



Setup & Installation

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1. Introduction

The following file contains information about setting up and running the serial to ethernet-wiredi dobona board called eDoboS. The eDoboS is a small single-boardcomputer running under Linux designed for panel builders and manufacturers wishing to cloud-enable their PLC/panel/machine and hence be able to communicate both ways with it in real-time through its mobile app. eDoboS can also send emails to its panel/machine designer about its alarms/faults and other troubleshooting conditions, and at the same time other emails about its daily production, stoppage, downtime etc.. To make things clearer, the eDoboS is an interface or gateway between a controller such as Programmable logic controller (PLC) and a remote human person connected together over the iotsprint.com cloud. The eDoboS by itself is not a programmable device; it simply conveys information back and forth between the PLC and the cloud. It is up to the PLC programmer to decide what data and when to send it between the PLC and himself or other persons involved with the panel/machine that is controlled and managed by the PLC. Example of use could be for the PLC to send a daily email to the production manager summarizing the number of pallets produced, the total running hours, the average speed of the machine, the highest temperature of the furnace, the number times the emergency button was pressed, at what time work resumed on the machine after lunch break... Also an email can be dispatched to the machine manufacturer alerting him that the maximum allowable temperature was exceeded by a certain margin and by how long, and providing him with critical data that could compromise the machine safety/warranty etc... eDobos back and forth messages exclusively use https secure connection.

The eDoboS requires a Din-rail mountable socket (supplied) for easier industrial panel installation, and features one RS232 serial connection to the PLC (RX, TX and 0V) and a 100Mbs Ethernet port to an internet-enabled router. It should be powered by a regulated 24VDC/minimum 0.5A supply (not provided). The 0V of the RS232 connection is isolated from the supply 0V inside the eDoboS. The exact terminal connections are drawn on the eDoboS enclosure side.

2. Prerequisites

To install eDoboS, the user must:

- Have basic information about installing electrical components, otherwise call a certified electrician to do the necessary wiring
- Own a eDoboS board connected to a PC or PLC via a serial port
- Have an internet-enabled modem with at least one Ethernet port
- Download the “dobona” application from the Play Store (Android) or the Apple Store (iOS)



3. How to setup the board?

1. User installs eDoboS in an electrical enclosure and ensures the RS232 connection is completed before powering up the eDobos. The eDobos must never be removed from its base socket while it is powered. Also for cooling purposes, the eDoboS must have a minimum clearance of 2cm from all sides.
2. User downloads dobona app to his android or apple phone/tablet.
3. User launches dobona app. the first screen that appears is the live_log screen with scrollable fifty lines, each for setting up a separate board. The red font with the downward thumb shows that no board has been setup so far (Fig.1).

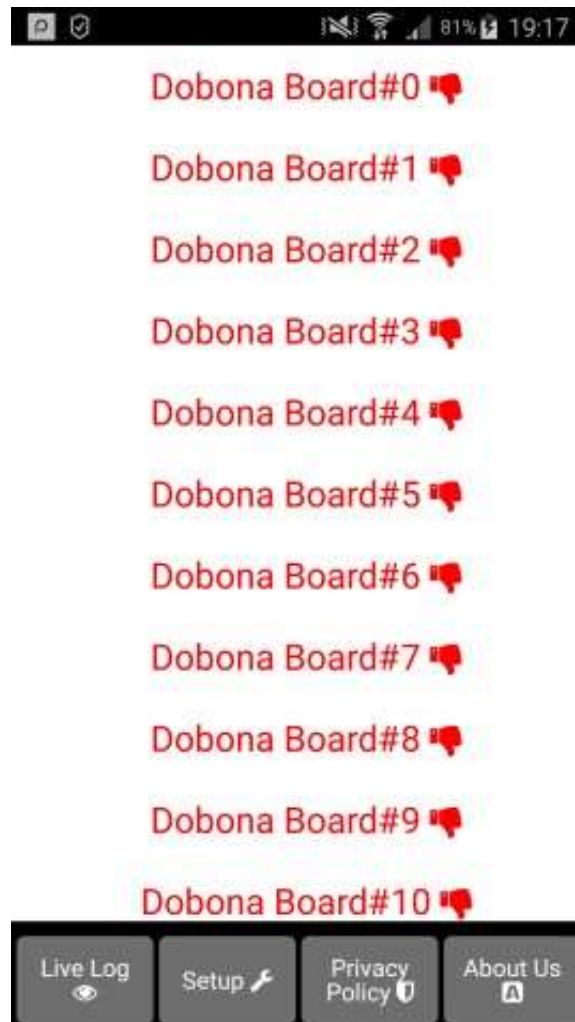


Fig 1.



