AGROMAGIC AC / DC

Instruction Manual

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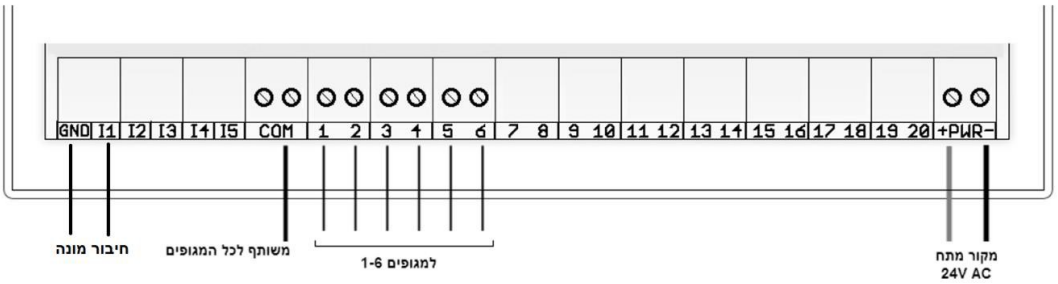
1. Installation



Tools

- Use a flat screw driver of 4.5mm to set wires in place as shown in the above drawing.

Power supply

- For DC controller – connect two wires of the rechargeable battery to the screw terminal where “PWR” is marked. **Notice**: in DC system polarity is important. Red wire will be connected to the screw marked with “+” and the black to the one marked with “-”.
- For AC controller – 24VAC wires should be attached in the screw terminal where “PWR” is marked. There is no significance to polarity.

Valves connection

- For DC controller – each valve has two wires, usually black and red.
  Connect red wire (“+”) of valve #1 to screw #1 and the black wire (“-“) to screw #2.
  For valve #2, connect red wire (“+”) to screw #3 and the black wire (“-“) to screw #4.
  Keep this attachment order for the rest of the valves.
- For AC controller – each valve has two wires, usually with the same color.
  Connect one of them to “common” screw and the other to the station screw.

Master Valve connection

- Master valve is being set instead of the highest watering station. Examples:
  For a 6-station DC unit, master will be connected to screws #11(red) and #12 (black).
  For a 4-station AC unit, connect master valve wires to common screw & screw #4.

Water meter connection

- Connect the two water meter wires to the most left screws, marked with "GND" & "I1".

Fixing the controller’s case

- Before closing the case, use a long screw driver in order to attach the box to a flat stable surface.

Closing the controller's case

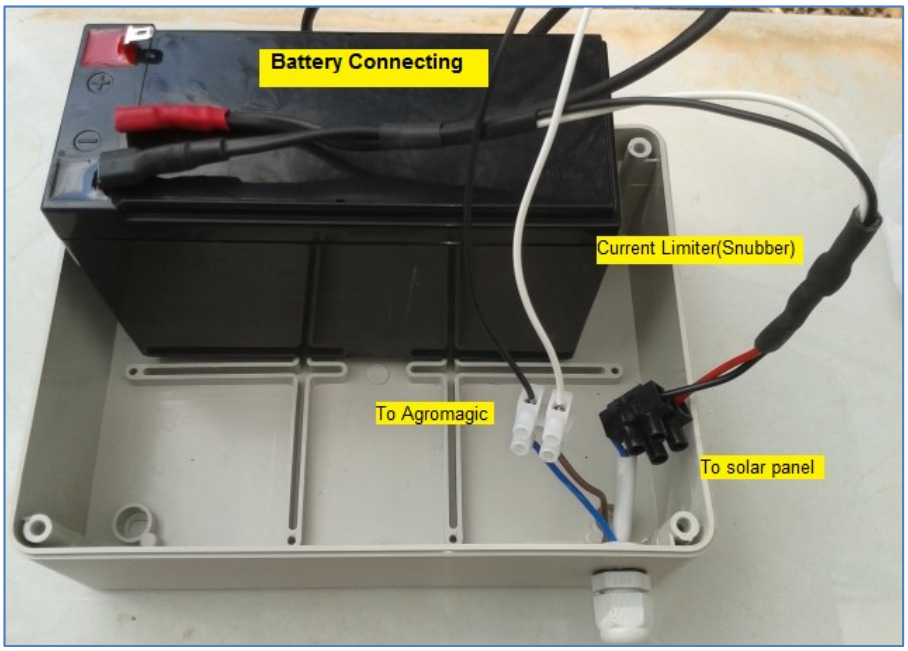
- The AgroMagic case is an IP-55 standard and can be installed outdoor. After finishing all wires connection, ensure you close the box cover firmly and tight four screws to avoid water or humidity entrance.
- Attention (!) –
  For AC controller, the wall mount AC transformer must be set to mains only after all wiring had been completed!

