



QuickStart Guide

PC SETUP

To minimize potential issues during setup of the defender, a few changes on the programming PC should be made before beginning anything else.

For more details on the Defender, or for advanced setups, use the QR code below for the full manual.

1. Install the Defender 400's Access Control Software by performing the following.

Navigate to the Defender 400 product page linked below:
<https://www.emxaccesscontrolsensors.com/product/defender-400/>

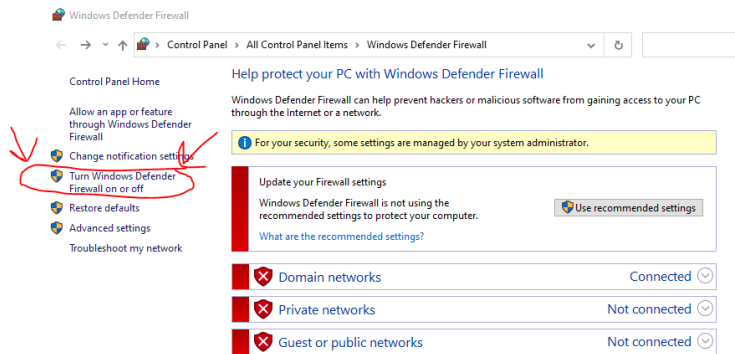
Go to the Downloads section and click on Software to download the software in a zip folder.

After downloading the defender package, extract the files to somewhere on your PC (must be local, server locations will give issues). Then run "setupWin7.exe" to install.



2. Disable windows firewall on all possible network connections. If the firewall is present, the defender cannot be found over an ethernet connection.

To disable the windows firewall, type "disable firewall" into the start menu search bar. This should bring up the windows defender firewall control panel. From here, there should be an option on the left side labeled "Turn Windows Defender Firewall ON or OFF".



Turn off all three network firewalls (Domain, Private, and Public).

REMEMBER TO TURN THEM BACK ON WHEN FINISHED PROGRAMMING THE DEFENDER

3. Disconnect the PC from the internet during the first connection to allow easier finding of the defender board over ethernet. If an internet connection is present, the default IP of the defender may be the same as other devices on the network and will not connect without advanced networking changes.
4. Ensure the date and time are correct on your PC machine. The date/time of your PC will be used to update time/day the defender thinks it is.

PROGRAMMING

The intention of this quick-start guide is to streamline the process between having nothing set up and getting to a point where the defender PCB is properly receiving Wiegand messages and activating its relays. **Before moving on, complete all steps in the PC SETUP Section.**

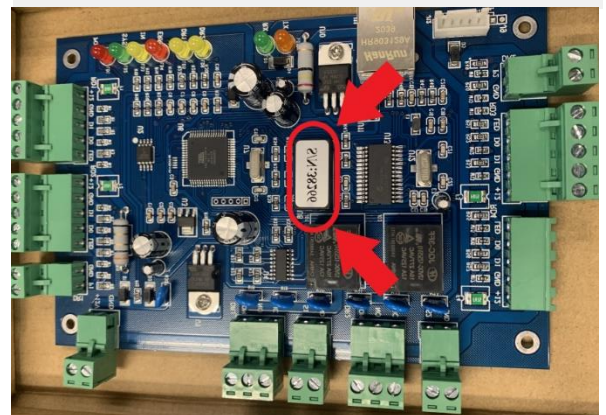
1. Open the AC management software. The default app name will be “Management Center V6.9” and the icon will be a key.
2. You will be prompted to login. Username is “**abc**”, Password is “**123**”. Case sensitive
3. In the top left, a menu will pop up and cover some of the interface. Click the “**close guide**” button near the bottom of this menu.
4. In the menu along the top of the screen, press the “**help**” button and then press the “**about**” button. This should cause a pop-up to appear. On this pop-up press the “**register**” button.



Enter “**2004**” into the “**Register Code**” field. You can put whatever you want into the other two fields. Press “**OK**” to register.

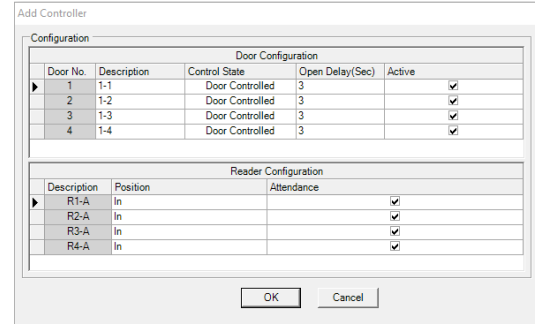
5. In the menu at the top left of the screen, click “**Controllers**” under the “**Basic Configure**” section.
6. Just to the right of the previous menu, a new row of button should have appeared, press “**New**”.
7. A pop-up menu should appear asking for information on the controller.