4. Since no board has been setup yet, the user should press on the setup button on the bottom of the screen to move to the setup page, which looks similar the live log page but with beige background (Fig.2).

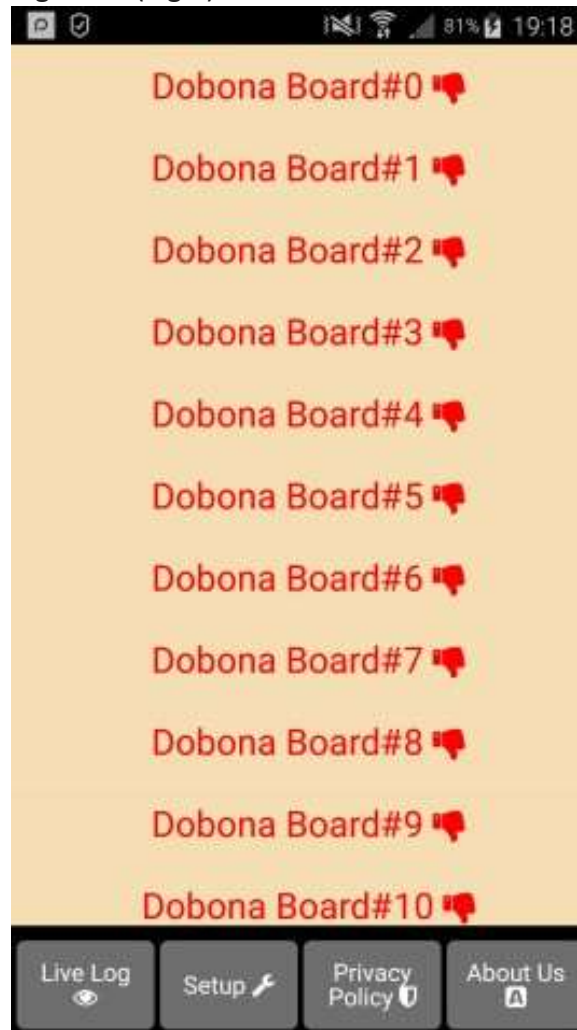


Fig 2.

5. In order to setup a board, the user should press any of the red lines. Supposing he presses on the first line (Dobona Board#0), after which he is presented with a popup screen to choose the board type (Fig.3). Since we are interested in DoboS board only, the user should press the DoboS (serial).

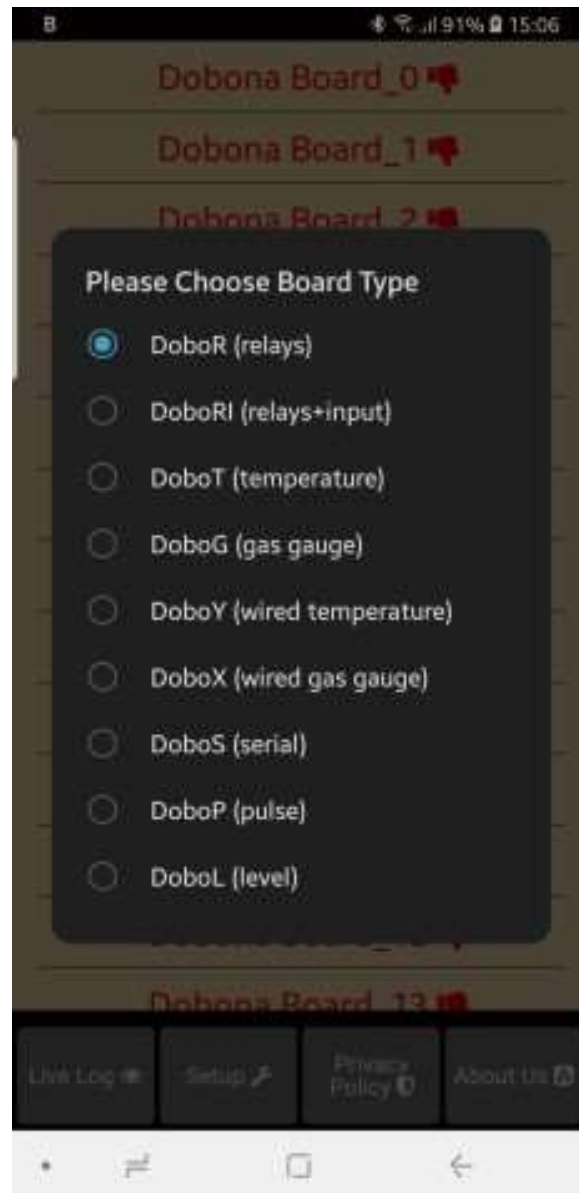


Fig 3.

