



SPRINKLERS

ELEKTORAIN

remote control and programmable raingun

INSTALLATION
USE
MAINTENANCE





WARNING!!

The user is requested to read this manual before starting to use the raingun. In this way, he will understand fundamental comments and suggestions concerning the installation, the functioning, the maintenance, control and repairing.

Not to follow these instructions may cause dangerous situations for people, environment and raingun.

Not to follow these instructions may cause the right compensation loss.

Gli irrigatori Sime sono conformi a tutte le norme esistenti in tema di sicurezza, le riparazioni devono essere effettuate soltanto nei centri di assistenza Sime.

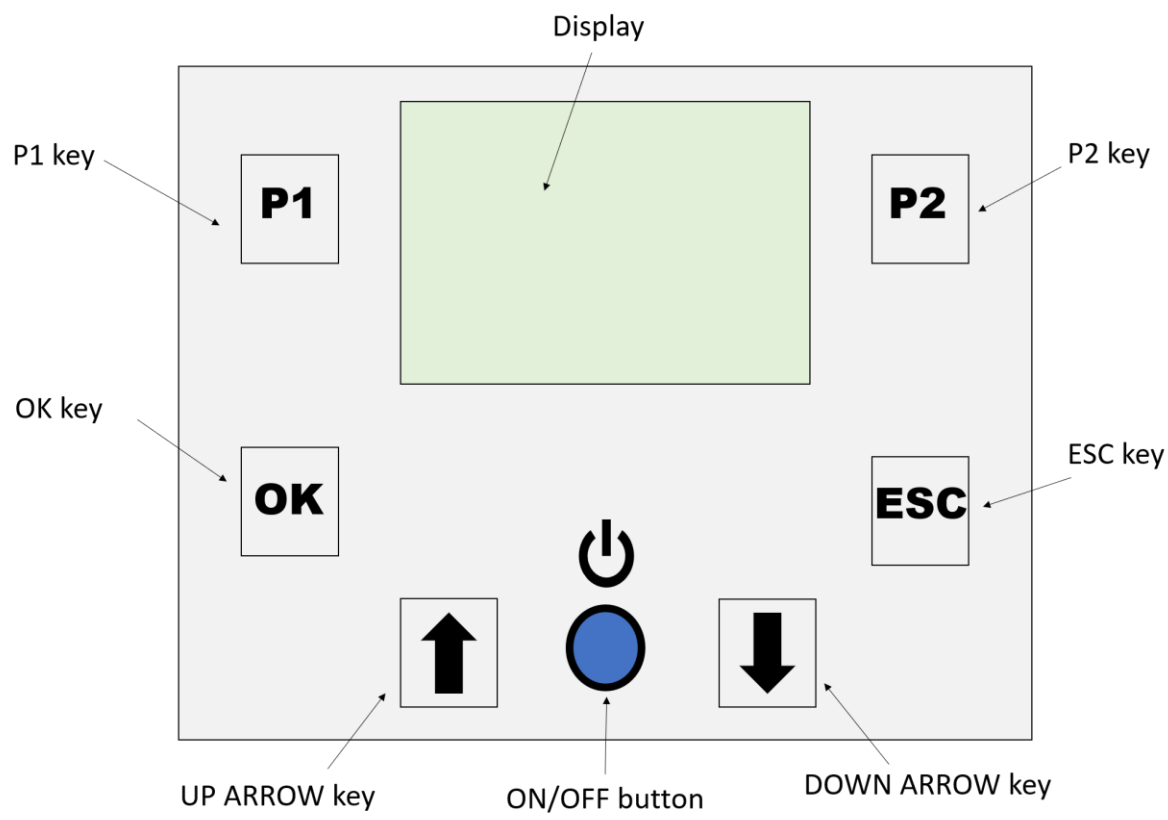
In case of obstacles like streets, buildings, railways, etc, at the irrigated field's borders, the stream of water may cause damages. In case of inconveniences or modification in the irrigation machine's parameters (or the pauses either the PE pipe's speed), it is compulsory to stop the irrigation and to reprogram the irrigation sectors related to the new raingun's position.

Do not put the raingun near streets, highways, railways, stations, airports, bike lanes and power lines.

Check always the irrigation sector, in particular in the presence of obstacles listed above.


SIME Idromeccanica Srl disclaims all responsibility for damages to things or people due to wrong use, mistaken programming, wrong maintenance or lacking direct check during irrigation.

