

Dado Door Master Controller Operation Manual

DO NOT CHANGE SETTINGS WITHOUT CONSULTING!

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Dado Door Master Controller Operation Manual

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This document is an overview of the Dado Door System Controller, which covers all of the programming menu options, including error messages.

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Note: From time to time, changes are made to the software and menu directory. For systems shipped prior to 1/1/13, menu options are different than shown. Older systems may contain more items than shown above. Effective 1/1/2013, the previously labeled setting "Set I-Max" is now called Max Torque. If your menu shows I-Max, then the same info contained in this manual regarding Max Torque will apply to your system. A setting labeled Hand Detect Level on older versions has been improved and re-labeled as Object Detection Level in this manual.

Introduction to the Dado Door Master Controller

The Dado Door sliding door automation system is a sophisticated software and hardware solution for automating sliding doors. Contrasting the typical industrial automations system, the Dado Door system is designed for high end residential applications which demand quiet, smooth, elegant, reliable operation. Significant effort has gone into engineering the track automation to produce an extremely reliable and efficient product that requires basically no maintenance. In the majority of installs, once calibrated, the system rarely if ever needs further attention.

There are two aspects of the Dado Door automation system. The first part of the install is the hardware installation. The second part is programming the door to fit the application. This manual covers the programming aspect of the installation, and assumes that a door has been attached to the track and is ready to be calibrated. Each phase requires attention to detail to insure a positive install experience in addition to a positive homeowner enjoyment after installation.

The Master Controller contains a simple and easy to follow menu directory of settings. When changing a setting, they are stored permanently. This manual will cover all aspects of the menu. It is advised that the installer do not make any changes to a setting without first reviewing the manual.

It is advised that the Master Controller be installed in a manner so that it is easy to get access to if future adjustments are required. Do not install in a room (ie attic or basement) such that there may be significant temperature fluctuations, moisture, or excessive dust accumulation. It is ideal to have a line of sight from the Master Controller to the door when possible for easy programming. During the install and calibration, it is best to plan for easy access to the motor and Master Controller, as the most frequent problems experienced by installers are due to wiring and connection problems. When the motor and Master Controller are easily accessible, troubleshooting wiring problems is a quick and easy process.

Although much effort has gone into methods to make the door system as safe as possible, there is always some potential risk that the Dado Door automation system may cause bodily harm to persons or pets that are in the door's path. Use a common sense approach as to where and how this system is installed.

Precautions before turning on the Master Controller Power Switch:

Do not connect or disconnect any cables while the power is turned on.

Do not connect the CAT5 cable from the motor to any other port besides the MTR LOGIC port. The motor may become damaged if plugged into any other port.

Do not connect a Touch Screen that is labeled Touch Panel to any other port besides Touch Panel A or B.

Do not connect a Touch Screen that is labeled Keypad to any other port besides the Bio/Keypad port.

Getting started:

Before powering on the Master Controller, be sure that the door can move freely by hand from one side to the other with power OFF. Be sure that the door is able to touch the Home Switch located on the track without obstruction reaching it.

Upon powering up the system, the door will make two small 1/8" diagnostic moves, then will start to move very slowly towards the fully open position. If the system exhibits any behavior OTHER than moving slowly towards HOME(fully open), quickly turn off the power. If the door begins the homing process towards the CLOSED position, then the belt has been installed in reverse. It is advised that when powering the system up for the very first time that you have easy access to the motor and Master Controller. It is ideal to be able to see the door from the Master Controller while programming.

The primary settings required to be adjusted by the user are:

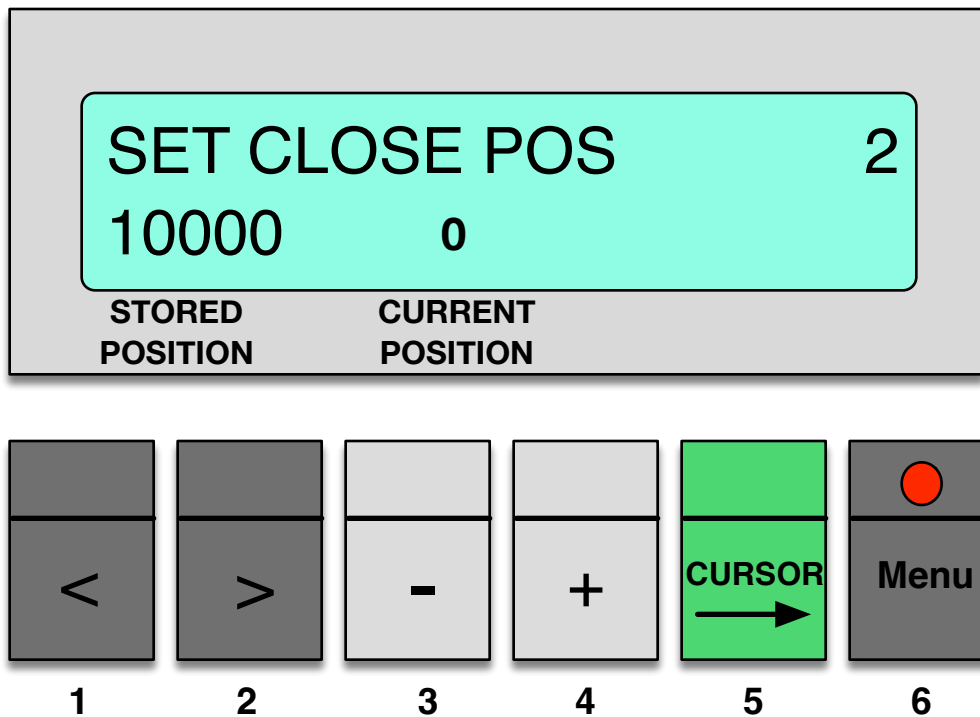
Set Closed Position, Closing Trip Level, Set Max Torque(DO NOT CHANGE TORQUE)

MANY settings designated as "Factory Settings" should never be changed without consulting Dado Door.

In the event of the system become inoperable, before powering off the Master, look at the LCD display and see if any error messages are present. For a detailed explanation of error messages, see the error listing section later in this guide.

NOTE: The default distance the door is set to move is 20". You will need to adjust the Set Closed Position to your requirements. If your door is required to move LESS than 20", be sure to adjust this Closed Position BEFORE attempting to test the system. Do not allow the door to contact the door jamb.

MASTER CONTROLLER PROGRAMMING LCD DISPLAY



The Dado Door Master Controller is programmed by entering the Main Menu and scrolling to the various options. To enter the Main Menu, press the SETUP MODE button. This button contains a red LED which should turn on when the button is pressed. The menu will open up to the last setting that was displayed. The Main Menu is organized in a list of user settings. The left and right arrows < > are used to scroll from the top of the menu list to the bottom of the list. The menu list order may change, but this guide will provide the basic programming information needed to set up the parameters.

Buttons Explained:

< > Move up or down the Main Menu

- + Add or subtract from a number, or select Yes/No fields

CURSOR Cycle the cursor through a menu item with more than one field

MENU Enter/Exit the Main Menu. The LED is ON upon entering the menu.

To exit the menu, press the button again, the LED will turn off.

You may enter Setup Mode at any time after the system is booted and has completed the diagnostics routine. If there is a problem with the system not being able to complete the bootup routine, it may be required to enter the Setup Mode using the BYPASS MODE. Some other controls may not work while in MENU MODE.

MENU SETTINGS:

These are SOME of the settings found in the Main Menu. Do NOT Make changes unless you have consulted Dado Door.

1. Test Motion
 2. Closed Position **DO NOT CHANGE WITHOUT CONSULTING!**
 3. Max Torque* **DO NOT CHANGE WITHOUT CONSULTING!**
 4. Input Config
 5. Closing Trip Level* **DO NOT CHANGE WITHOUT CONSULTING!**
 6. Opening Trip Level* **DO NOT CHANGE WITHOUT CONSULTING!**
 7. Home Trip Level* **DO NOT CHANGE WITHOUT CONSULTING!**
 8. Object Detection Level* **DO NOT CHANGE WITHOUT CONSULTING!**
 9. Open Speed
 10. Closing Speed
 11. Set < > Directions* **DO NOT CHANGE WITHOUT CONSULTING!**
 12. Accel/Decel Config* **DO NOT CHANGE WITHOUT CONSULTING!**
 13. Offset Open Position **DO NOT CHANGE WITHOUT CONSULTING!**
 14. Offset Enable **DO NOT CHANGE WITHOUT CONSULTING!**
 15. Auto Close Enable
 16. Auto Close Delay
 17. Volume(Audio/Beep)
 18. Device ID* **DO NOT CHANGE WITHOUT CONSULTING!**
 20. Deadband* **DO NOT CHANGE WITHOUT CONSULTING!**
 21. Temperature Comp* **DO NOT CHANGE WITHOUT CONSULTING!**
 22. Reset All Settings* **NEVER TRY TO RESET. NEVER EVER EVER**
 23. Nudge Distance*. **DO NOT CHANGE WITHOUT CONSULTING!**
- * Factory settings. Do not change.