- a. Controller # field needs to be filled out, if you have no other controllers, you can set this to “1”.
- b. SN: field needs to be filled out. This number is found on the defender PCB on a sticker. **The number you put in this field must match the one on your defender PCB.**
- c. On the right side of the pop-up, select “**Small Network (in the same network)**”.
- d. Description can be filled out with anything. Ensure the “**active**” box is checked and then press “**next**”

A screenshot of the "Add Controller" software window. The "General Information" section contains the following fields: "Controller #" with the value "1", "SN" with the value "38266", and "Description" with the value "Controller 1". On the right side, there are radio button options for "Serial Port" (set to "COM1"), "Small Network (In the same network)" (which is selected), and "Medium or large network, or internet". There is also a checked "Active" checkbox and a note "* Required, must be unique". At the bottom, there are "Next>>", "OK", and "Cancel" buttons.

e. Another pop-up menu should appear as shown to the right. This menu allows you to pick which wiegand inputs are going to be active. The board itself has 4 relays, which means four doors can be controlled. If you are only using one Reader, you can disable the extra inputs.

f. The main area of the program should now have a table with the controller info you just added.

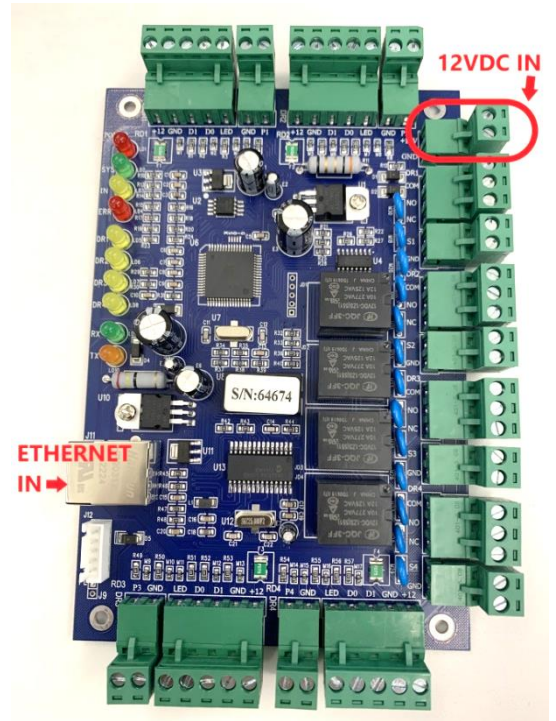


Controller #	SN	Description	Active	Channel type	Note
1	38266	Controller 1	<input checked="" type="checkbox"/>	SMALL	1-1; 1-2;

Repeat steps A through F for all controllers you would like to add.

8. Now we need to power up our Defender board and connect it via ethernet to our PC to fully connect.

- Connect +12VDC to the power input terminals as shown to the right, you must follow the polarity labeled on the PCB.
- Connect one end of your ethernet cable to the defender board at the connector shown to the right. Then connect the other end to an open Ethernet port on your PC.
- On the defender board, you should see power the “POWER” LED fully turn on and the “SYS” LED will begin blinking slowly.
- In the windows application, go back to the “**controllers**” menu under “**basic configure**”.



Once here, press the “**Search .Net**” button. A pop-up menu will appear.

e. On the pop-up menu, you should see the serial number of your controllers along with the associated MAC and IP address. If you see nothing on this pop-up menu, something is wrong or not properly connected (make sure you’ve disconnected wifi/other internet).

Nothing needs to be done in this menu, but you must make sure your controller is present.

9. We will now begin the process of adding various readers/users to our database. There are a few different methods of adding in tag credentials. All methods of adding tags can be found under the “**Personnel**” menu which is found under the “**basic configure**” section.

a. Method 1, single tag manual add:

- i. Click the “**New**” button near the top of the application, a pop-up menu should appear.
- ii. Enter the “**User No.:**” (Can be anything, generic number system to track tags).
- iii. Enter the “**Name**” (can be anything, Ex. James, Matt)
- iv. Enter the tag credentials into the “**CARD ID**” field. This must be the full tag number including facility code. All extra zeros in the tag ID must be included.
- v. Change the “**Deactivate**” field to a date in the future.
- vi. Ensure “**Attendance**” and “**Access Control**” boxes are checked and then press “**OK**” or “**Add**” Other fields can be filled or left blank.

b. Method 2, “Add By Reader”:

- i. Click the “**Add By Reader**” button on the “personnel” page. A pop-up menu will appear showing a list of your controllers. Select the one you would like to be scanning through and click “**OK**”
- ii. A menu labeled “**add users automatically**” will appear. On the right side of this pop-up, there will be an option labeled “**Read Card**”. Select this option then have the Tag be seen by the connected reader. If the tag is properly accepted, you should see the TAG ID populate the main table in this pop-up window.
For assistance in wiring the Wiegand reader to the DEFENDER, jump forward to page 6, SECTION 11
- iii. Scan all tags and then press OK. If you need to change the associated information with any of the tags, this can be done in the “**personnel**” menu.

c. Method 3, “Excel Sheet Import”

- i. When in the “**personnel**” menu, press “**Ctrl + Shift + Q**” on your keyboard and a new option should appear on the top bar labeled “**Import from Excel**”.
- ii. Create an excel spreadsheet and add tag data in the format shown below.