CONTROLLER DESIGN



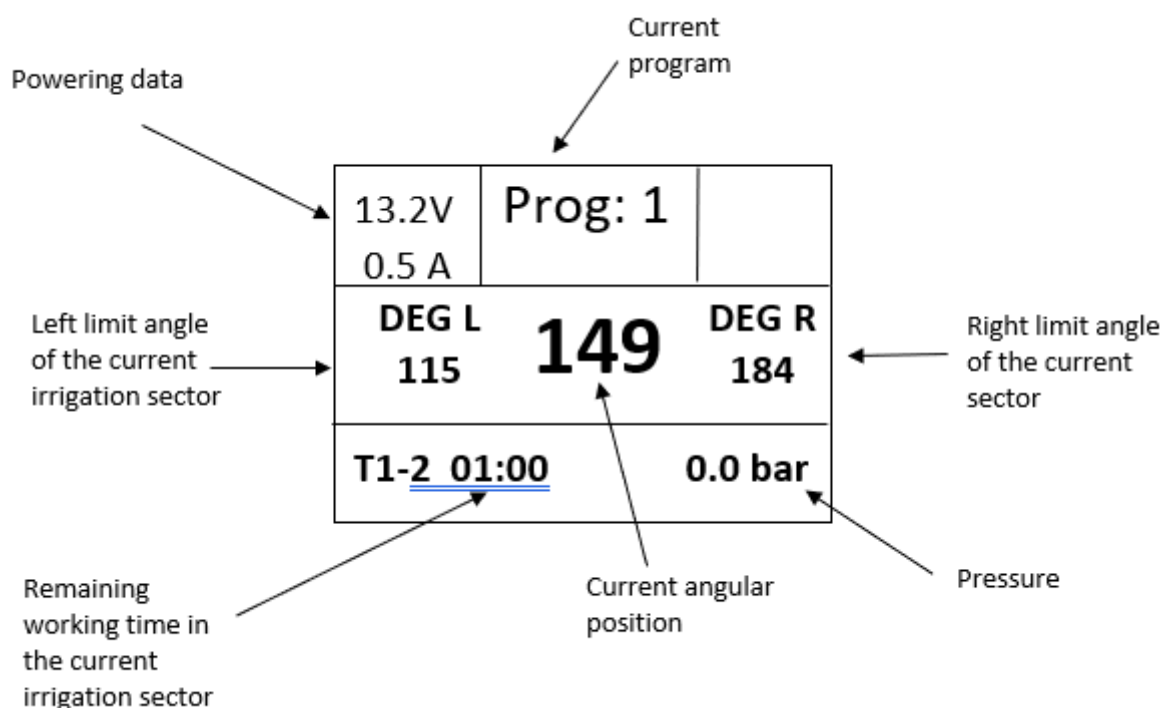
CONTROLLER MANUAL

IMPORTANT: THE KEYBOARD WORKS ONLY WHEN THE DYNAMO IS NOT PROVIDING POWER (THAT IS WHEN THE RAINGUN IS NOT IRRIGATING). IF THE DYNAMO DOES NOT PROVIDE POWER AND NO BUTTON IS PUSHED FOR 3 CONSECUTIVE MINUTES, THE CONTROLLER AUTOMATICALLY IS SWITCHED OFF.

Push the blue button under the symbol  to switch on the controller.

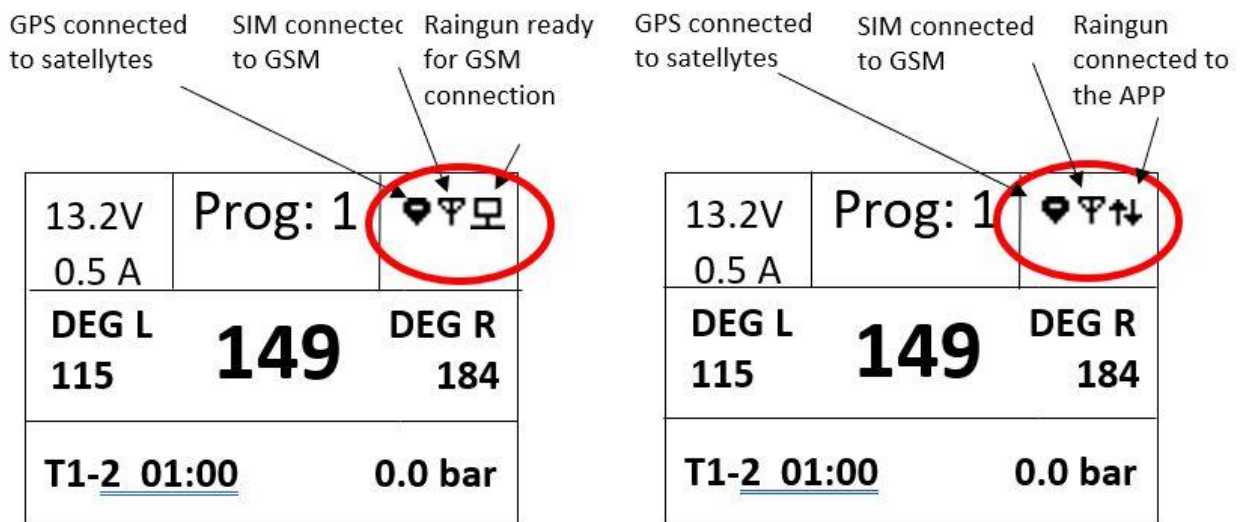
IMPORTANT: DURING THE SWITCHING ON OF THE DEVICE (LOGO APPEARING ON THE DISPLAY) DO NOT TOUCH ANY KEY OF THE KEYBOARD TO ENABLE THE RIGHT KEY CALIBRATION.

The home page is the following:



Wait 60-90 seconds until in the display's top-right pane the following symbols appear (see picture below).

IMPORTANT: IF IN THE AREA THERE IS NO GSM SIGNAL OR IT IS TOO WEAK, THE CENTRAL SYMBOL AND THE RIGHT ONE WILL NOT APPEAR. HOWEVER, THE WI-FI CONNECTION MODE IS GUARANTEED ANYWAY.



Press OK to start to program.

A menu opens and it is possible to navigate in it with the two ARROW BUTTONS. Press ESC to go back to the home page.

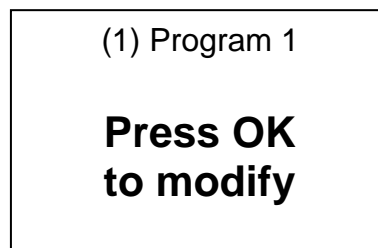
Menu description:

1. Programming Program 1
2. Programming Program 2
3. Raingun's rotational speed
4. Variable speed function depending on the angular position
5. The setting of the zero degrees position
6. Reserved area

OPERATING MENU

PAGE 1: PROGRAMMING PROGRAM 1

Go to Page 1 of the menu and press OK to modify Program 1.



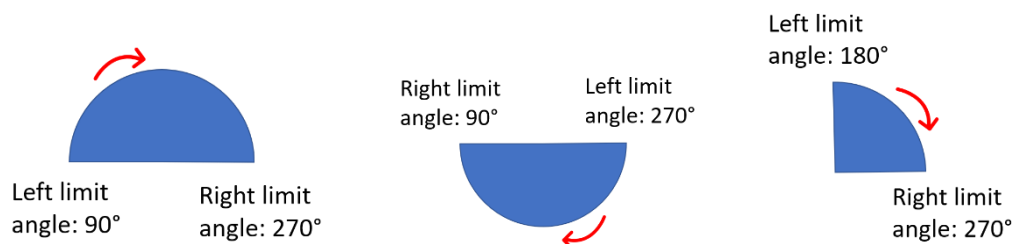
IMPORTANT: THE RAINGUN STORES IN THE MEMORY THE LIMIT ANGLES WHERE THE USER PHYSICALLY MOVES IT. FOR SAFETY REASONS, IT IS NOT POSSIBLE TO SET AN IRRIGATION SECTOR SMALLER THAN 15°. THE APPLIED CONVENTION CONSIDERS LARGER ANGLES ROTATING CLOCKWISE.

In the new page, there are the two limit angles of the first sector, left (DEG1) flashing and right (DEG2) fixed.