6. User is then presented with the next screen where he is prompted to enter a name for the dobona board he chose (Fig.4). Supposing he writes "MAIN_PLC" as name and makes sure the phone/tablet has an internet connection, and presses on the next button, he is taken to a new screen to enter the eDoboS credentials on the server (Fig.5).

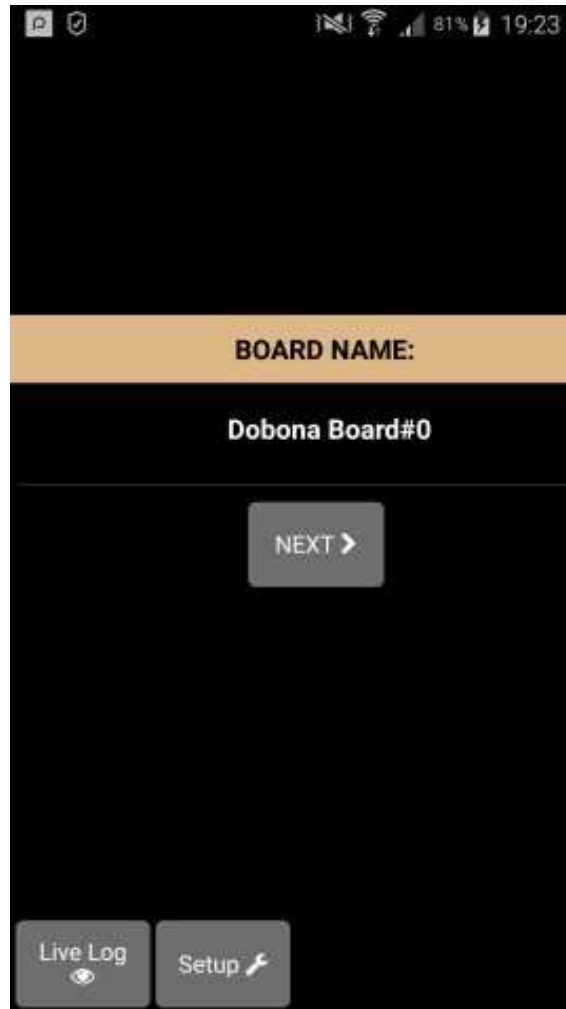


Fig 4.

7. In the ssid field, please enter: dobos, and in the password field: ethernet. The iotsprint cloud will automatically generate and send a registration key. For the eDobos, we need to manually enter a Reg.Key different than this generated one. For that, the user has to press on the 'pen image' to the right of the Reg.Key. The generated field will become empty and the user can then enter the board registration number; by default it is the factory registration number printed on the eDoboS side label. Supposing it is: S12345678901, then enter it in the Reg.Key field. We will see in section 5 how to change it to prevent any potential security breach in the future. Leave the 'Register Phone for Email Notification' unselected. Next press on 'SAVE AND REGISTER ON SERVER' button to send the data to the cloud. If everything has been entered correctly then the user is presented with the live log screen (Fig.6).

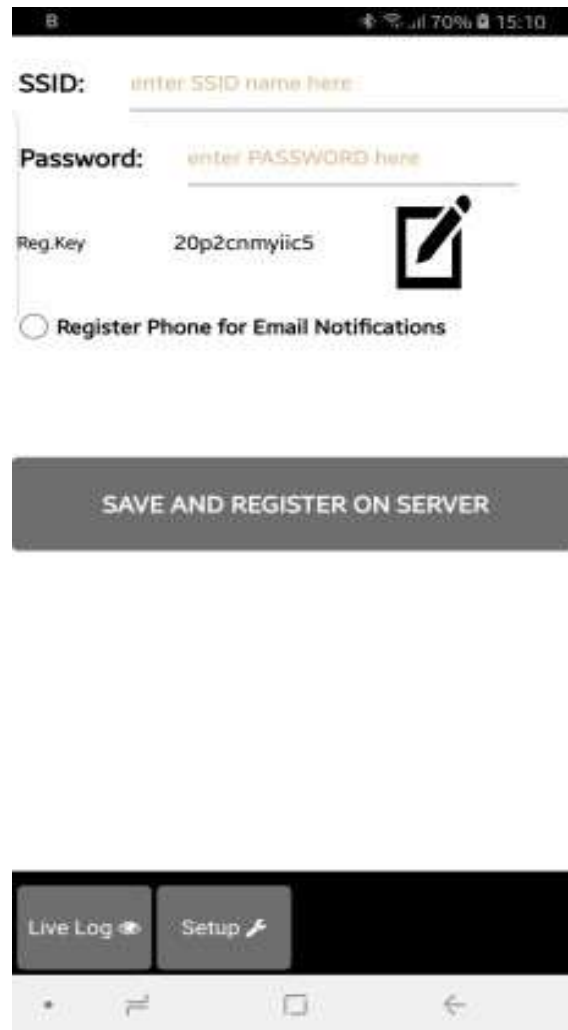


Fig 5.

