1 A (at -4 ˚F)<br>Thermal overload protection, self resetting |
| GNDct: | max. load 1 A (at -4 ˚F)<br>Thermal overload protection, self resetting |
| Inputs IN 1-4: | 24 VDC/ 3 mA Pull up |
| Module interfaces: | MCU42-BDM-A (T-1637)<br>MCU42-EDM-A (T-1638)<br>MCU42-MDM-A (T-1640)<br>MCU42-MDM-B (T-1640)<br>MCU42-PIM-A (T-1691) |

## TECHNICAL SPECIFICATIONS

| T-1691 e | Module Documentation | ★★★★★ |
| | Programming Interface Module MCU42-PIM-A | **TORMAX** |
| | | AUTOMATIC |
| Area of application | TORMAX 1102, 1201 Swing Door Drive | 12859 Wetmore Road |
| | | San Antonio, Tx 78247 |
| Release | 17 July 2014 | 1-888-685-3707 |
| | | www.tormaxusa.com |
| Use | Planning, installation, maintenance | |

## Purpose

Additional module for the TORMAX 1102 and 1201 Swing Door Drive for programming with iMotion Skipper or with the user interface USIN-7-A.

## Function

The module is only temporarily used for programming with iMotion skipper. The module is only required if there is no exterior door module EDM installed. At the EDM the required RS232 interface is available.



T1691_2

T1691_1
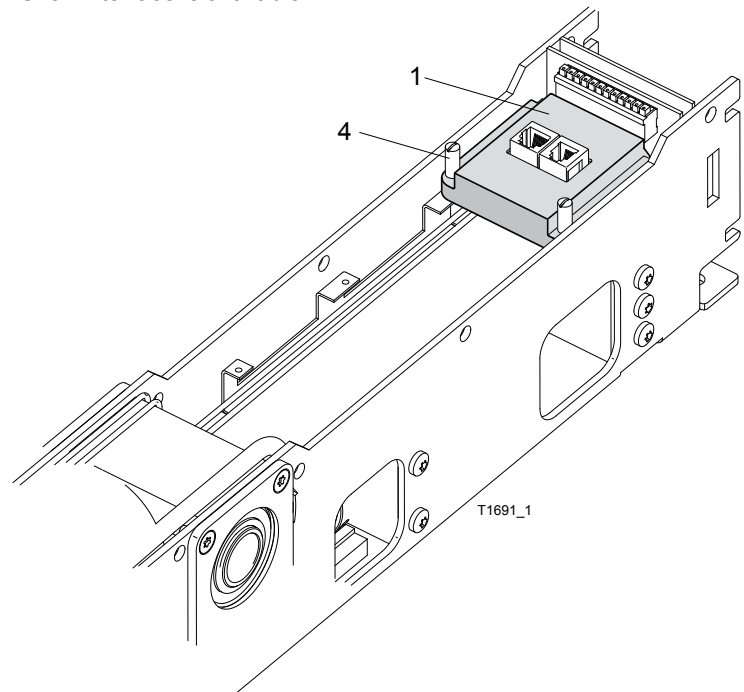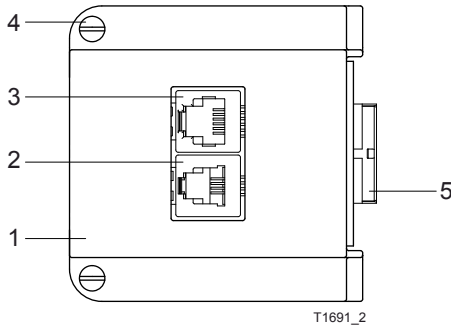
1 Programming Interface Module MCU42-PIM-A

2 RS232 (Skipper)

3 LIN (user interface)

4 Securing screws

5 Connector plug

## Installation

- Plug in the module in current-free state to the base module BDM or the last installed module respectively by means of the connector plug (5).

- Lock the module with securing screws (4).

## Technical Data

Dimensions: 2.519" × 2.519"

Serial interfaces: 1 x LIN
1 x RS232 (Skipper)

Module interfaces: MCU42-BDM-A (T-1637)
MCU42-PDM-A (T-1639)
MCU42-MDM-A (T-1640)
MCU42-MDM-B (T-1640)

# TECHNICAL SPECIFICATIONS

| T-1757 e | Module Documentation | ★★★★★ |
| | User interface MCU32-USIN-7-A | TORMAX |
| | | AUTOMATIC |
| Area of application | TORMAX 1102, 1201 Swing Door Drive | 12859 Wetmore Road |
| | | San Antonio, Tx 78247 |
| Release | 15 August 2014 | 1-888-685-3707 |
| | | www.tormaxusa.com |
| Use | Planning, installation, maintenance | |

## Purpose

Operation and programming of automatic doors with MCU32 and MCU42 Swing Door Drives.