(1) Program 1	
DEG1:	DEG2:
90	270

1. Pull the blocking pin downwards and move BY HAND the raingun to the desired left limit angle position. Then press OK.
2. DEG2 value starts to flash: repeat the same procedure for the right limit angle and press OK to go forward.

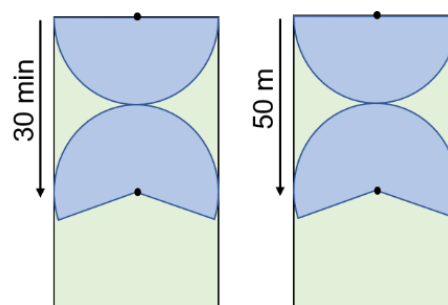
IMPORTANT: THE IRRIGATED SECTOR IS THE ONE COVERED BY MOVING CLOCKWISE FROM THE LEFT LIMIT ANGLE TOWARDS THE RIGHT LIMIT ANGLE (SEE EXAMPLES BELOW).



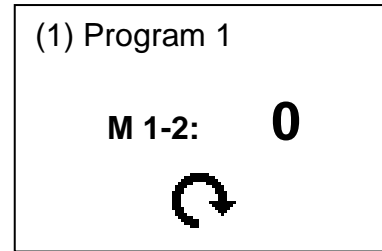
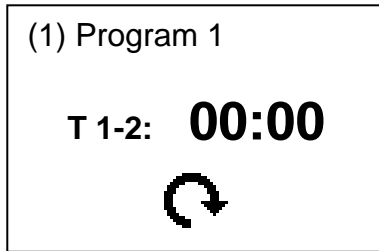
In the new page one can decide whether to drive the Program 1 by **time** or by **distance**.

Programming by time: each irrigation sector is kept for a certain time interval (example below on the left).

Programming by distance: each irrigation sector is kept until the carriage has covered a certain distance (example below, on the right).



1. Press P1 to program by time (default option) or P2 to program by distance.



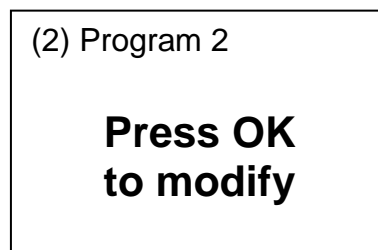
2. **Programming by time.** The hour value flashes: change the value with the two ARROW BUTTONS and, once reached the desired value, press OK. The minute value flashes: repeat the same procedure and press OK.
3. **Programming by distance.** The meters value flashes change the value with the two ARROW BUTTONS and, once reached the desired value, press OK.
The round arrow flashes: use the two ARROW BUTTONS to decide whether to pass from the first irrigation sector to the second one with a clockwise or counter-clockwise transition. Then press OK.
4. In order to set the following irrigation sectors, repeat the same procedure done for the first one.

IMPORTANT: SELECT ZERO WORKING TIME (00:00) OR ZERO WORKING DISTANCE (0) FOR THE IRRIGATION SECTOR THAT HAS TO BE KEPT UNTIL THE END OF THE PROGRAM (THE LAST ONE).

At any time, pressing ESC, one can go back to the home page and automatically loose the settings modified so far.

PAGE 2: PROGRAMMING PROGRAM 2

Go to Page 2 of the menu and press OK to modify Program 2.

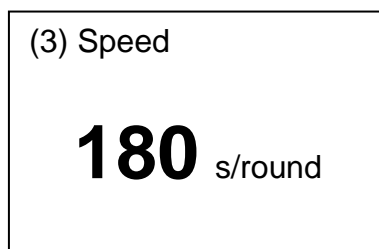


Follow the same directions as for Program 1.

PAGE 3: RAINGUN'S ROTATIONAL SPEED

IMPORTANT: THE RAINGUN'S ROTATIONAL SPEED IS MEASURED IN SECONDS FOR A FULL CIRCLE: THEREFORE, THE HIGHER THIS VALUE THE LOWER THE ROTATIONAL SPEED.

Go to Page 3 of the menu and press OK to modify the raingun's rotational speed.

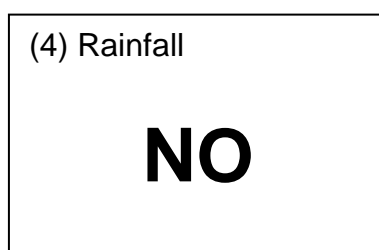


The corresponding value flashes: change the value with the two ARROW BUTTONS and, once reached the desired value. Then press OK to save and stay inside the menu or press ESC to save and go back to the home page.

IMPORTANT: THE SET VALUE IS USED IN ALL THE IRRIGATION SECTORS OF BOTH THE PROGRAMS.

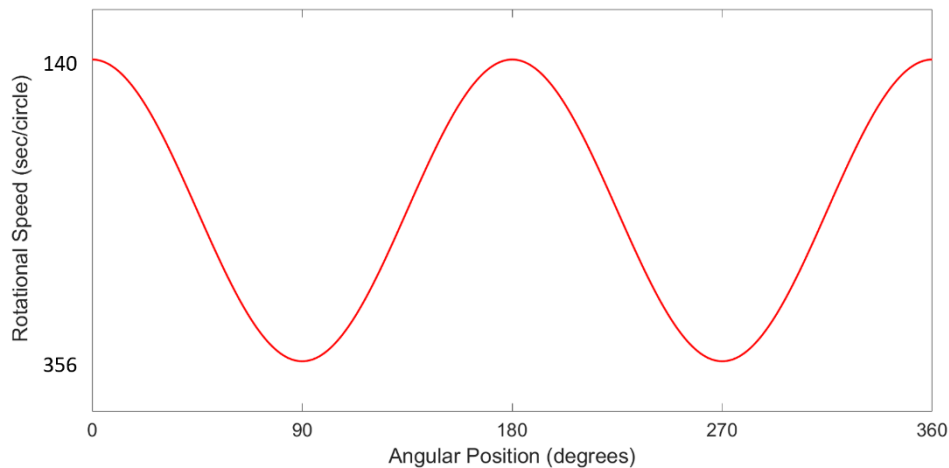
PAGE 4. VARIABLE SPEED FUNCTION DEPENDING ON THE ANGULAR POSITION

Go to Page 4 of the menu and press OK to modify the settings concerning this function. Change the settings with the two ARROW BUTTONS:



NO: Constant rotational speed independent on the angular position.