There will be a consultation fee to put back working settings if you RESET ALL SETTINGS.

BYPASS MODE:

If required, at power ON the user can immediately PRESS and HOLD down the Setup Mode Button until the Main Menu appears, this will bypass the diagnostics and HOMING process. This BYPASS approach to the Setup Mode is for special cases where the user may need to make some adjustments prior to the system running the diagnostics and HOMING routine. DO NOT ATTEMPT TO OPERATE THE DOOR FROM THIS MODE USING TEST MOTION, THE DOOR MUST BE HOMED PRIOR TO MOVING THE DOOR. If using the Bypass Mode, once you exit the Setup Mode by turning off the RED LED, the system will automatically begin the diagnostics and homing routine.

SYSTEM OVERVIEW and FEATURES

Electronics:

The system controller is a 110/220VAC powered master controller that contains the main motherboard, motor driver board, power supply board, and optional audio processing board. When ordering, if the system is to be operated from 220, this controller may need to be specifically prepared in advance with special wiring internally. Connections to the controller are as follows:

8 port RJ45 jack(uses CAT5E cable, straight through wiring):

Port 1: Touch Panel A
Port 2: Touch Panel B
Port 3: Optional Keypad
Port 4: Motor Logic Cable
Port 5: AUX IOs (4 buffered connections for external control input/output)
Port 6: MISC IO((2 connections for external control input/output)
Port 7: RS485 interface for remote device serial communication OPTIONAL PORT
Port 8: RS485 interface (duplicate for daisy chain). OPTIONAL PORT

Motor 3 Phase Power Leads:

Connection to the Brushless DC motor power using 26VDC is made with a 3 conductor 18G specially prepared cable.

AC Power:

110VAC cord (Standard 3 conductor/3 prong power cord)

External Inputs:

AUX IO: The standard control system allows four external inputs of low voltage sources(0 - 5VDC) for remote triggering. As an example, a Motion Sensor may be used for automatic operation. A fire alarm may be used to trigger the door to open or close as desired for egress requirements. Additional methods of signaling the door to open or close may be configured. Consult with Dado Door Prior to making any connections to external equipment. AUXIO board may only connect to the AUX port.

MISC IO: Other inputs or outputs can be configured using the MISC IO port and MISC IO breakout board plugged into the MISC IO port. MISC board can only connect to the MISC port.

FEATURES (cont'd)

Touch Screens: There are several versions of wall mounted touch screens available. These touch screens are not required to operate the door. The Standard Touch Screen has a large main area for door toggle, this area is indicated by two arrows together and is a one-touch button. There are smaller touch areas indicated by the < and > arrows for positioning the door anywhere between the extremes of full open or full closed while the arrows are pressed. There is a lock area with a corresponding LED to display whether the door is locked or unlocked. We offer a fingerprint/keypad keypad panel in a Keypad Touch Screen. The Keypad can be used for passcode entry. The optional fingerprint sensor can store up to 1000 users in the database.

Software Features:

Locking Features: Port B is designated as a locking master sTouch Screen. A secret unlock method can be provided as required to prevent accidentally being locked out of a room or for emergency purposes. Port B is typically the port that will be used as a Locking Touch Screen inside the room. Port A it typically the outside Touch Screen.

Auto Home: Upon each power up, the system automatically moves slowly towards a Home switch which is located on the track near the motor. After Homing, the system operates normally. Turn off power if the door is homing away from the switch.

Parameters and Settings: There are basic user settings and advanced settings for motion control to achieve the best possible motion for any door weight and size. Each setting is stored in permanent memory and cannot be lost due to power failure.

Upon a power outage, when the power comes back on, the door moves to it's Home position(fully open), and all parameters remain as they were prior to the power outage.

Auto Close: Automatic close mode can be enabled, whereas after a user defined delay period(0 - 60 seconds), the door will automatically close after it has been opened.

Auto Retract on obstruction or door jam: If the door is closing and encounters an obstruction(unusual pressure), it will retract automatically to the fully open position. There is a parameter to set this threshold of pressure that must be exceeded before retracting(Closing Trip Level). The method of determining pressure is done by using a current sensing circuit on the motor driver board. The software monitors the current levels and detects if the levels have exceeded the user-defined Trip Level.

FEATURES(cont'd)

Test Motion: In the Main Menu, the Test Motion Screen allows the door to be operated with the buttons. This is used when no other controls are connected and it is necessary to calibrate the door. In some cases, it may be easier to run the door from the Master Controller Test Motion feature even if other controls are connected.

Open and Close Speeds: The user can set the speeds for both opening and closing with the Open Speed and Close Speed settings.

Acceleration/Deceleration: The user can program the rates at which the door accelerates and decelerates, this is configurable separately for each direction.

Motion Detection: Motion sensors may be provided to open or retract the door, including safety sensors to monitor for a person or object blocking the door path.

Fire Alarm interface: External inputs can be configured to receive input from any low voltage source for remote control, such as a fire alarm contact closure.

Deadband DO NOT ADJUST WITHOUT DISCUSSION. The Deadband value is based on $1'' = 500$. This setting in the menu determines how precise the door should attempt to hold a position. In some cases, this setting may be increase to reduce some oscillation or 'pulsing' motion when the door is supposed to be stopped. The default setting is 10, which means that the door will park typically within $10/500$ of an inch precision(.02"). For an exaggerated example, if the Deadband is set to 250, the final position of the door could be within $1/2''$ of the actual position programmed in the controller.

FEATURES(cont'd)

Remote Serial Communication OPTION: The controller has several methods of external digital control. There are built-in RJ45 ports that allow RS485 serial interface for access from external digital systems. Advanced home automation systems offer configurable serial communication using a serial protocol. The home automation installer can write own code blocks to operate the door system.

Overload Protection:

Much effort has gone into the software design in order to avoid overloading the motor driver. If needed, the system will abort the current move and alert the user by means of LCD display with an error message. In the event of the door closing and sensing an obstruction, the door automatically retracts. This trip level when closing is referred to in the menu as the Closing Trip Level. There is also a threshold setting for the opening direction called the Opening Trip Level. Upon boot up, the door moves to the HOME position switch. During this phase, there is a threshold called **Home Trip Level**, which is used to prevent the system against overload due to an obstruction during the Homing phase. The parameters may need to be adjusted to account for the weight, speed, and friction of each door by the user at the time of installation. These features reduce the possibility of overheating the circuitry on the motor driver.

The motor driver circuit board has it's own method of current limiting as well in the event of the motor drawing more current than necessary. There is a trim pot on the motor driver board that is set at the factory so that above a certain current level, the motor driver IC will temporarily go into a FAULT mode and shut down the motor until the over current condition has been corrected. A red LED near the center of the motor driver circuit board will turn on to indicate the FAULT state.

Fuses:

The motor driver receives power through a 2 amp slo blo fuse, which will burn out if the motor is drawing more current than normal operation calls for. The power supply board uses a 2 amp slo blo fuse in line to the 110/220 AC supply HOT input.

Power:

Cables from the main circuit board to the touch panels are all 5 volt DC logic.

The power supply generates 26VDC for the motor driver and motor use. It generates 5 VDC for all other system use.

Overload Trip Levels

Closing Trip Level:

The Closing Trip Level is a setting at which the door will retract (while closing) upon encountering pressure. This is a safety feature that prevents the motor from continuing if the software thinks the door is experiencing higher than normal pressure. The lower the Closing Trip Level value, the easier the motor will sense pressure and retract. The higher the setting, the greater amount of pressure required to cause the door to retract. The goal is to find a setting that is a good compromise between avoiding false triggers due to the door's inherent load factor, and being too high. In a new installation, this setting is one of the main calibrations required. If you notice that when trying to close the door it retracts by itself and returns to the open position, then the Trip Level is too Low. Raise the Closing Trip Level in small increments until the door will move completely to the closed position. This process is a bit of trial and error. Note: A door that gets used very frequently will require a higher TRIP LEVEL than a door that gets used infrequently. This is because as the circuitry warms up due to driving the motor a lot, the system will become more sensitive and will produce false 'Trips' and subsequent retractions while closing.

The speed the door is set to will affect the Closing Trip point. The faster the door is moving, the more current the motor is consuming, thus a higher Trip Level will be required to avoid false trips. Each time the speed is adjusted in the menu, the Trip Levels will need to be adjusted as well for optimal retraction. If you have set the Trip Level to a good value, and then you raise the speed to a faster speed, then there is a good chance the door will produce a false trip and will retract by itself.