8. The user will notice that the Dobona Board#0 is now replaced with MAIN_PLC, with a green font and thumbs up to indicate that the board has been setup.



Fig 6.

9. Now pressing on the MAIN_PLC line will display the live log screen related to the eDoboS board that has been setup (Fig.7). The upper part of the screen is where the app. user can enter the data he wishes to send to the remote eDoboS. By pressing the "Send to Dobos" button, the user-entered data will be send to the cloud and then to the remote DoboS board. The lower part is the last message sent by the eDoboS to the user(s). The last time the eDoboS board checked with the server is displayed on the bottom of the screen. This information is important for the user to know if the eDoboS and its internet connection are working properly within a certain time period. If for instance the screen displays an unusually long time, it could be an indication that the eDoboS or its internet connection or router are facing issues.



Fig 7.

4. How to delete the board setup?

In order to delete an already setup DoboS from the user phone/tablet, he must:

- Launch the dobona app
- Press on the Setup button on the bottom of the screen
- The user must make sure his phone/tablet is connected to the internet
- Press on the green line of the board name (MAIN_PLC in our case) □ The below screen is displayed (Fig.8)



Fig 8.

- Enter the board SSID in the input field and then press on the OK button, for the eDobos, it is fixed: dobos. By entering it and pressing 'OK' button, the app. will send info to the server to delete the "MAIN_PLC" board information and will also delete it from the phone if the server acknowledges that the entered SSID was correct.

5. How to change the eDoboS Reg.Key

As stated in section 3, it is essential to change the default eDoboS Reg.Key which is printed on the enclosure side label as soon as possible because anyone who sees it can read/compromise the eDoboS data if he or she downloads the Dobona app. In order to change it, make sure the eDoboS is properly connected, powered up and internet is available. The steps to do it are below:



- First of all you should find the IP of the eDoboS. There are different ways to search for it. The most obvious one is to connect to your router by typing its IP from any browser, and look under DHCP for the connected devices. Another way is to download an IP finder app like 'Fing' that displays the IP of the different connected devices.
- Next, enter the eDoboS IP from any browser, you should see the page in Fig.9.

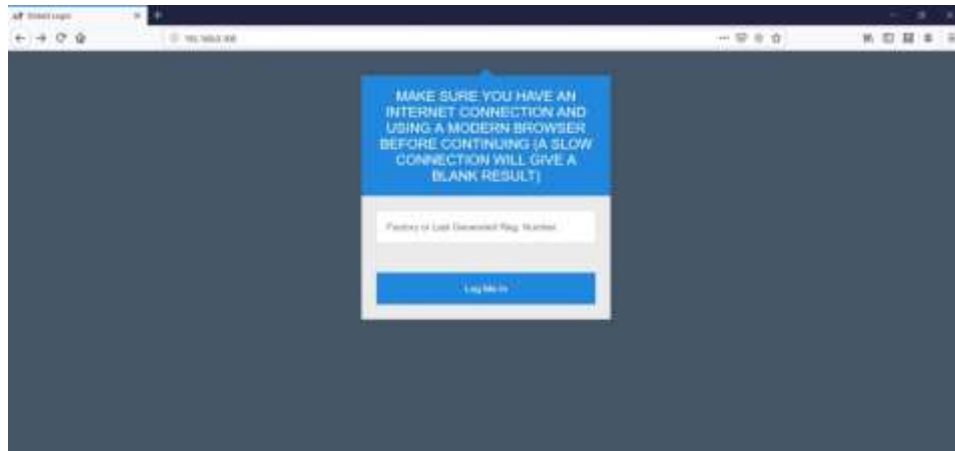


Fig 9.

- The user should enter the Factory registration number if he or she has never changed it before and then press on the 'Log Me In' button where he is presented with eDoboS main page in Fig. 10 and by scrolling down Fig. 11.