C1: The rotational speed depends on the angular position as in the curve below.

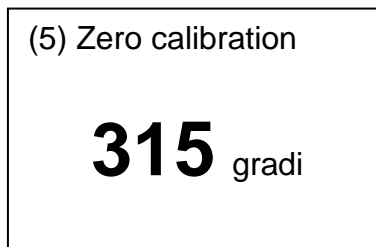


Press OK to confirm and stay inside the menu or press ESC to confirm and go back to the home page.

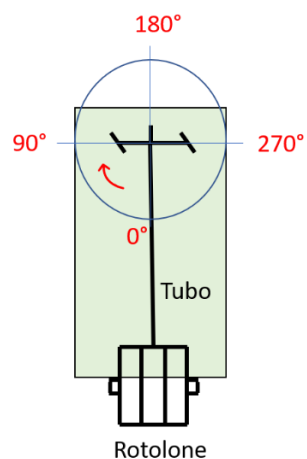
IMPORTANT: WHEN THIS FUNCTION IS ON, ALL THE CHANGES OF THE ROTATIONAL SPEED FROM THE CONTROLLER'S MENU OR FROM THE APP ARE NOT CONSIDERED.

PAGE 5. SETTING OF THE ZERO DEGREES POSITION

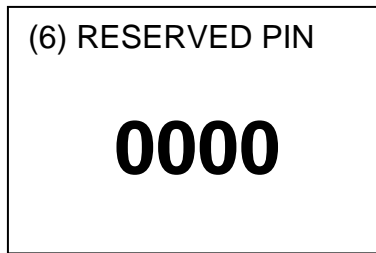
Go to Page 5 of the menu. Pull the blocking pin downwards and move BY HAND the raingun in the desired 0° angular position. Then press OK to save.



IMPORTANT: USE THE FOLLOWING CONVENTION: THE 0° POSITION CORRESPONDS TO THE RAINGUN FACING TOWARDS THE HOSE REELS MACHINE IN THE PIPE'S DIRECTIONS (SEE BELOW).



PAGE 6. RESERVED AREA



Area reserved to the manufacturer.

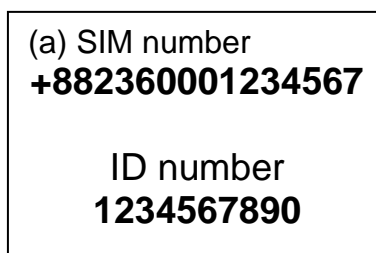
SIM CARD MENU

Once symbols “Sim connected to GSM” and “Raingun ready for GSM connection” have appeared in the top right pane of the raingun’s controller, press OK for 5 seconds or more to get access to the SIM menu. To browse inside the menu use the ARROW BUTTONS.

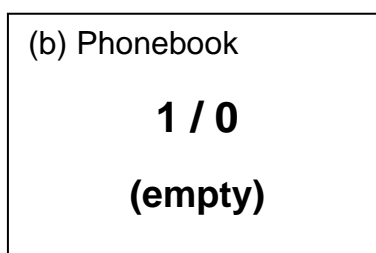
IMPORTANT: AFTER EXITING THE SIM CARD MENU, REMEMBER ALWAYS TO SWITCH OFF AND THEN RESTART THE CONTROLLER IN ORDER TO MAKE POSSIBLE THE CONNECTION WITH SMARTPHONE.

PAGE a: SIM CARD NUMBER

In this page the controller’s SIM number is displayed. Below the ID number of the raingun is shown: note that this ID number is the one that you have to insert when configuring the raingun on the app.



PAGE b: PHONEBOOK



Press OK to modify the SIM phonebook containing all the numbers which the controller will send possible alarm SMS to.

Insert number

Using the UP ARROW key, go to last position of the phonebook (empty). Press OK to insert the desired number including the international area code.

Use the ARROW BUTTONS to select each digit and confirm it with the OK button.

(b) Phonebook <div>1 / 0</div> (vuoto)	Insert number: +3933012-
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Cancel number

Using the UP ARROW key, go to the position of the phonebook you want to cancel. Press OK twice to cancel the selected number.

(b) Phonebook <div>1 / 1</div> +391234567890	ERASE +391234567890 ?
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PAGE c: RESET SIM

Press OK to cancel all the numbers appearing in the SIM phonebook.

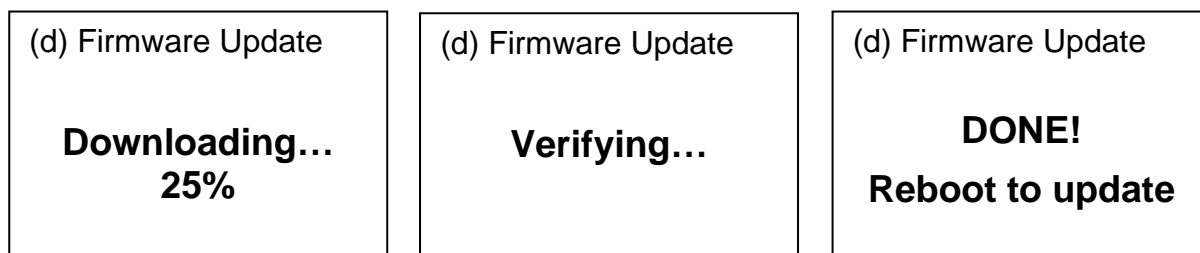
(c) RESET SIM Press OK to start

PAGE d: FIRMWARE UPDATE

Press OK to download and install possible firmware update.

(d) Firmware Update Press OK to start	(d) Firmware Update Checking...
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If an updated version is available, the controller will download it and install it at the next reboot.



IMPORTANT: ONCE DOWNLOADED A FIRMWARE UPDATE, AT THE NEXT START THE DISPLAY WILL REMAIN BLANK FOR 8-10 SECONDS. DO NOT TOUCH ANYTHING DURING THIS TIME INTERVAL. AFTER THAT, THE UPDATED VERSION OF THE SOFTWARE WILL BE LAUNCHED.

ALARM LIST

Thanks to the sensors installed, the controller checks continuously the correct functioning of the raingun. Critical situations may occur and in these cases the controller stops the raingun rotation and an alarm message is displayed on the screen and sent (SMS) to the numbers saved in the phonebook.