Opening Trip Level: NEVER CHANGE

The Opening Trip Level is a similar function to the Closing Trip Level, except that it is the value for the opening direction pressure. Pressure senses above the Opening Trip Level threshold, the system will shut down requiring reboot. This is to prevent damage if the door has become jammed while opening.

Home Trip Level: NEVER CHANGE

The Home Trip Level is a similar function to the Opening and Closing Trip Level, except that it is the value for the HOMING phase. The Homing phase occurs at boot up, where the door will automatically move towards the fully OPEN position to find the HOME switch. If the software detects a pressure trip level during this motion, it assumes that the door is not moving freely and shuts down the system requiring reboot. If the system shuts down during the Homing Phase, the user should power off the system, and test the door manually back and forth to make sure the door is able to move freely to the Home Switch. If the door will not home due to a home trip level error, power off and reboot using the BYPASS SETUP MODE, then adjust the Home Trip Level setting a little higher and exit the Setup Mode to begin the Homing process. Adjust the Home Trip Level until the door can move to fully open without an error.

Temperature Compensation: (*Factory Setting, do not change)

The Temp Comp is a factory setting that should not be changed without consulting Dado Door. The metal enclosure has a certain ambient temperature due to electronics in the box and the room temperature combined. The motherboard has an onboard digital thermometer which is checking the temperature constantly.

In electronics, temperature affects how circuits behave, and the previously mentioned Trip Level settings are no exception. If the temperature changes in an environment, then the Trip Levels will tend to change as well, throwing off the calibrations made at an earlier time at a certain temperature. The Temp Comp is part of an internal algorithm that uses the digital thermometer to track the room temperature and compensate for changes, thus keeping the Trip Levels somewhat stable over a range of temperatures.

Set Close Position:

The Set Close Position is the actual distance the door will travel towards the closed (stopping) position STARTING from the fully open (HOME) position. Upon booting up the system, the door will travel to a HOME position (fully open), and will contact the Home Switch on the track. The default Close Position settings is 10,000, which is 20" of travel. Zero is the fully open position at the point of contact of the door to the HOME switch. The system uses digital encoders located on the motor to keep track of where the motor/door are in a highly precision manner. The Set Close Position value shown in the display will equate to approximately 1" = 500. As an example, if the value says 5000, then calculate $5000/500$ and you can assume that the door will move 10". If the value is 10000, then the door will move 20" and stop ($10000/500$). $1/2" = 250$, $1/4" = 125$ $1/8" = 62$ $1/16" = 31$ $1/32" = 15$.

This setting is one of the first important settings on a new install. ****Change this setting in SMALL amounts and WORK YOUR WAY UP TO the final closed resting point, DO NOT go past the point where the door bumps the jamb****. It is never a good idea to allow the door to contact the wall or jamb when closing. If the door does bump the wall, immediately power off the system to avoid stressing the motor and motor driver. The Closing Trip Level 'may' catch the overshoot and retract the door if it hits the jamb, but, on a new install, the Closing Trip Level may be set too high to detect the jamb and the system could be stressed causing damage.

Keep in mind, that if you change the Home Switch location on the track at any time AFTER establishing the Set Close Position, then the Set Close Position will have to be re-calibrated BEFORE running the door again. If the Home Switch is moved closer to the door jamb on the closed side of the door, then the door may hit the jamb based on the distance it has been programmed to move. If the home switch is moved, change the Set Closed Position to a lower value so that the door will be sure not to hit the jamb, then start over on the calibration and work your way up to the actual closed position again.

Set Max Torque: NEVER CHANGE WITHOUT DISCUSSION WITH DADO!!!!

This is a factor in the motor control software. The "Max Torque" is the maximum power the motor driver can produce, thus limiting the power to the motor. On a new install, it is possible that the Max Torque is too low and the motor does not have enough power to move the door. In this instance, errors will be seen on the Master Controller LCD. The solution to this problem is to reboot the Master Controller using the Bypass Mode, adjust the Max Torque setting upwards by 500, then exit the Menu. Once the motor has sufficient torque to match the door weight and friction, the system will be able to run the boot up diagnostics and Homing routine. On the other hand, if the Max Torque is set too high, the door will move in abrupt jerky motions. The key is to find a balance between not enough torque, and too much. See further info on Max Torque.

Object Detection Level: NEVER CHANGE WITHOUT DISCUSSION WITH DADO

This setting allows the software to determine if an object has obstructed the door from closing completely. The setting is calculated by the value entered, whereas 500 = 1" of travel. Since 500 = 1" of door travel, 250 would be 1/2" travel, 125 would be 1/4" etc. Upon closing, if the door is not able to complete the move to the Closed Position due to an obstruction, then the door will automatically retract. This is a redundant safety feature. In most cases, the Closing Trip Level is used to detect an amount of pressure on the door during the closing motion. Above a certain pressure on the door, the door will auto-retract(Closing Trip Level). In some cases, during the last couple of inches of travel closing as the door is decelerating, it becomes more difficult to detect pressure on the door. It is during this last few inches that this extra Object Detection feature becomes useful. The purpose of the Object Detection feature is so that in the event that a hand or finger is stopping the door from completing it's motion towards the closed position, and the Closing Trip Level does not detect the pressure due to the slow speed in deceleration, the Object Detection provides a safety backup.

The Object Detection operation uses an average of 10 completed closes to determine a time factor in the software to track the normal closing time of the decel phase. This means that to become effective, the door must complete 10 closes without an obstruction to establish the internal running average. After the average is settled, the Object Detection begins to operate. If an object is preventing the door from completing the move within the average time, the Object Detection will retract the door. If the Object Detection Level is set to 125, then any object thicker than 1/4" will trigger the retraction. On an Object Detection, a message will appear on the Master Controller LCD screen stating "Object Detected" at the time the door retracts.

NOTE: After two consecutive Object Detections, the master controller will automatically reboot. This is done to recalibrate the system to the Home Switch.

Final Note Regarding The Object Detection Level: If the Max Torque is not sufficient to move the door to the final stopping point, the door may not actually be obstructed but this error may still occur. If it is certain that there is no obstruction, but this error appears, try raising the Max Torque by 500 and retest. Remember, the door must close 10 times without an obstruction before the Object Detection begins to operate.



Accel/Decel Parameters:

There is a lot of flexibility for affecting the motion profile. One of the nice features of the Dado Door system is the ability to create an elegant motion to suit the desired aesthetic and function. The Acceleration and Deceleration for both opening and closing directions are able to be set in this menu separately. Toggle through each setting with ENTER button.

The menu has 4 values: AC DC AO DO

AC = Acceleration when Closing

DC = Deceleration when Closing

AO = Acceleration when Opening

DO = Deceleration when Opening

A smaller number means the accel/decel %factor will be smaller. A larger number means the factor will be larger, and will take longer to slow the door to a stop. To cause the door to take longer to accelerate to full speed, choose a higher accel factor. Shorter values produce a more abrupt motion at the far ends of travel. Larger values produce a more graceful, slower accel or decel. The value for each parameter is an actual percentage of distance of the total motion.

Set Max Speed Open:

This setting affects the maximum speed reached while opening. Ranging from 1 to 21, the lower number will result in a lower speed. The system is designed to handle a large range of door sizes and weights, but it should NOT be assumed that your door will move at the fastest setting allowed in a safe manner. It is highly recommended that upon initial installation, your door be set to a slower speed before testing at higher speeds to avoid possible damage. The default settings should be a safe speed to begin testing. Increment the values in small amounts and test the motion if you choose to increase the speeds. Keep in mind that speeds will affect the Opening Trip Level discussed earlier.

Set Max Speed Close:

This setting affects the maximum speed while closing. Ranging from 1 to 21, the lower number will be a lower speed.

Set Direction: NEVER CHANGE WITHOUT DISCUSSION WITH DADO

On the Dado Standard Touch Panel, there are two smaller areas towards the lower half of the panel that have graphic indicators marked < and >.

On the Dado Door Touch Screen, pressing and holding the < arrow will move the door in one direction, and pressing > will move in the opposite direction while the arrows are pressed. Due to the fact that there are numerous ways a system can be set up, these arrows may not always reflect the direction that the door is actually moving in. For the sake of having these arrows move the door in the same direction as they are pointing, the Set Direction parameter allows the direction of the actual effect of the arrow buttons to be reversed.

If your arrows are moving the door in reverse from how you want to operate the door, use the GREEN BUTTON to move the cursor to the Touch Panel you want to change the direction(A or B Touch Screen) on, use the buttons + and - (buttons 3 and 4) to change the value from 0 to 1. This will reverse the direction of the arrows on the Touch Screen. Once changed, turn off the RED LED on the menu button, and test the results. You may need to change the direction of both LCD Touch Panels. The Touch Panel that is plugged into Touch Panel A is going to be affected by the direction settings in the menu option under "A". The Touch Panel that is plugged into Touch Panel B is going to be affected by the direction settings in the menu option under "B".