Connecting the rechargeable battery to solar panel & controller

The solar panel is connected with a split 2-wire cable to a 12V, 7A rechargeable battery and to the Agromagic controller..

User must use the cable that was supplied with the Agromagic controller.

This cable includes a snubber which is essential to battery correct charging.



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2. User Interface

The user interface is suitable to be used by PC, tablet or smartphone with any kind of web connection.
In order to login one needs to enter his “user name” and “password” got on registration.

User's Screen

In this screen user may choose the desired irrigation controller (site) among the list of controllers set to his account, to see a periodical accumulative report of all sites, to get alerts summary for all sites, to verify all controllers are registered to the cellular network and to have a graphic battery charge trend for his DC controllers.

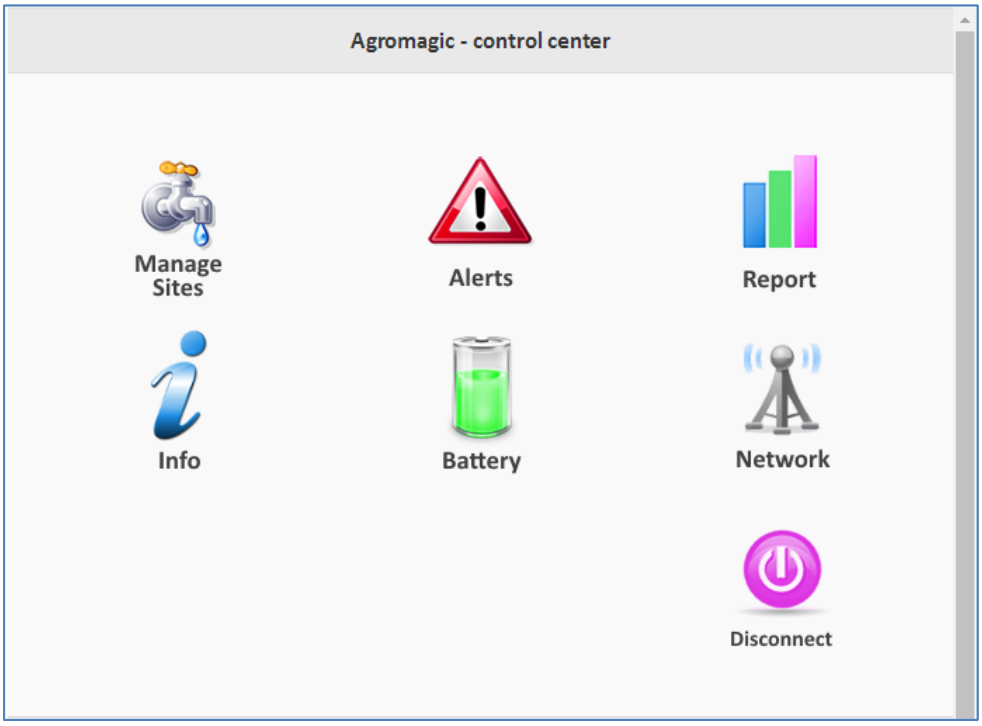


Figure 1 - User's Screen

Irrigation plan Screen

In site's irrigation plan screen one can perform editing, adding and deleting irrigation plans.

Using the “Sync. Irrigation Plans” button will synchronize the irrigation controller and server with last changes done by user.

Using the “Refresh” button  will re-read irrigation plans and will update screen with last known data from server.