ALARM messages	Description
Encoder failure	Electrical problem or mistaken wire connection of the sensor which reads the angular position → Inform the assistance
Pressure Sensor Failure	Electrical problem or mistaken wire connection of the sensor which reads the water pressure → Inform the assistance
Dynamo Error	The dynamo is not producing current even if the pressure is higher than 3.5 bar → Check whether the secondary nozzle is obstructed. If the problem remains, inform the assistance
Movement error	Problem in the raingun rotation due to a damage in the gear motor or to a wrong functioning of the angular position sensor → Reboot the raingun and check whether the problem remains. In this case, inform the assistance
Motor error	Too high electrical absorption of the gear motor → Reboot the raingun and check whether the problem remains. In this case, inform the assistance
Tilt error* *Only if the optional tilt sensor has been bought.	The raingun is tilted of 30° or more. → Stop the irrigation and check the raingun.

APP MANUAL

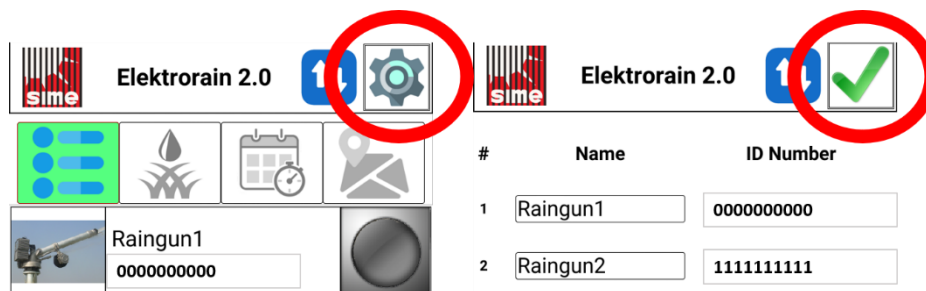
IMPORTANT: ONCE CONNECTED THE RAINGUN AND THE SMARTPHONE APP THROUGH **GSM DATA**, THERE IS NO MAXIMUM DISTANCE BEYOND WHICH THE COMMANDS SENT BY THE APP ARE NOT RECEIVED BY THE RAINGUN. FOR SAFETY REASONS, THE MANUFACTURER STRONGLY SUGGEST TO EXPLOIT THE REMOTE CONTROL FUNCTION ONLY WHEN THE RAINGUN IS IN THE USER'S SIGHT.

IMPORTANT: ONE SMARTPHONE CAN CONTROL UP TO TEN DIFFERENT RAINGUNS BUT JUST ONE AT A TIME. THE SAME RAINGUN CAN BE CONTROLLED BY MORE THAN ONE SMARTPHONE BUT, FOR SAFETY REASONS, ONLY ONE SMARTPHONE AT A TIME CAN CONNECT TO THE RAINGUN.

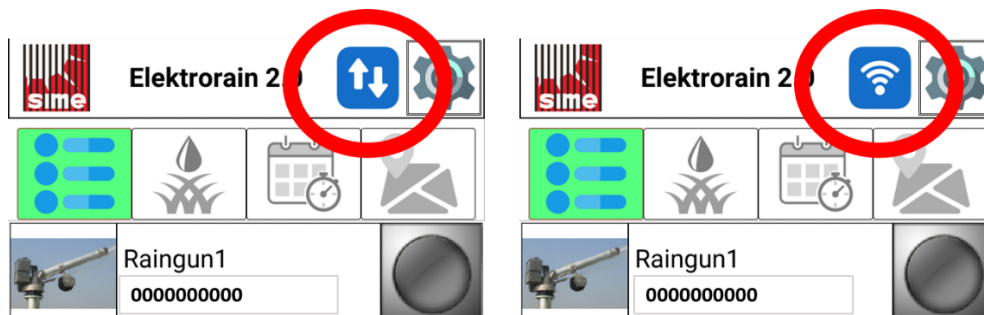
Download and install the app **Elektorain** from Google Playstore (smartphone Android) or Apple Store (smartphone iOS).

1. CONNECTION APP-RAINGUN

The first time you open the app click the gear symbol in the top right pane. In the new page, insert the desired name for the raingun and the raingun's ID number (you find it in the first page of the SIM CARD menu of the raingun's controller, see at Page 9). Then touch the green tick to save (see below).

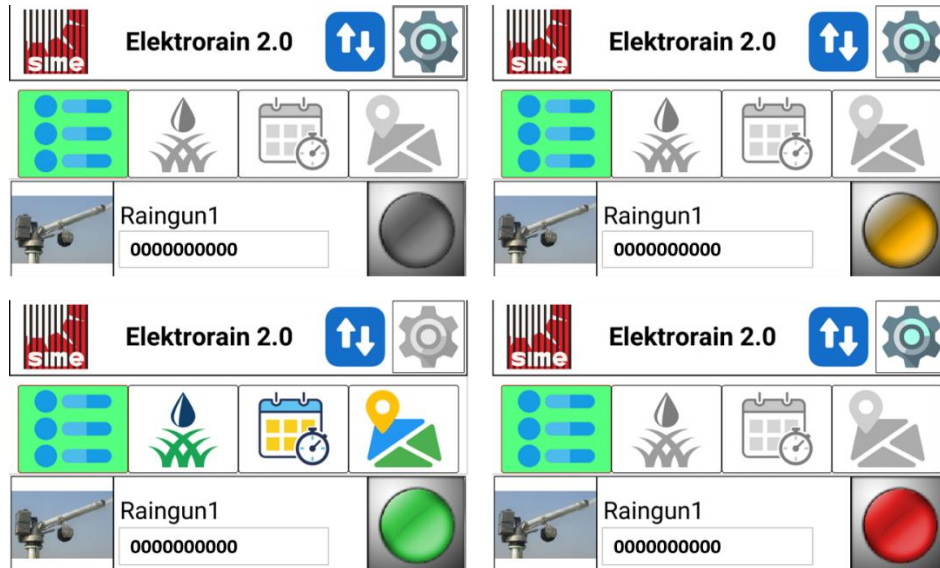


Once saved, the home page automatically reappears and now it is possible to see the raingun in the list and beside a light off: this means that the smartphone is not connected to the raingun yet. Before connecting to one gun in the list, you have to decide which kind of connection you want to establish: GSM data (default option) or Wi-Fi. In order to select it you have only to touch the blue button on the left of the gear symbol passing from GSM data (image below on the left) to Wi-Fi (image below on the right) and viceversa.