Warning!!! In this same menu option is a feature for reversing the MOTOR DIRECTION. Never change this setting without consulting Dado Door. Damage will result if you change the Motor Direction.

Offset Open Option: NEVER CHANGE WITHOUT DISCUSSION WITH DADO

This setting determines if the Open Position Offset is ON or OFF.

On boot up, the system HOMES to the home switch and 'zeroes' out the system. If for any reason after installing the system you would prefer to OPEN the door to a position more 'inward' than the extreme HOME switch position, the OFFSET OPEN is a software option to position the door. If the Offset Open Option is turned off, then the door will move to the OPEN position set by the HOME switch. If the Offset Open Option is turned ON, then the door will move open to the position determined by the Set Open Offset value.

Set Open Offset: NEVER CHANGE WITHOUT DISCUSSION WITH DADO

This setting determines the offset distance away from the HOME switch that the door will stop at when in the fully opened position after the initial boot up process is complete. On boot up, the system HOMES to the home switch and zeroes out the system. If the Open Offset is turned on, the offset value is used for the fully open position.

The value in the menu is approximately 1" = 500. So for example, to create a 1/2" offset, put the offset value at 250. The door should move as the setting is changed in the menu as long as the Offset Open Option is turned on, this way you can see the door position updates real time in 1/8" increments.

AutoClose Option:

If this option is ON, the door will automatically CLOSE after a delay amount set by the AUTO CLOSE DELAY menu option.

AutoCloseDelay:

This sets the time in seconds after which the door will automatically CLOSE if the AUTO- CLOSE option is ON. For example, if the setting is 5, then after the door opens, in 5 seconds it will close again.

Reset Defaults: NEVER CHANGE WITHOUT DISCUSSION WITH DADO

If for any reason the factory settings need to be reinstalled, this menu option will restore the settings that are installed prior to shipping the system. This option will clear any settings that have been set by the user. If you have a need to reset the defaults, you MUST go through all the menu options and write down your custom settings for future reference. A fee will be charged for Dado Door to help you put Back good working settings and this takes 30 minutes on the phone.

Set Volume:

This options allows the user to select the volume of Master Controller beeping sound. This is used in cases where the beeping produces by the controller may need to be turned down or off.

Set ID: NEVER CHANGE WITHOUT DISCUSSION WITH DADO

If RS485 is used to communicate with one or more Dado Master Controllers, each door will require a unique ID number ranging from 0 - 127. The Destination field is the ID of the Master Device that is communicating with the Dado Door controller. The Destination number will always be 0 by default.

System Input Configuration:

The system controller has a number of options for controlling the door. On the top of the enclosure are the connections to the system for remote control, which include the Touch Panel A, Touch Panel B, Keypad, AUX Input, MISC IO RS485 networking. In the menu, there are 5 headings *A *B KP X1 RS with corresponding values below each heading. '0' = option disabled, '1' = option enabled. Disable unused inputs.

Toggle through each setting with --> CURSOR button.

*A = Touch Screen A
*B = Touch Screen B
KP = Keypad with Fingerprint Option OBSOLETE
X1 = External Input
RS = RS485 network OPTIONAL

System Display Messages

The System Controller has an LCD display which has several functions. One is to allow the user to see menu options for programming the system, and the other is for displaying error messages in the event that the controller has encountered a problem. In some cases, if the controller senses that the door has become obstructed, the system will shut down and a reboot is required. The error messages should give a general idea of what the problem may be and the information below should offer a remedy to correct the error. In the event that the door stops working, prior to turning off the power to the Master Controller remove the top cover panel and check for any error messages on the LCD.

Bootup Routine

Upon powering up the controller, the LCD will display several messages that relate to the boot up diagnostic routine. The boot up messages are shown in the order below:

1. Software Revision (ie REV3.03.027)

2. Current temperature in Fahrenheit. to 4 decimal places (ie 74.0125F)

The temperature readout is not of any significant value to the user, except in cases of troubleshooting the information may be requested by Dado Door.

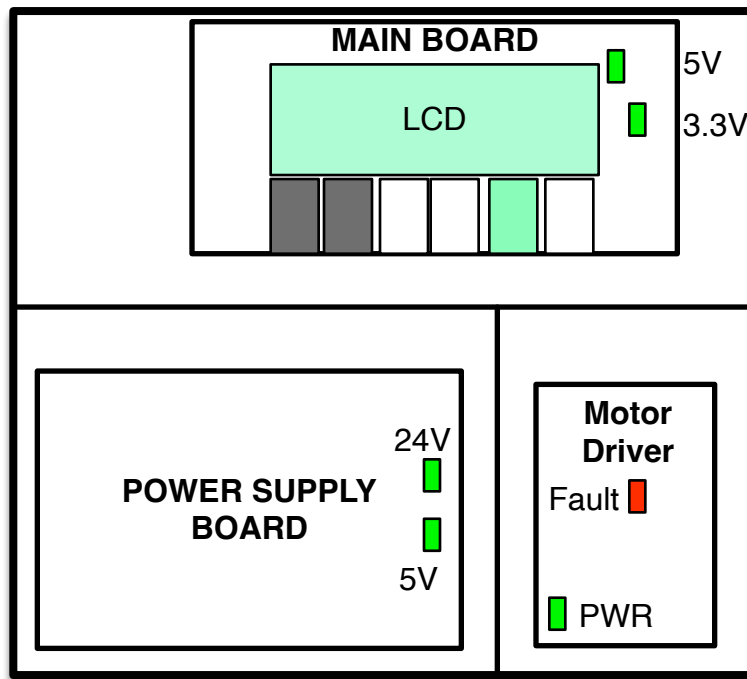
3. ENCODER TEST: Encoder Passed or Encoder Failed. The encoder is a sensor attached to the motor that allows the system to know very precisely where the motor and door are at all times. If the encoder has been damaged or the cable that connects the system controller to the motor (Motor Logic port) is disconnected, then the encoder test will report Encoder Failed. If the system finds that the encoder is operating as it should, it will report Encoder Passed. The system cannot run unless the encoder is tested to be connected and working properly. If you get this error on power up, the typical issue is that the MTR Logic cable is not connected, or the Max Torque is too low. See troubleshooting guide for more info.

4. Homing If the system has booted up and the encoder diagnostic has passed, then the screen will show the message HOMING.... During this phase the door should be moving very slowly towards the fully open position, and the door should press in the Home Switch located on the track.

5. Jog Reverse After pressing in the Home Switch, the screen will show the message "Jog Reverse". During this phase, the door will move back off of the Home Switch so that the door no longer is pressing the switch in.

6. Ready Assuming that everything went well during the bootup routine, the screen will show the message "Ready" indicating that the door is ready for normal operation. If any other error messages are shown, please consult the error messages section and contact Dado Door if assistance is needed.

Dado Master Controller Unit LED Status Indicators



Normal Status of the LED's on the Motor Driver Board(Overview)

1. On power up, the GREEN LED on the lower left of the Motor Driver board should always be on.
2. The Motor Driver board RED LED should be OFF on initial power up, but after several seconds should briefly flash ON for less than a second, then go back off***
3. The Power Supply board Green LED's for 24V, 5V should be ON
4. The Main Board Green LED's for 5V, 3.3V should be ON.

***On power up, if the RED Fault LED on the motor driver board is lit right away, then there is a problem:

1. The Motor Logic cable is not plugged in from the Master Controller to the motor.
2. On the motor, there is a set of five wires that go to the small circuit board located on the motor. This set of wires may be damaged, or the plug is not seated properly.
3. If the motor has been plugged into the Master Controller using ANY port other than the MTR Logic port, the motor may have been damaged causing this fault.

See additional information on troubleshooting.

Troubleshooting the Motor Driver FAULT ERROR LED:

On the bottom right hand corner of the master controller, look on the motor driver PCB for LED activity upon power up. If the motor is connected properly, there will ONLY be one LED that turns on right away on power up, it is the lower left Green LED on the Motor driver board marked "PWR". The PWR LED indicates that the motor driver board has 24volts. If the RED FAULT LED (near the center of the Motor Driver board) is ON right away at power ON, then there is a problem between the master controller and the motor. The problem may be that the CAT5 cable is damaged or cross wired, or maybe connectors or wires are damaged on the motor, etc. On the end of the motor, there are 5 wires that are associated with this error: Black, Red, Blue, Green, and White. These wires have a 5 conductor plastic connector attached that plug into the small circuit board on the motor. The order of the colors are Black, Red, White, Green, Blue. Be sure that the CAT5 cable to the motor is wired 'straight through', with no crossover. Keep all pairs together, do not split any wires out of a pair. Each end of the CAT5 cable should be identical colors, not mirrored colors.