Worker No.	Name	Card ID	Department
car01	emxtest01	1301005	Engineering
car02	emxtest02	1300005	Engineering

- iii. Save the excel file somewhere on your PC as a “**.xls**” file and then press the “**Import from Excel**” button in the database software. A directory window will then pop up, select the location you saved the excel file at.

NOTE: the excel must be in “.xls” format to be accepted.

- iv. After a short moment, the database software will give you a pop-up stating how many tag credentials were added.
- d. Method 4, “Batch Add”
- i. Click the “**Add By Reader**” button on the “personnel” page. A pop-up menu will appear showing a list of your controllers. Select the one you would like to be scanning through and click “**OK**”

- ii. A menu labeled “**add users automatically**” will appear. On the right side of this pop-up, there will be an option labeled “**Manual Input**”. Select this option and then specify the lowest and highest tag numbers you have. For example, if you set “Begin No” to 013002001 and “End No” to 013002010, this will add all 10 tag numbers between these two.

No.	Worker No.	Name	Card ID	Department	Attendance	Access Control
					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
▶ 1		Matt	13002021		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2		N13002001	13002001		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3		N13002002	13002002		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4		N13002003	13002003		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5		N13002004	13002004		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6		N13002005	13002005		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7		N13002006	13002006		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8		N13002007	13002007		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
9		N13002008	13002008		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
10		N13002009	13002009		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11		N13002010	13002010		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

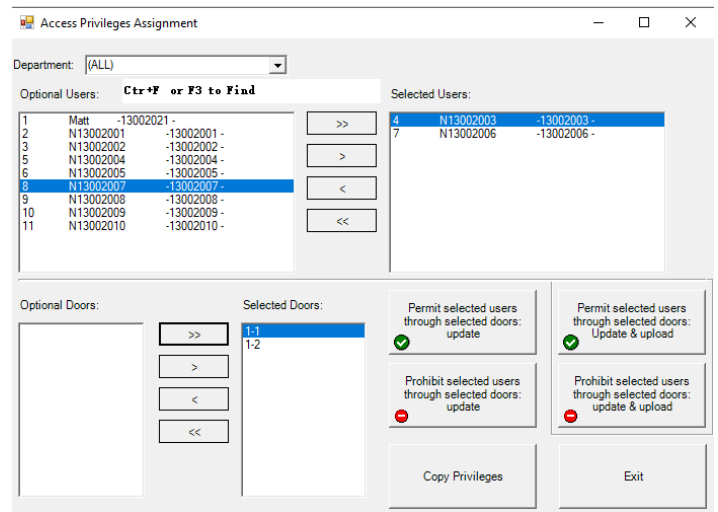
- iii. Press OK, to add the entire tag range. Under the “**personnel**” section, all new tags should now be in the table.
- iv. Now click “**Batch Update**” and then check the “**valid date**” box. Now select the “**deactivate date**” field and change this to any time in the future when you want the cards to no longer be accepted.

10. Now that we have our Tag IDs added to our database, we can assign privileges to each Wiegand input.

- a. Go to the “**Access Privileges**” section in the top left corner of the computer app.
- b. Click on the “**Change Privileges**” button near the top of the screen. A pop-up labeled “Access Privileges Assignment” should appear.
- c. This menu allows assignment of personnel (Tag IDs) to be able to open specific doors when they activate their tag on the correct reader.
- d. To assign door privileges to tags, select the desired tag IDs that are in the “**Optional Users**” table and then press the **>** button to move them in the “**Selected Users**” table. If you wish to give privilege to all added tags, you can press the **>>** button to move every tag over at once.

e. Then select the doors you wish to assign them to in the “**Optional Doors**” table and then press the **>** button to move them to the “**Selected Doors**” table. If you’d like to add privilege to all doors, press the **>>** button to move every door over at once.

f. For example, see the image to the right. This setup will allow the tags 013002003 and 013002006 to open door #1 and #2.