IMPORTANT: IN CASE YOU WANT TO CHOSE WI-FI CONNECTION, BEFORE OPENING THE APP, REMEMBER TO ACTIVATE WI-FI ON YOUR SMARTPHONE AND TO CONNECT TO THE ONE CALLED "AI-THINKER...". THEN OPEN THE APP, SELECT WI-FI CONNECTION AND CONNECT.

Once the connection mode is selected, touching the light it becomes yellow (connection attempt ongoing). Then, if the connection establishes, the light becomes green, otherwise, if the attempt fails, the light becomes red.



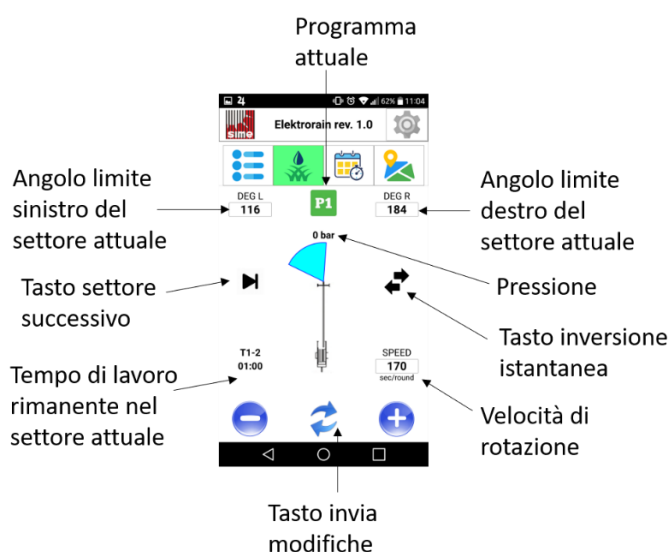
The main reasons why the connection attempt might fail are:

- Raingun controller off
- Raingun SIM or smartphone SIM not connected to the GSM network (if GSM data connection is selected)
- Another smartphone already connected to the raingun

Once the connection establishes, touching the icons that before were grey, you can get access to the pages that before were disabled.

IMPORTANT: CONNECTION THROUGH Wi-Fi IN OPEN FIELD IS GUARANTEED UP TO A MAXIMUM DISTANCE BETWEEN THE USER AND THE RAINGUN OF ABOUT 60-70 m. (THIS NUMBER MAY DIFFER DEPENDING ON EXTERNAL CONDITIONS, OBSTACLES...)

2. REAL TIME REMOTE CONTROL



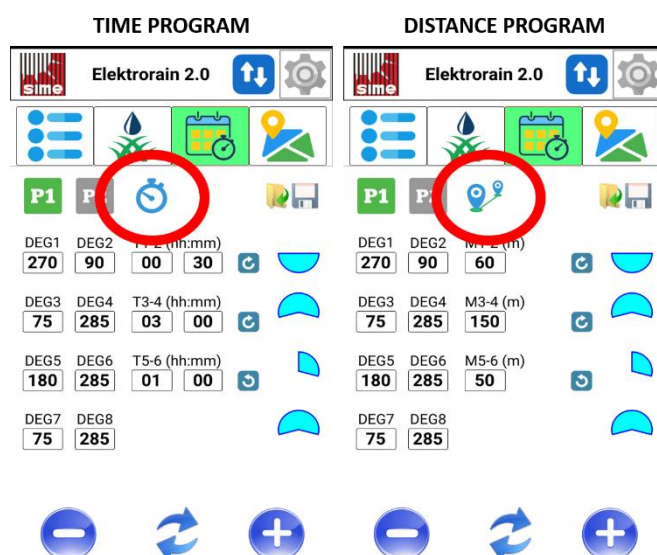
In order to change the limit angles of the current sector or the rotational speed touch the pane you are interested in, modify the value with the button + and – until the desired value and finally touch the central confirmation button. Immediately, the new values are sent to the raingun which immediately changes the current irrigation sector and the rotational speed will change after the first reverse of rotation.

The button “next sector” is available only in case of programming by time. It enables to pass immediately to the next sector without waiting the remaining time.

The button “instant reverse” enables to immediately reverse the rotation of the raingun and it sets as the new limit angle the angular position where the raingun was at the moment of the command.

3. PROGRAMMING

Touching the icon with the calendar and the timer one gets access to the PROGRAMMING PAGE.



Selecting P1 or P2 it is possible to modify respectively Program 1 and Program 2. The round circles highlight in the figure above programming by time or by distance (touch to switch the operating mode).

For each irrigation sector one can set limit angles and working time/distance: select the pane you are interested in and use buttons + and – until you reach the desired value. The round arrow indicates clockwise or counter-clockwise transition passing from a sector to the other (touch to change it).

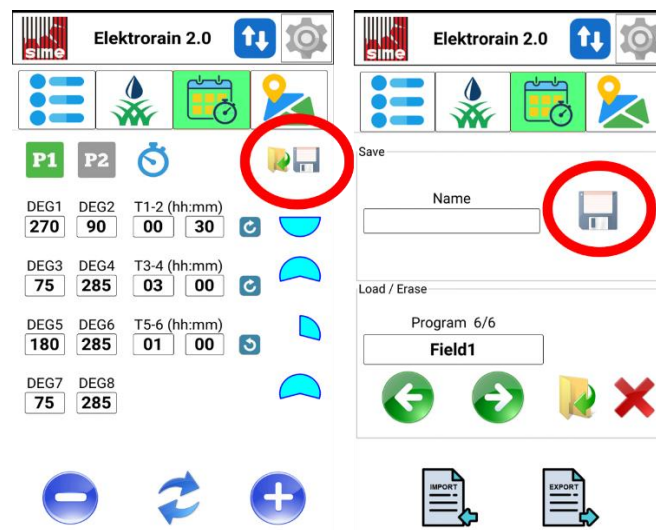
Once all the changes have been done, push the central confirmation button to save them and send them to the raingun.

IMPORTANT: PUSHING THE CONFIRMATION BUTTON, THE RAINGUN RUNS FROM THE BEGINNING THE PROGRAM (P1 OR P2), JUST MODIFIED, THAT IT WAS RUNNING BEFORE RECEIVING THE COMMAND. THEREFORE IS STRONGLY SUGGESTED TO NOT MODIFY PROGRAMS DURING THE IRRIGATION.