When the connection problem is resolved, on power up the motor driver board will only have the Green PWR LED lit up. The master controller on bootup does several diagnostic routines. If the FAULT LED is LIT immediately on Power ONs, the system will never boot up and pass the diagnostics test. First check that the MOTOR LOGIC cable is plugged between the master controller and the motor. It may be required to plug in the connector on each end several times to insure the copper connections are cleaned. A good rule of thumb is to plug in the cable on each end 5 times to clean the copper contacts on the plug. Also, inspect that the 5 wires from the motor are secure in the plastic connector. Gently pull on each wire to see if one may have been broken, in which case the wire may pull out of the connector.

A Fault on the Motor Driver indicated by the RED LED being on immediately at power up is not a problem that can be solved with settings in the Master Controller.

NOTE: On some earlier versions of the Motor Driver circuit board (prior to 2013) the Fault LED near the center of the board may have been GREEN. All newer boards use RED.

See Section on Advanced Details on the FAULT LED ERROR.

Advanced Notes on the FAULT LED ERROR on the Motor Driver Board.

This LED will ONLY be ON immediately upon turning on the power under these conditions:

1. The MTR logic cable from the master to the motor is disconnected, or not connected well(or contacts dirty). The plastic plug that is crimped on each end of the CAT5 cabled has been damaged or has a bad (or intermittent) internal connection. The CAT5 MTR logic cable has been damaged somewhere between each end(ie nailed, screwed, cut, etc).
2. The connector that the CAT5 MTR Logic cable is plugged into at the motor or at the Master Controller has been damaged.
3. The set of 8 wires that runs from the main circuit board (top compartment of master) to the motor driver board (lower right) has a bad connection or either one of the plugs is not seated well. The eight individual wires may be inspected to be sure they are plugged into the white connector and that none of the 8 wires is loose or pulled out of the white connector at each end.
4. If the MTR logic cable is plugged into any other port on the Master Controller other than the MTR logic port, sensors on the motor may have been damaged. If any type of CAT5 cable that is NOT wired STRAIGHT THROUGH is connected, there is a high likelihood that there is a damaged sensor on the motor.

With this test below that you can determine if ONE of the problem conditions listed is present:

1. Turn off the power to the Master Controller
2. Insure the proper MTR logic cable is connected at the Master and at the motor(Straight Through ONLY).
3. Turn on the power to the Master and immediately press and continue to hold down the SETUP MODE button(far right button in the Master), wait until the LCD shows MAIN MENU then release the button, the LED should remain ON.
4. If the LED is ON on the center of the motor driver board(lower right), then ONE of the problems listed above is present. Move the door any amount by hand, even if only 1/8". While moving the door, watch the center LED on the motor driver board to see if it turns off or flickers on and off. In either case(solid LED or blinking), either the motor has a sensor that has been damaged, or there is a bad connection at some point between the motor driver board and the small circuit board attached to the motor.

The problem is either one of 3 places in this case:

1. Master Controller
2. Motor
3. Cables between Master and Motor

You may attempt to check the wiring while in this test mode, and if the connection is resolved, the LED will turn OFF.

If the FAULT LED flickers on and off during the manual door move test, that may indicate that one of three Hall Sensors is not connected back to the Motor Driver, or that one of the sensors is damaged. If the FAULT LED remains solid, that is more indicative that the Hall Sensor voltage supply is not present (5V and/or GND). It may not be easy to diagnose whether the Hall Sensor on the motor has been damaged or if it is a connection problem. Past experience has shown that connectors are typically to blame for the FAULT LED condition when the Hall Sensors are in good working order. During installation, if a cable is tripped over or pulled accidentally, the connection may be damaged but the damage may not be apparent.

Initial Calibration and Setup. FACTORY SETTINGS >>>DO NOT CHANGE!!!! <<<<

NOTE. THE TORQUE IS FACTOR SET, DO NOT CHANGE WITHOUT CONSULTING!

******* IF YOU CHANGE THE TORQUE WITHOUT CALLING DADO DOOR FIRST YOU ARE ASKING FOR PROBLEMS AND WASTED TIME *******

If this is the first time setting up the door, please get familiar with the following information regarding the Max Torque. The Max Torque MAY need to be tuned for each door for optimal performance only in rare occasions.

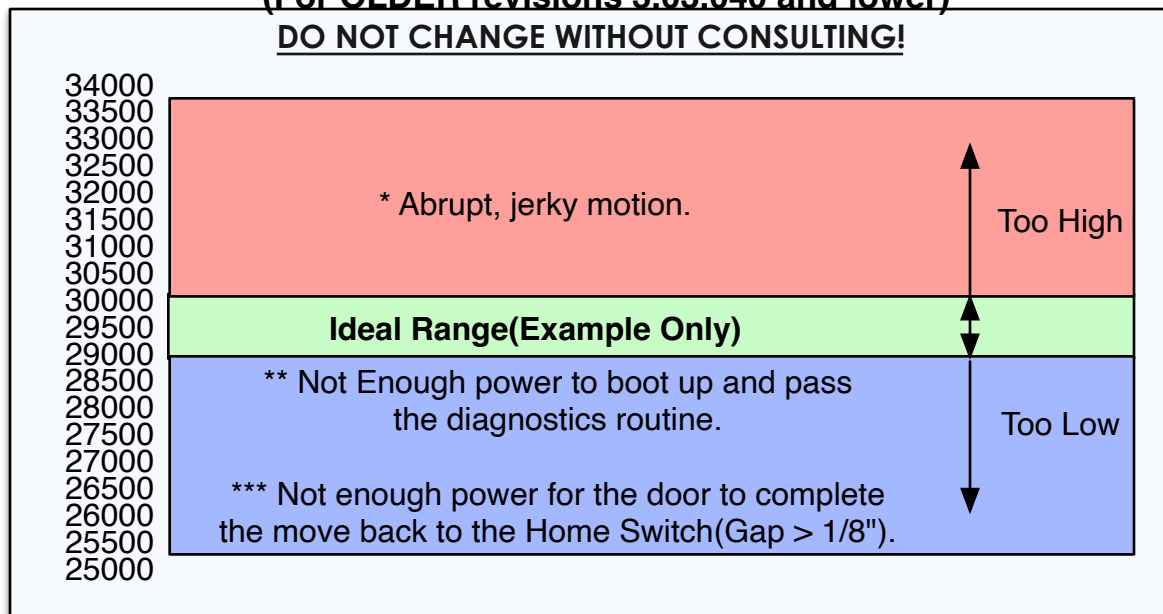
DO NOT CHANGE WITHOUT CONSULTING!

NOTE: As of Revision 3.03.041, a feature has been added to assist with calibration the Max Torque at the FACTORY ONLY. This feature is called Torque Cal. See notes later in this guide.

Setting the Max Torque Value

(For OLDER revisions 3.03.040 and lower)

DO NOT CHANGE WITHOUT CONSULTING!



The Max Torque setting is incremented in values of 500 in the Main Menu by entering the Setup Mode. If required, the Setup Mode may be entered on bootup with the BYPASS MODE:

DO NOT CHANGE WITHOUT CONSULTING!

1. Turn off the power
2. Turn on the power and immediately hold down the Setup Mode Button. Continue holding the button until the screen shows MAIN MENU. Then release the button. The Red LED will remain on, indicating you are in Setup Mode.

This setting is used to calibrate the Maximum amount of torque the motor can be provided by the Motor Driver board. This value is unique to each door and Master Controller. When closing, on new systems a COUNT is shown and fully closed. This should be below 50 or torque is too low.

* Abrupt jerky motion. On boot up, if the door moves in short, jerky motions, then the Max Torque is likely set too high for the door. Enter the Main Menu using the BYPASS MODE, reduce the Max Torque by 500. Exit Setup Mode, observe the bootup routine and repeat until the door operates in a smooth manner. When the Max Torque is too high, the system may produce Trip Errors frequently.

Setting the Max Torque Value (cont'd)

NEVER CHANGE WITHOUT DISCUSSION WITH DADO

** Not enough power to complete the bootup routine, resulting in error message Encoder Failed During the bootup stage. Enter the Main Menu using BYPASS MODE, raise the Max Torque 500, exit, observe and see if the door completes the bootup routine. Repeat if needed, adding 500 each time.

*** Not enough power to complete the motion back to the Home Switch. Each time the door retracts to the open position, the door edge should park within 1/8" to 1/16" of contacting the Home Switch button. If the gap is larger than 1/8" (assuming no offset has been entered), then the motor is needing more torque. If already booted, enter the Main Menu at any time using the Setup Mode button, raise the Max Torque setting by 500. As the setting is raised, the door should immediately move slightly towards the Home Switch.