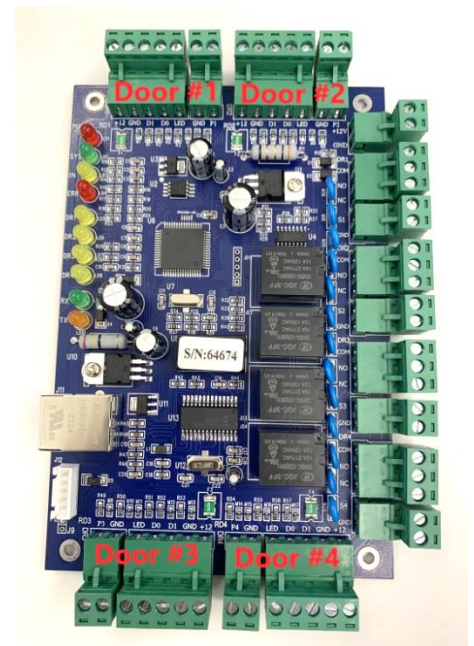
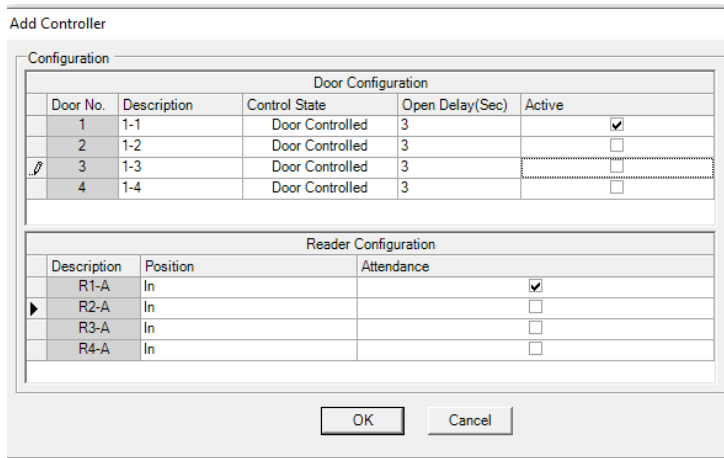
g. After you have your selections made, press the button both buttons with green checkmarks . This will save these privileges to the database and then upload them to the defender PCB.

h. If you need to remove a specific tag’s privileges, select their Tag ID and the doors you would like to remove them from. Then press the two buttons with the RED minus sign .

i. Press “**Exit**” when complete.

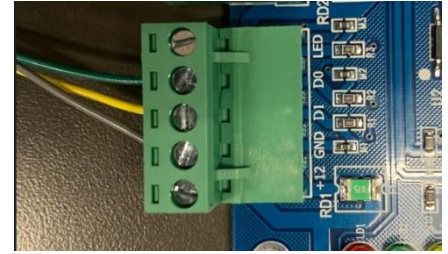
11. Now it’s time to wire in the Wiegand device into the Defender PCB. There are 4 possible Wiegand inputs but which one you use will depend upon the selections that you made during the “add controller, step 7e” part of this guide.

a. For example, see the nearby images. If these were your selections during step 7e, you will need to wire the tag reader into Door1, INPUT1.



b. At a minimum, the two datalines (**D0 and D1**) and the **GND** terminal need to be connected to the wiegand device. Wire color to these terminals ultimately depends on which wiegand reader you are using.

- c. For example, the image to the right shows the wiegand input wiring to a “Patriot E” tag reader. Green to D0, Yellow to D1, and grey to GND.
- d. If you accidentally wire into the incorrect wiegand terminal, the terminals on the Defender are removable so you can simply swap their positions without removing any wires.



12. Programming the Defenders date and time

- a. On the left side of the app, press the “Console” button under the “Basic Operate” section.
- b. Click and drag to highlight all doors (they will be labeled 1-1, 1-2, 2-1, etc).
- c. Then click the “Adjust Time” button. This will update the time and date saved into the Defender. You should also see a message in the “runtime info” table confirming the time was successfully adjusted.

Run Time Info		
Time	Description	Information
15:56:34	1-1[38236]	Adjust Time Successfully2023-07-28 15:56:34 Fri
15:56:34	1-2[38236]	Adjust Time Successfully.

- d. After this step, the defender should begin to operate its relays if a “privileged” tag is detected on the wiegand input.

13. Confirming Operation of the system.

- a. On the left side of the app, press the “**Console**” button under the “Basic Operate” section.
- b. Click and drag to highlight all doors (they will be labeled 1-1, 1-2, 2-1, etc).
- c. Then press the “**Check**” button near the top of the screen. If there are any configuration errors associated with the selected doors, you will receive these errors in the “**runtime info**” table.

Example error: didn’t set date and time for Defender

- d. Click and drag to highlight all doors again.
- e. Then press the “**Upload**” button. This will ensure all settings on the PC app have been sent to the DefenderPCB.
- f. Click and drag to highlight all doors again.
- g. Then press the “**Monitor**” button. This will begin continuously checking both doors for any events. At this point, scanning a tag on the connected reader will cause a log event to show the TAG ID, which door it went through, and when it happened. You will also receive any relevant messages from the other inputs located on our board (such as the door force open sensors, or standalone open push buttons).