4. PROGRAMS' MEMORY

- HOW TO SAVE A PROGRAM IN THE APP MEMORY:

If you want to write a new program without launching it to the gun but saving it in the app memory you have to write it down in the programming page, then press the LOAD/SAVE icon on the top right. Here you enter a new page: under the description “Name” you put the desired name for that program and you press the FLOPPY DISK symbol to store it.



- HOW TO LOAD OR ERASE A PROGRAM ALREADY SAVED IN THE APP MEMORY

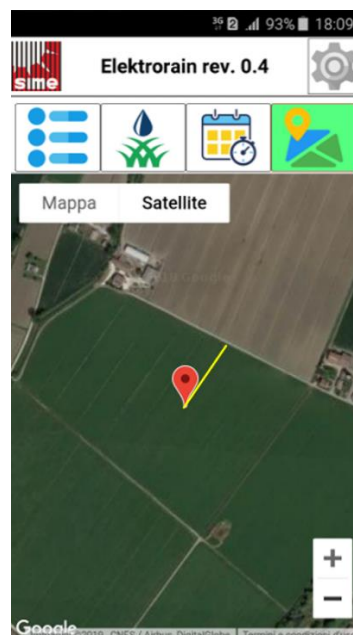
From the programming page press the LOAD/SAVE icon on the top right. Here you enter a new page: in the central part of this page, using the green ARROW BUTTONS you can go through the list of program already saved. Once you have positioned on the desired program you can either erase the program from the list (touching the RED CROSS button) or load the program in the programming page (touching FOLDER + GREEN ARROW button). In this last case you will find the selected program load in the programming page and in

order to definitely launch it to the raingun you have only to push the central confirmation button.

- HOW TO IMPORT/EXPORT THE PROGRAMS' LIST BETWEEN USERS
See appendix 1 at the end of this manual.

5. MAP

Touching the right icon, you open the map. Here one can check the current position of the gun (red marker) and the path covered by the carriage during the program ongoing (yellow line). Note that this page is disabled when you are connected through Wi-Fi because in that case you have to be relatively near the raingun and therefore you already know where it is.



EXAMPLES IN THE FIELD

In the following, some examples are discussed. They are expected to cover most of the cases that can happen in the field. It will be described how to handle the raingun, its programming and its interaction with the smartphone app.

1. FIRST TIME IN THE FIELD

After having fixed the raingun to the carriage of the hose reel, the first thing to do is the setting of the 0° position. Turn on the controller, press OK to enter the menu and use the UP ARROW BUTTON until the fourth page. Then, set the 0° position as explained before having in mind the convention to follow: 0° corresponds to the raingun facing the hose reel machine.

Then it is possible to roll out the hose, as for a standard raingun. After that, turn on again the controller and set the program that you want to run either with the controller or with the app (once the connection has established). Finally, press P1 or P2 depending on the program you want to run.

IMPORTANT: THE CONTROLLER STARTS TO COUNT TIME OR METERS WHEN WATER STARTS TO PRODUCE POWER THROUGH THE DYNAMO.

2. PASSING FROM ONE FIELD TO ANOTHER

To irrigate a new field, after having rolled out the hose, follow one of these two procedures:

- **CASE 1: YOU WANT TO REPEAT THE LAST PROGRAM RUN**
Turn on the controller and press P1 or P2 depending on where the desired program is stored. Check on the controller's display that in the left bottom pane the program has restarted from the first sector (T1-2 or M1-2).
- **CASE 2: YOU WANT TO RUN A NEW PROGRAM**
Turn on the controller and set one of the two available programs either from the controller or from the app. Finally, press P1 or P2 on the controller depending on where the desired program is stored. Check on the controller's display that in the left bottom pane the program has restarted from the first sector (T1-2 or M1-2).

3. STOP THE IRRIGATION PROGRAM

Let us assume that you have to stop irrigation before expected for any inconvenience (for example wind rises).

If after a certain time, you want to restart irrigation you just have to restart the pump and the raingun **automatically** resumes the program from where it stopped.

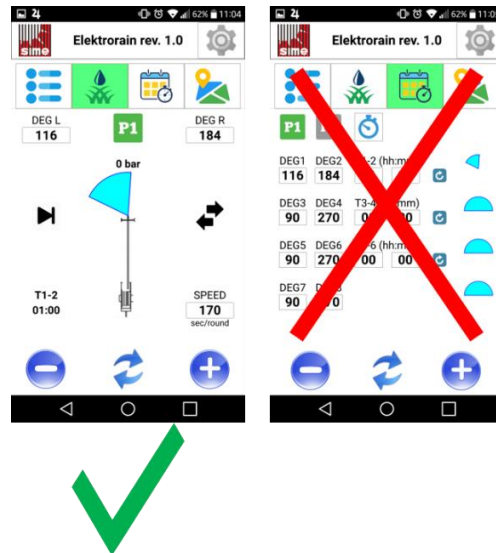
IMPORTANT: IN SUCH A CASE DO NOT PRESS P1 OR P2 BUTTON ON THE CONTROLLER OTHERWISE THE RAINGUN RESTARTS THE SELECTED PROGRAM FROM THE BEGINNING.



4. CHANGE IN REAL TIME THE IRRIGATION SECTOR

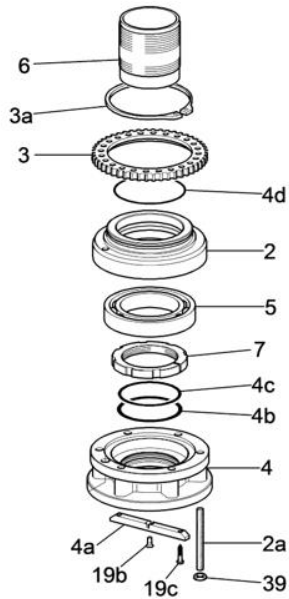
If during the irrigation you want to modify the limit angles of the CURRENT irrigation sector, you just have to connect the smartphone app to the raingun and do it on the Remote Control page.

IMPORTANT: DURING THE IRRIGATION, DO NOT MODIFY THE IRRIGATION SECTORS ON THE PROGRAMMING PAGE OF THE APP. IN SUCH A CASE YOU WOULD RESTART THE RUNNING PROGRAM FROM THE BEGINNING.