Initial Test Run:

1. Insure that all cables are plugged into the correct port with power OFF.
2. Insure that the door can be moved freely by hand from one side to the other.
3. Remove the top panel on the Master Controller. Power on the system. Observe the LCD screen on the Master.
4. The LCD screen will show a diagnostic stage called Encoder Test. On the lower line of the LCD the test starts with the number "0". The door should begin a short 1/8" move towards the motor, during which the number should begin to move towards a negative number, approximately -20. Once reaching the negative lower limit, the motor should reverse and move away from the motor by approximately 1/8", during which time the number should move positive towards 10. If the first part of the move fails, the LCD Display will report Test Fail Part1. If the diagnostic moves are successful, the display will read Encoder Passed. At this time the door will begin to HOME towards the motor and eventually press the HOME switch in. If the diagnostic moves are not successful, an error will be displayed stating Encoder Failed (or Test Fail Part2). See Troubleshooting under Encoder Failed for possible solutions.
5. After the diagnostic and Homing routine is completed successfully, the LCD will show READY. This means the door is ready for operation. Press the SETUP MODE button. Use the < > buttons to scroll through the menu options and locate TEST MOTION. Press the Green button (button 5 from left) to toggle the door towards closed side. The door should move 20" and stop. If the door retracts before it reaches the stopping point, raise the Closing Trip Level by 50 and retry. Press the button again to toggle back to open.
6. The first setting to adjust is the Set Closed Position. This is the value associated with how far the door moves when closing. The software keeps track of the door position at all times, and the Set Closed Position is a value in software that the door moves to. There is no switch used to stop the door in the closed position.

Error Messages and Boot Up Information.

Home Switch Error

The system at power ON will move the door towards the HOME switch. On power ON, if there is a condition where the system finds that the switch is already depressed (or the switch is not connected properly), the display will read **Home Sw Open**, indicating that it had expected the contacts of the switch to be normally closed, but found an open condition. The system will first assume that the door is pressed against the HOME switch, and will attempt to roll the door very slowly off of the switch to remedy the condition. The display will show a **JOG OFF SWITCH** message during this attempt. If, after this roll-off attempt, the condition does not correct, the system will shut down requiring reboot, and assumes that A) the HOME switch cable is not connected, B) the MTR logic cable is unplugged, or C) the switch is malfunctioning. The display will then read **Home Sw Error!** The system will not run if the HOME switch does not test properly under the initial bootup diagnostic tests. Check to see that the cable is connected properly between the Motor Logic Port and the motor, and that the short cable from the switch is connected to the motor circuit board. Reconnect the MTR Logic cable on both ends 5 times to clean the contacts. Insure that the two motor cables are connected.

If the system gets past the tests above and finds the HOME switch is functioning properly, the system will then begin to move very slowly towards the HOME switch, which is in the direction of the fully open position. The default direction of homing is towards the motor. If the door is homing AWAY from the motor, turn off the power immediately and contact Dado Door. If the door homes away from the motor, the belt is likely installed in reverse. After the bootup diagnostics test, the display will read **Homing...** during the phase while the door moves towards the Home switch.

If during the process of moving towards home, the system detects unusually high current consumption on the motor, the system will assume that the door has become obstructed and will begin to beep as long as the over-current condition exists. After 7 total beeps, the system will shut down requiring reboot and will display **JOG Home Failed Error5**. If during the Jog Reverse phase the system detects unusually high current consumption on the motor, the system will assume that the door has become obstructed and will shut down requiring reboot. The display will show **JOG Reverse Fail Error6**. **If there is no actual obstruction, it may just require that the Home Trip Level be raised until it will complete the Home move.**

If during the Jog Reverse motion, the switch does not become released as it should in a short period of time, the system will shut down assuming that the switch is not functioning properly or a cable is not connected properly. The display will show **Home Sw Failed Error4**. Contact Dado Door if you are getting this error.

Door Jam Error2

Adjust Closing Trip Level higher to find a threshold that does not trip when using the < or > keys on the Dado Touch Screen.

Door Jam Error3

An over trip condition during the opening motion. If the door is not actually obstructed, then raise the Opening Trip level to find a threshold that does not produce an error when the door is opening.

Encoder Error9 While opening or closing(door toggle mode), this error means the encoder has stopped updating when it should be updating. If the motor position has not changed, the system faults out and shuts down. It is assumed that the motor is running, but no counts accumulating on the encoder. The goal of this error is to test that:

- A. The encoder has been damaged and no longer is outputting pulses.
- B. The specific wires to the encoder from the processor are damaged, shorted, cut.
- C. The door is jammed not allowing encoder updates.

Encoder Error10 While HOMING, this error means the encoder has stopped updating when it should be updating. It is assumed that the motor is running, but no counts accumulating on the encoder. A possible solution is to check all wiring, reboot in Setup Bypass Mode, then increase Max Torque(iMax) by 500 and run.

Encoder Error11 While opening or closing using the < or > arrows, this error means the encoder has stopped updating when it should be updating. A possible solution is to check all wiring, reboot in Setup Bypass Mode, then increase Max Torque(iMax) by 500 and run.

Encoder Failed Immediately upon power up, the system attempts to diagnose various conditions and make sure things are plugged in correctly. If you receive an Encoder Failed, there are several possible things to look at:

1. Be sure the motor is connected by BOTH the Motor Logic cable and the heavy Motor Power cable. With the power OFF, unplug and reconnect both cables several times to be sure the cables are plugged in and the contacts are clean.
2. Inspect the Motor Driver LED status LED indicators discussed earlier in this manual.
3. Increase the Max Torque by 500 with the BYPASS MODE.

Warning and Precautions

Significant effort has gone into providing methods to reduce potential for physical harm. As with any automated device, there is some risk associated with using this system.

The Dado Door automation system should only be installed in applications where:

1. There are other means of egress in the event of fire, emergency, or door failure (If there is no other means of egress in the event of fire, emergency, or door failure, the installer must insure that any user be made aware of methods to shut down the power to the system so that the door can be slid open manually by hand. If there is no power to the Master Controller, the door is able to be slid open. There is some effort required to slide the door, but this effort is typically small, so that most persons are easily able to slide the door).
2. It has been determined by the installer that the system is safe and appropriate for the application.
3. Small children are not allowed to operate the door, or be unattended around the door. No determination has been made as to an age that is sufficient for children to operate the door. Common sense should prevail. This door may produce injury to small children!
4. Elderly or disabled persons may be injured by a door in motion. Even with safety sensors installed to detect someone in the door path, there is always a risk associated with a moving door when someone is not agile enough to avoid being struck by a moving door if the door is closing as they are attempting to pass through. This is especially a concern when using a door in AutoClose mode.

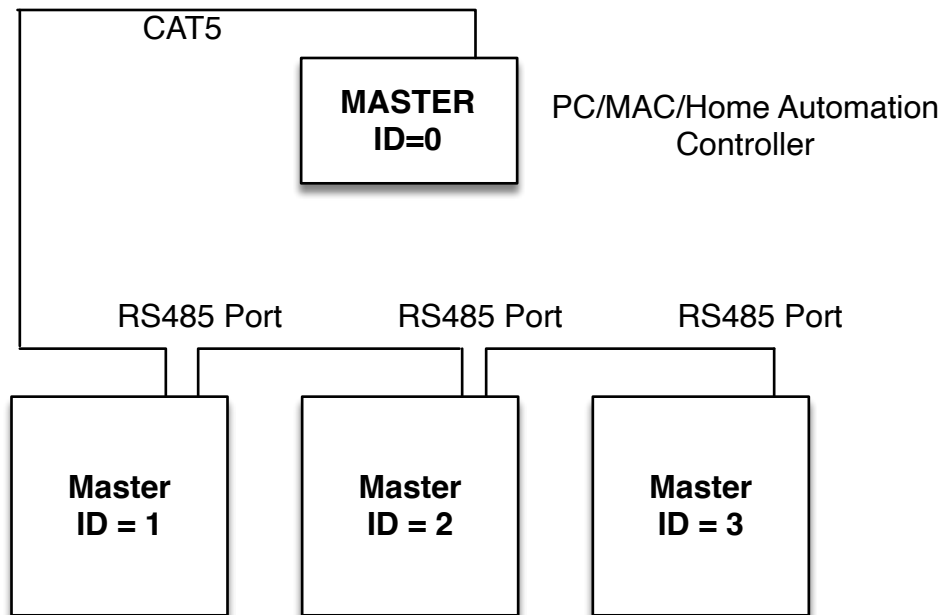
Keep in mind when installing this system, that an electronic device can and will fail at some point in its lifetime. There is no known period of time as to when to expect a Dado Door system failure. Insure that some thought goes into how to resolve an emergency in the event that any of the door controls fail to open the door. Again, if the power is turned off, the door should slide open without great effort. A good plan for door control failure is to include some method to kill power to the Dado Master Controller so that it can be manually operated if needed.