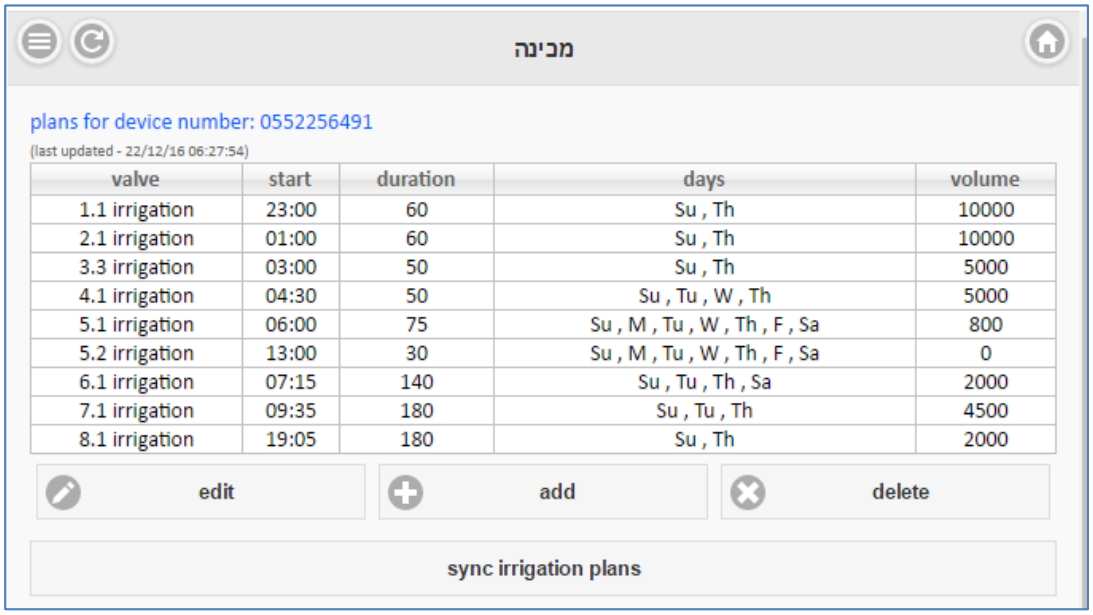


Figure 2 - Site's Irrigation Plan

Use  button in order to get to main menu.

To return to main user's screen,from any point, use the  button.

Site's Main Menu

Data from device / Raw data – Controller's-server interaction log.

Send Command – Manual irrigation commands, Enable/disable irrigation plan, read current flow rate, parameters value change, etc.

Irrigation Reports – Accumulative irrigation report per station.

Alerts Report – Summary of water breaks, high and low flow measurements.

Alerts Definitions – Thresholds' definition for volumetric irrigation control.

Valves Properties – Valve's name & nominal flow definition.

Irrigation Plans – All valve's irrigation plans in one view and edit buttons.