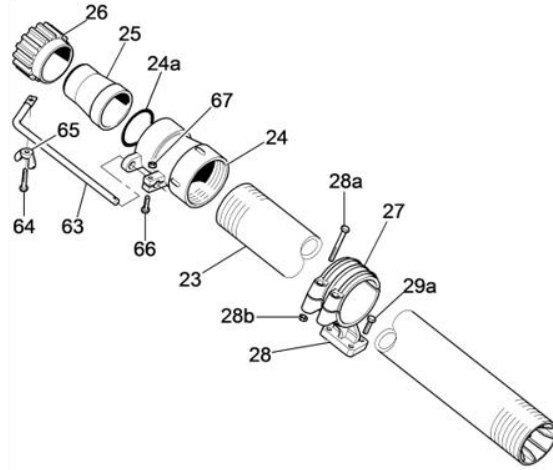
THEREFORE, IT IS NOT POSSIBLE TO MODIFY A SECTOR OF THE PROGRAM UNLESS THE RAINGUN IS ALREADY RUNNING THAT SECTOR.

REPLACING SPARE PARTS



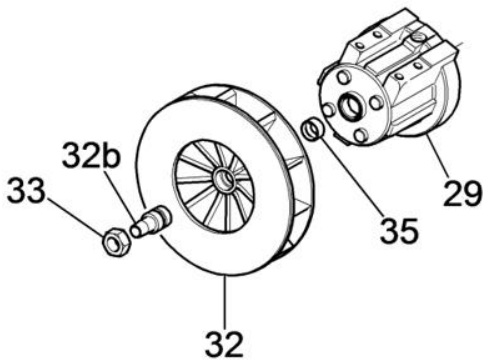
Replacing flange (4), body (2) and gear (3)

Unscrew screws (19b) and nuts (39) and remove flange (4). Unscrew locknut (7) and remove body (2). Remove fastener (3a) and remove gear (3).



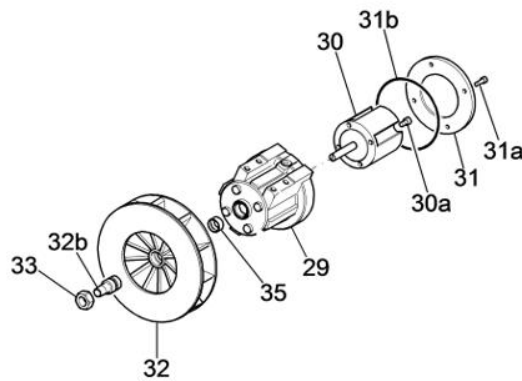
Replacing pipe (23)

Unscrew nuts (28b) and remove clamp (27) and support (28). Unscrew head (24) and remove pipe (23).



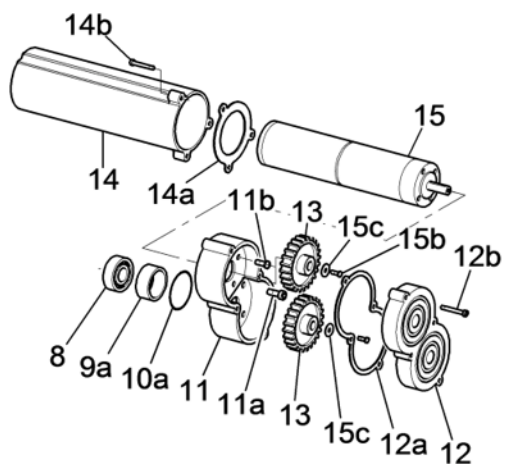
Replacing turbine (32)

Unscrew nut (33) and remove turbine (32).



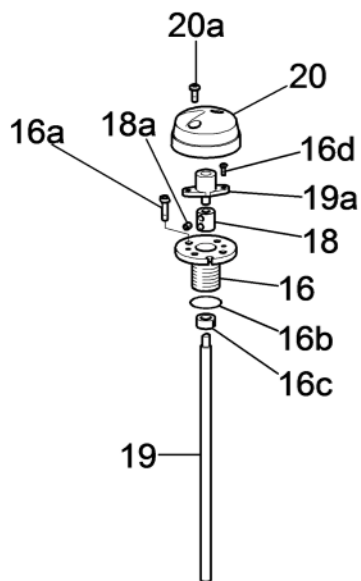
Replacing generator (30)

Unscrew screws (31a) and remove cover (31). Unscrew screws (30a) and nut (33) and remove turbine (32).



Replacing motor (15)

Unscrew screws (12b) and nuts (15b) and remove gears (13). Unscrew screws (14b) and remove cover (14). Unscrew screws (11b) and remove motor (15).



Sostituzione sensore (19a)

Unscrew screws (20a) and remove cover (20). Unscrew screws (16d) and remove magnetic sensor (19a).

APPENDIX 1: Programs' Import / Export with App Elektrorain

Elektrorain function Import / Export is necessary only if you want to transfer programs written with a certain smartphone to another one.

ANDROID

EXPORT BUTTON

Touching EXPORT BUTTON all the programs stored in the list of programs of the app will be saved in a text file called "ekrain_prog_list.txt" in the folder Download. From here this text file can be sent (through email, bluetooth ecc...) to another smartphone.

IMPORT BUTTON

Once the file "ekrain_prog_list.txt" has been received from another device, it must be stored into the folder Download. Then pushing IMPORT BUTTON in the app all the programs in the txt file are automatically imported in the app programs' list.

IOS

EXPORT BUTTON

Touching EXPORT BUTTON all the programs stored in the list of programs of the app will be saved in a text file called "ekrain_prog_list.txt" in the folder Documents of the Elektrorain app. To get access to this file, open the app "File" of iOS. Select "Posizioni" and then "Su Iphone". The folder Elektrorain will appear and inside it you will find the text file "ekrain_prog_list.txt". From here this text file can be shared (through email, bluetooth ecc...) to another smartphone.

IMPORT BUTTON

Connect the smartphone to a pc with Itunes. Open Itunes and select the smartphone symbol in the upper bar. In the main page all the informations about the smartphone will appear (for example model, memory occupied etc..). Click on "Share file" on the left column. The app Elektrorain will appear. Click on the Elektrorain icon and you will find the documents folder of the app (typically empty).

Click on Add to insert the file "ekrain_prog_list.txt" received before. Now disconnect the Iphone from the pc, enter the app Elektrorain and by pushing the IMPORT BUTTON all the list of programs will be automatically imported.



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