**DADO DOOR
RS485 CONFIGURATION**

**RS485 has become an optional feature. Not included by default.
It is much simpler and easier to use contact closure for Open, Close, Toggle.**

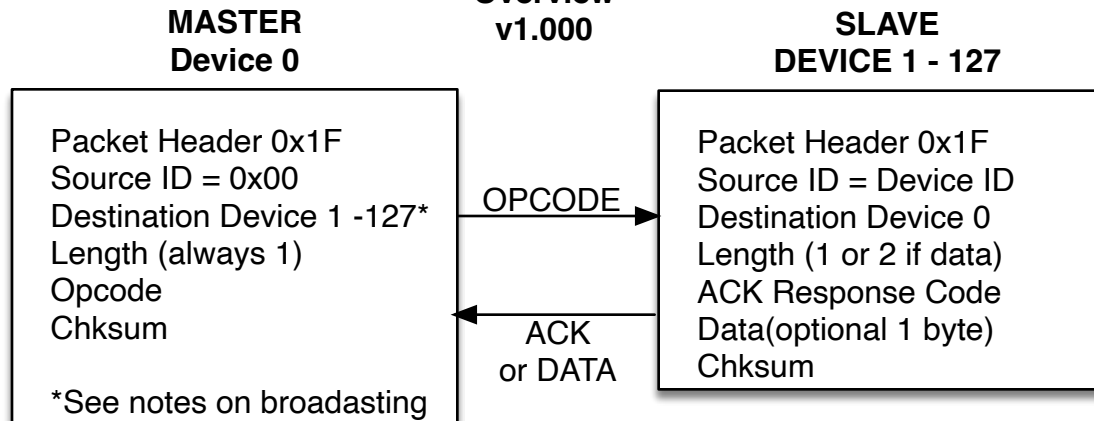
To connect multiple devices, run a CAT5 cable from
one unit to the next in a daisy chain
fashion using the RS485 ports.

**CONFIGURATION WITH A EXTERNAL RS485
DEVICE AS MASTER**



DADO DOOR RS485 SERIAL INTERFACE PROTOCOL

Overview v1.000



Use 9600 Baud, 8 bit, 1 stop bit, no parity. RJ45 pins: A=1, B=2, 3-8 unused. See MAX3430 for RS485 device datasheet. A PC/Mac may be used as a master control device. Each Dado controller must have a unique ID. The ID of each Dado controller is set in the menu options. A Dado controller may also be configured as a master so that a Keypad may control slave devices. The master must be set to ID = 0, with the DEST ID set to either a specific device ID to control, or multiple devices using values > 128 with a bit mask value format. Any slave device must be set to ID value > 0. Any slave device that is required to respond to a request must have it's DEST ID set to 0.

*The Master Device is always ID 0. There is only one Master, all other devices can only respond to a request from the Master Device(ID 0).

*The Master may request status from any device for Door Position and Lock Status.

*The Master may toggle a door position from it's current state to the opposite state.

*The Master may Lock a door or Unlock a door.

*The Master may Ping a door to see if there is a response(ACK).

*The Master may Broadcast a command to any or all doors using a bitmask ID. The device will first check to see if bit 7 is high(1), and if so it will perform a bitwise AND with it's own ID. It is up to the programmer to avoid conflicts with Broadcast mode that would cause multiple slave devices to simultaneously respond with an ACK or Data+ACK. Broadcast ID values start at decimal 129-255.

OPCODES (and required response)

0x00 = PING(ACK) (Dec 0)
 0x10 = Move To Offset Position (Dec 16)
 0x11 = Open (Dec 17)
 0x12 = Close (Dec 18)
 0x13 = Toggle door position (Dec 19)
 0x14 = Get current door position(ACK+data) (Dec 20)
 0x20 = Unlock (Dec 32)
 0x21 = Lock (Dec 33)
 0x38 = AutoClose ON (Dec 56)
 0x39 = AutoClose OFF (Dec 57)
 0x3B = Get Lock Status(ACK+data) (Dec 59)

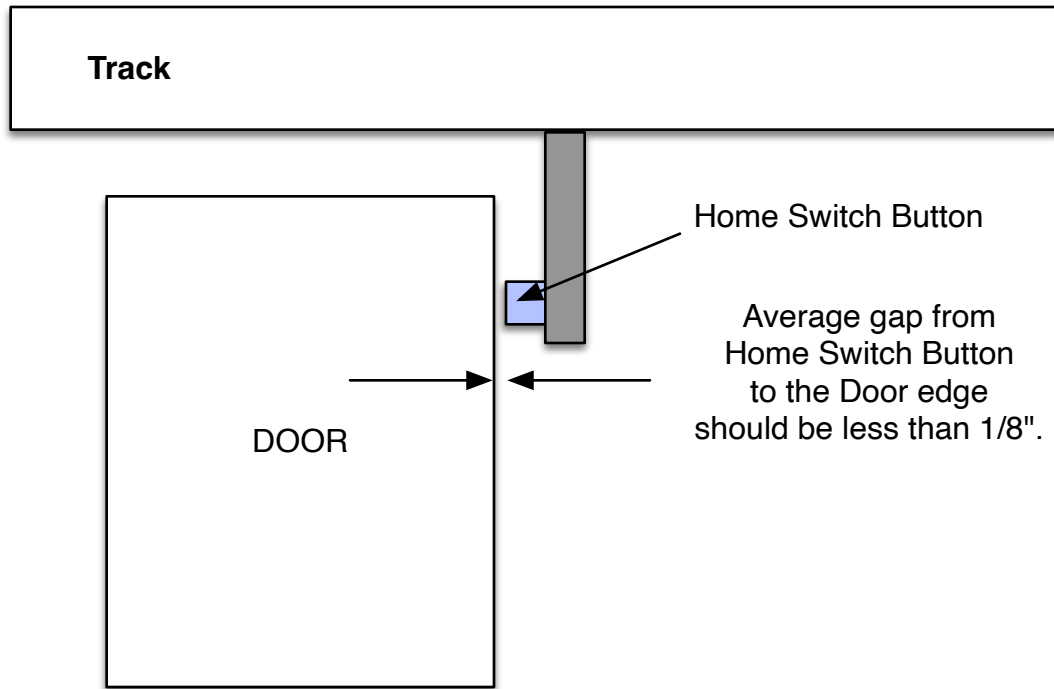
ACK RESPONSE CODES

0xFF = ACK Success
 0xFE = Bad Chksum

Data Replies:

Lock Status: 0-Unlocked 1-Locked
 Door Position: 0-Closed, 1-Open

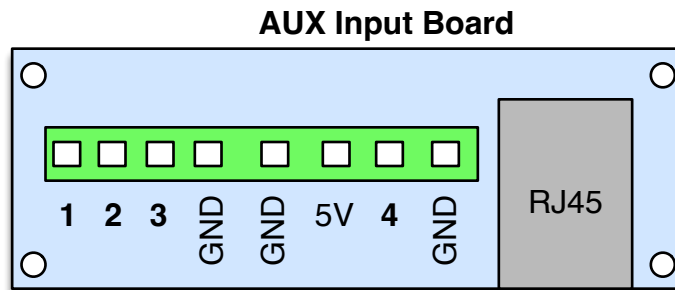
Home Switch Gap



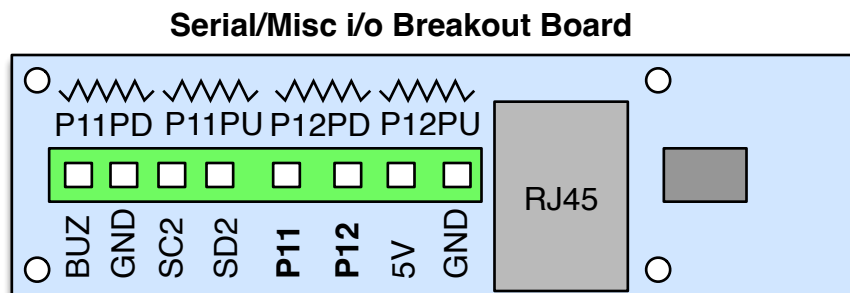
Upon bootup, the door should move towards the Home Switch, press the switch in, then move back off the switch and Park. After bootup, the door should not contact the switch again under normal conditions. If you are experiencing conditions where the door is pressing the button AFTER the initial bootup routine, please power off the system and check the troubleshooting guide for possible solutions or contact Dado Door for assistance.