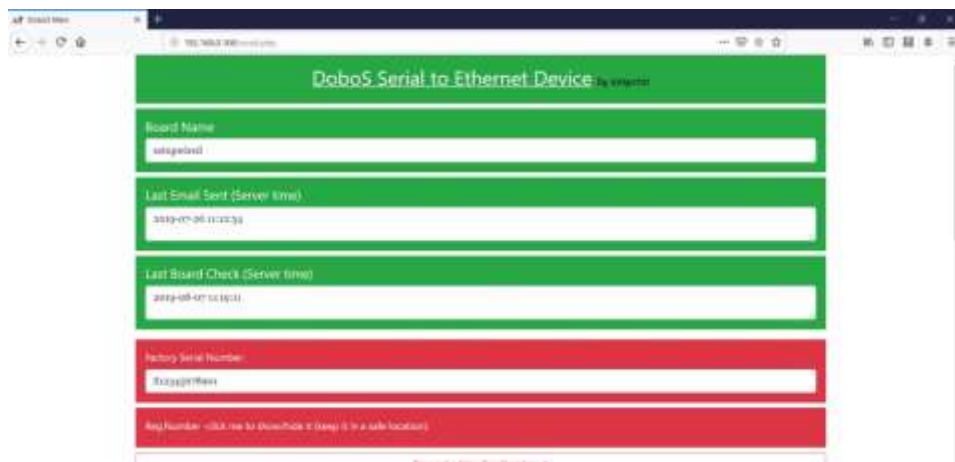


Fig 10.

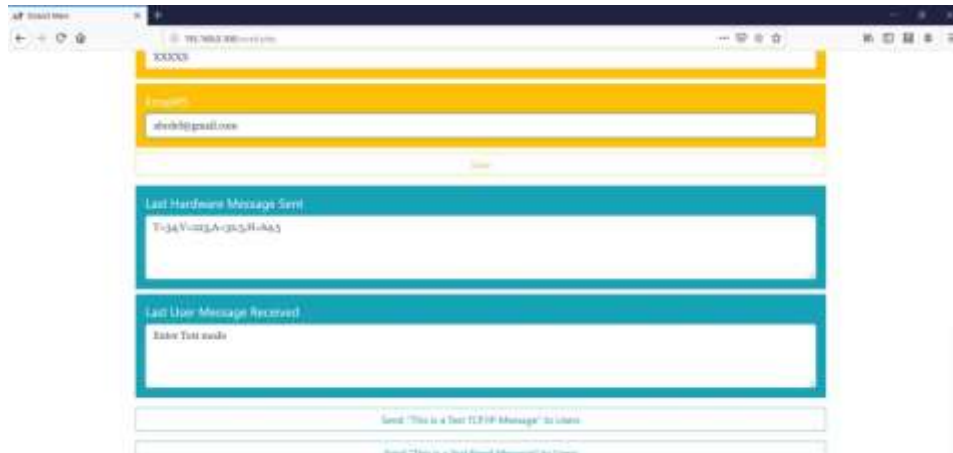


Fig 11.

The items on this page are descriptive. The user can request a new registration key which will override the old one by pressing on the 'Request a New Reg. Number'. The user can also change/edit/enter up to 5 different email recipients and save them on the cloud by pressing the yellow 'Save' button. Any unused email input field must have 5 capital X i.e. 'XXXXX'. He or she can check the last exchanged message between eDoboS and the users and vice versa. Also the user can simulate an eDoboS message being send to the users by pressing on 'Send "This is a Test TCP/IP Message" to Users' and even an eDoboS email to all users.

6. How to run the eDoboS?

The eDoboS does not require any particular tweaking. Whenever/whatever the PLC/PC terminal serially connected to it sends a string of characters, they will be seamlessly sent to iotsprint.com cloud server and the app user(s) will be able to read it on his/her phone or tablet. In parallel, any user-entered app message will be sent to iotsprint.com cloud and whenever eDoboS sends a new message, will read back the user message. Appending '|e' to any PLC/PC string of characters will result in the message being sent as an email to all valid emails saved on the cloud. Moreover, the eDoboS can send an email to a particular recipient only, for example appending '|e2' will only send the message to email#2. This could be useful if a particular email is used for maintenance troubleshooting personnel while other emails are for the production personnel. The maintenance email will be used to send an emergency condition like machine jamming or major fault, while the production email can be used to notify a manager about the number of pallets that were produced on a particular day for example. Messages sent to particular emails will not be shown on the user(s) app, whereas messages sent to all email recipients will be shown.



7. Contact information

For more information or comments, please do not hesitate to contact the Dobona technical team by email at: info@iotsprint.com

We are available from 8:00AM (GMT+3) to 6:00PM (GMT+3).