## Function
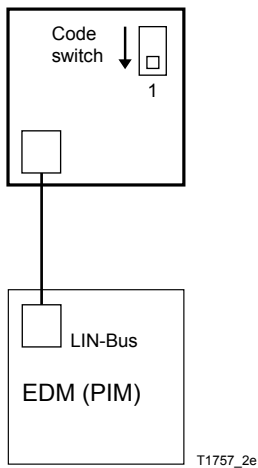


## Connection Diagram
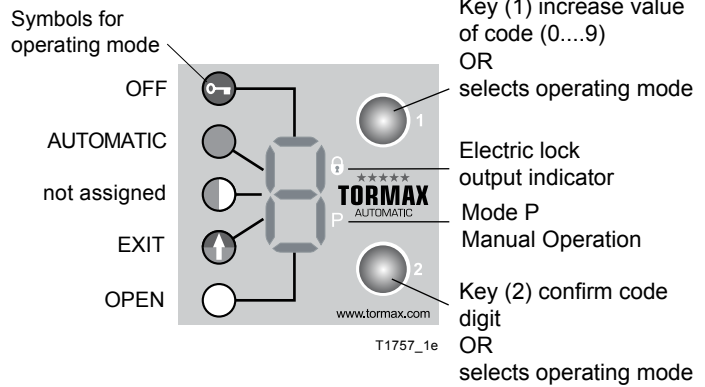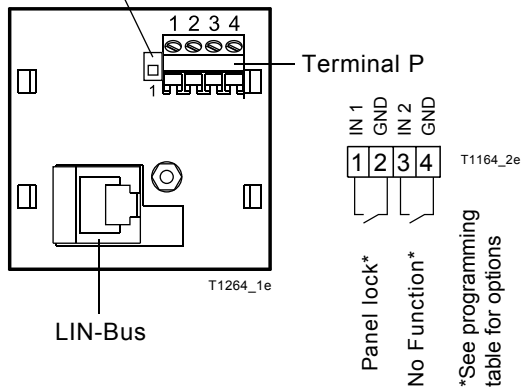
# TECHNICAL SPECIFICATIONS

## Installation

Mounting Frame
Switch on primary power at the operator after the user interface is connected.

- Mount the FCP user interface in the appropriate holder box system.
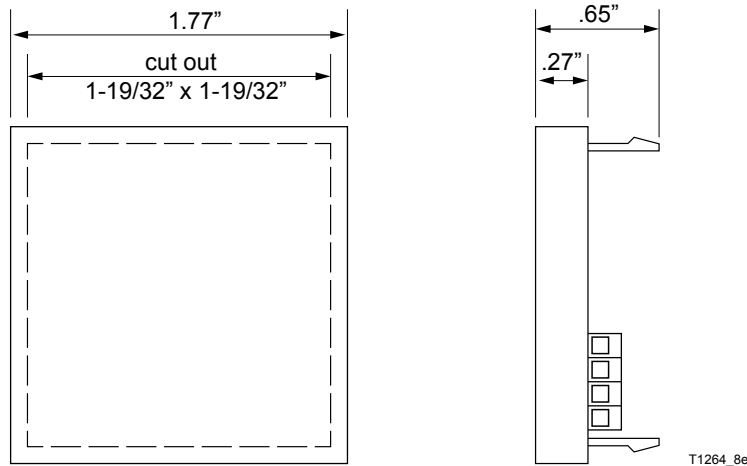- Or mount FCP in the side cover.

LIN Connection
Cut to length and assemble the LIN connection cable on both ends with a FCC 6-pole plug. The polarity of the FCC-plug is not of importance.

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



FCC 6 pole         max. 98'         FCC 6 pole
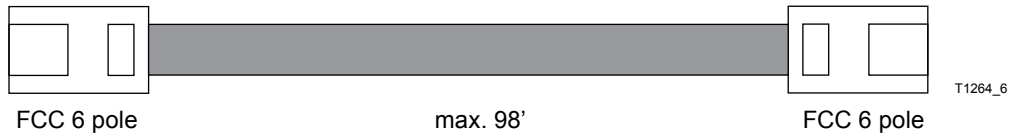
## Component Dimensions



## Technical Data

| | |
|---|---|
| Inputs: | 2 x Pull up in: 24 VDC/ 3mA, function programmable |
| Terminal cross section: | 20 AWG (stranded wire) |
| LIN interface: | FCC 6-Pol |
| Length of all LIN cables: | < 328' |
| LIN cable length between modules: | < 98' max, phone ribbon cable 6 x 0.14 mm2<br>< 100'max, LIN-Bus-Adapter MCU32-LADP-A |
| Ambient temperature: | – 4 …+122 °F |
| Dimensions: | 1.7716" × 1.7716", recess min. .787" |
| Module interface | MCU42-EDM-A<br>MCU42-PIM-A (for commissioning and maintenance)<br>MCU32 |

# ★★★★★ TORMAX
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