After moving the door to the closed position, then back to the open position, the gap should remain under 1/8". If the gap is consistently larger than 1/8", then it is likely that the Max Torque setting needs to be increase. As the Max Torque setting is increase, it is likely that the door will begin to close the gap automatically. Only raise the Max Torque setting in increments of 500, which is a single press. Do not hold your finger on the increment(+) button long of the value will increase rapidly. Take note of the initial setting before making changes to the Max Torque. Increase the value by 500, observe the gap, then increase it again, each time observing if the gap has corrected to less than 1/8". If the Max Torque is increased too much, the door will begin to move in abrupt jerky movements.

DADO DOOR AUX IO and MISC IO CONNECTIONS



*** Aux inputs 1,2,3,4



Optional P11 Pull Up Resistor
 Optional P11 Pull Down Resistor
 Optional P12 Pull Up Resistor
 Optional P12 Pull Down Resistor

***Pullup/Pulldown resistors used to hold input to a set voltage (GND or 3.3V). These are shipped already configured.

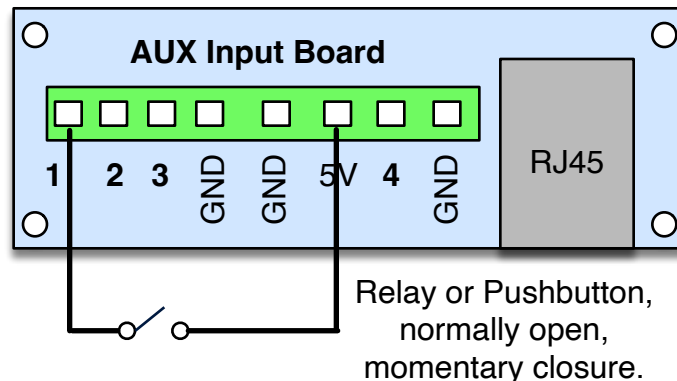
**Place breakout boards close to Dado Master Controlled using CAT5 cables less than 3'.
 See additional notes on AUXIO and MISCIO connections.**

AUXIO and MISCIO Additional Notes:

The AUXIO (Auxiliary input/output) and the MISCIO (Miscellaneous input/output) boards are provided for custom applications requiring additional input or output capability for door control. The AUXIO port is buffered and contains capacitors for noise reduction and protection. Never exceed 5VDC to the inputs.

Do not connect the AUXIO or MISCIO board to any other port other than the those ports labeled for their specific use.

AUXIO: This board can be configured for various uses including methods to connect additional inputs for door control. For external contact closure use, an input to the AUXIO may be connected to the 5VDC terminal via a relay or pushbutton as follows:



In the example shown, the relay or pushbutton will momentarily connect the 5VDC supply to input 1. NOTE: The software must be preprogrammed to recognize the voltage input in advance. Any custom control method should be discussed in advance of receiving the Master Controller, since the software needs to be installed for the software to recognize external triggers. It is possible to update the software after the Master Controller is already installed. Contact Dado Door for more info.

MISCIO: This board may be configured for external inputs, or may be used to control external devices with a control voltage sent by the main processor. This board and port must be configured in advance at the factory. The MISCIO board and port are not filtered, and are directly connected to the main processor. Consult Dado Door before making any connections.

Torque Calibration Feature FACTOR SET DONT TOUCH

(For revisions 3.03.041 and higher)

NEVER CHANGE THE TORQUE WITHOUT CONSULTATION OR YOU WILL COST US ALL TIME ENERGY AND MONEY

Using the Torque Cal option to set the Max Torque.

In software revision 3.03.041, a feature was added to assist in setting up the Max Torque. Max Torque in earlier versions of the menu was called iMax, and was set with the Set iMax menu option.

To use the Torque Cal feature, follow the steps below ONLY with DADO DOOR HELP:

1. Make sure the power is off
2. Push the doors towards the fully open position by hand
3. Turn on the power and immediately press and hold the MENU button until the screen displays MAIN MENU. Release the button, the RED LED should remain on. This method of start up is called the BYPASS MODE, which skips over the diagnostics routines and enters directly into the MENU.
4. Press button #2 (>) until the LCD screen shows TORQUE CAL. The system will beep several times with a warning that the door MUST be OPEN to use this feature. If the door is closed, it is possible that the door will collide with the door jamb in the closed position or hit the opposite door. Damage may occur in this case.
5. Once the LCD shows TORQUE CAL, press GREEN BUTTON #5 (+). The door will make a short diagnostic move of approximately 1". If the software determines that the torque is adequate, a message will appear stating DOOR OK. Simply exit the MENU MODE if this message appears. Upon exiting the MENU MODE will cause the door to boot up normally and move the the HOME switch. If the door was already HOMED from a previous bootup, then the door will not HOME again upon exiting this menu option.
6. If the torque is determined to be too low, a message will appear stating TORQUE LOW, the Max Torque setting will automatically increment by 500 and the new setting will be stored in memory.
7. If the torque is too low to move the door any amount, the LCD will display a message stating DOOR NOT MOVING. The Max Torque setting will increment by 500 and the new value will be stored in memory.
8. Assuming there is not a connection problem or obstruction stopping the door from moving, at some point the torque will be set correctly and the display will read DOOR OK. Continue pressing the + button as needed to arrive at the correct torque. By design, the amount of torque must be manually incremented and re-tested using the button +. If the system does not ever display DOOR OK, please contact Dado Door for assistance.

Troubleshooting Section:

Symptom The door is '**pulsing**' when sitting at either end when it should be still.

Explanation The software is designed to move the door to a specific and precise location on the track, the precision is approximately 1/500 of an inch. If the door is not allowed to park at that location for any reason, the motor will constantly attempt to correct the problem. This means that the system is actually doing what it is supposed to do, by rocking back and forth trying to land on the mark.

Solution There are several possibilities usually associated with this issue of NOT being able to land on a position:

1. The rollers may be not on a level track, or the rollers may have dust or debris on them causing the rollers to not want to PARK at the destination the Master Controller is telling the motor to move to. Inspect the rollers and track(if accessible).
2. The door motor is not designed to maintain a constant pressure, for example pressing a door against a rubber seal. The pulsing may be due to something in the path that is putting pressure on the door, so there is a constant push and pull between motor and obstruction.
3. If the Max Torque is too high, the motor may be overshooting the position. Reduce the Max Torque by increments of 500 and observe the door for changes.
4. Raise the Deadband Setting by 10 or 20, this factor allows a slight margin of 'precision slack' at the open and closed positions.

Symptom The door is **pressing the Home Switch** in AFTER the door has already Homed.

Explanation The door should only contact the Home Switch once upon booting up during the HOMING phase. After HOMING, any contact with the Home Switch indicates that something is not right.

Solution If the belt is not tight enough, the belt may actually slip on the pulley driving the belt. If this happens, then the door will be returning to a position based on the belt slippage, even though the motor may actually be stopping where it should. Check the belt to insure that it is tight and not able to slide over the cogs on the drive pulley located on the motor assembly.

Symptom The door is making a loud **vibration or grinding sound** when it is decelerating to a stop.

Explanation When the motor is decelerating, if the Max Torque is set too high, the motion control software is overcompensating during the decel phase, this results in a vibration during the slow down phase of motion.

Solution Reduce the Max Torque by 500 and test the door. If the vibration continues, reduce the Max Torque again by 500. Repeat until the vibration stops.

Symptom All of the touch screens and other **controls have stopped working.**

Solution If the RED LED is ON on the SETUP MODE button, no other controls will be able to work until the RED LED is turned back off. Press the button to turn off the SETUP MODE LED.

If everything was working fine, but all of a sudden the controls do not work, remove the top panel on the Master Controller and look at the LCD inside the controller to check for any errors. If an error is present, check the error messages section of this manual for possible solutions or contact Dado Door. Note: The system will stop working when most error messages appear, this is to prevent any damage to the system.

Symptom On power up, during the HOMING phase, the door is moving towards home in **jerky short motions.**

Solution This usually means that the Max Torque is set too high. Reduce the Max Torque by 500 and retry. Repeat until the Homing motion is smooth.

Symptom The door begins to CLOSE, but before it completes the closing move, it retracts and returns to the open position.

Solution This usually means that the Closing Trip Level is set too low, so that the weight of the door is enough to trip the retraction. Raise the Closing Trip Level by increments of 25 until the door will complete the Closing Move.

Symptom The door begins to OPEN, but before it completes the opening move, it stops and the system is locked up. An error message appears and requires reboot.

Solution This usually means that the Opening Trip Level is set too low, so that the weight of the door is enough to trip the shutdown. Raise the Opening Trip Level by increments of 25 until the door will complete the Opening Move.

Symptom The master controller is rebooting after closing twice. This is done by default. If the door closes and the OBJECT DETECTED error is shown, the system will reboot after 2 consecutive detections. This is done so that the door can recalibrate to the HOME switch in instances where the belt is slipping and the door is hitting the jamb or home switch.