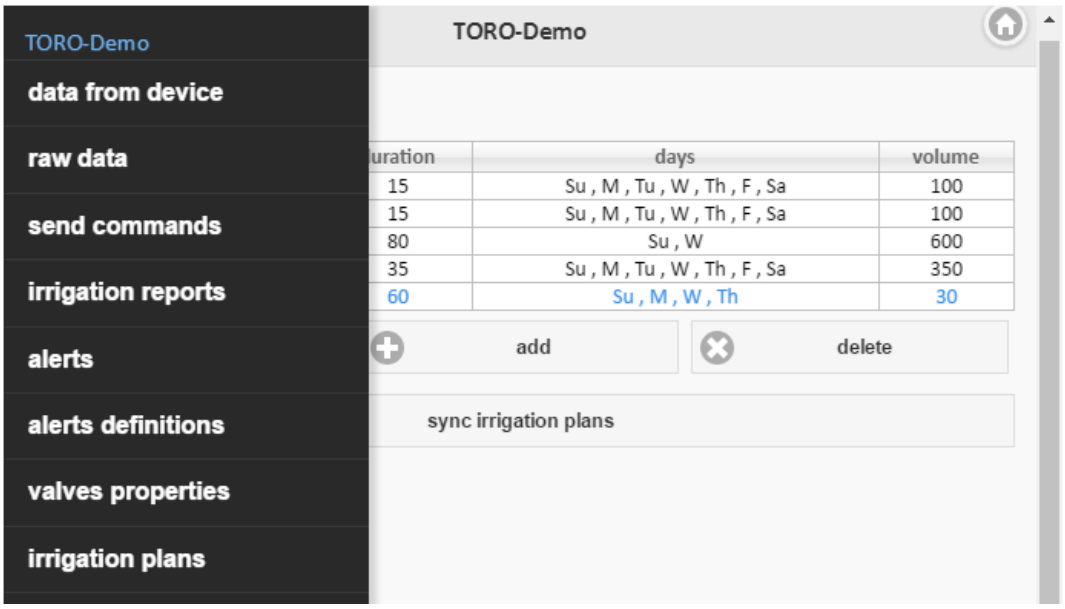


Figure 4 - Site's Main Menu

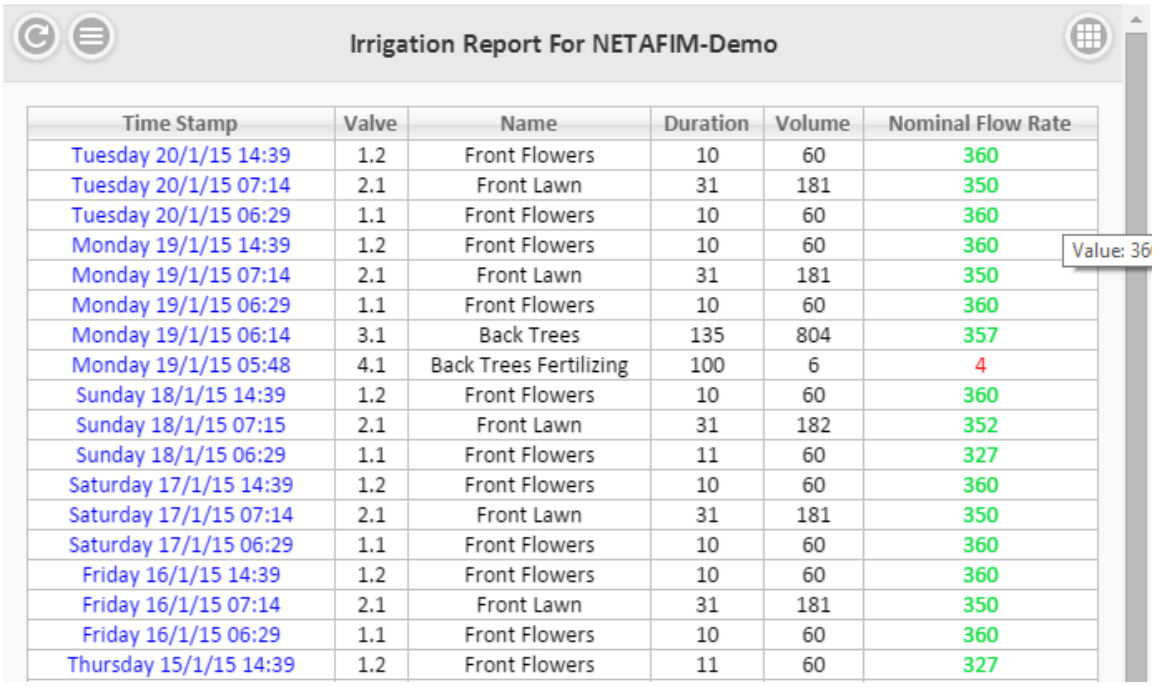
Irrigation Report

Irrigation report enables user to see the total quantity, total duration, closing water timestamp and the hourly calculated flow, of the selected water opening.

A flow measurement which is either high or low by 15% or more, comparing the nominal flow of the valve will be colored in red. A flow measurement which is inside this range will be colored in green.

User may choose range of dates to see this data by using the  button.

User can also export information on screen to an excel sheet, using the  button appears under the table.



Irrigation Report For NETAFIM-Demo

Time Stamp	Valve	Name	Duration	Volume	Nominal Flow Rate
Tuesday 20/1/15 14:39	1.2	Front Flowers	10	60	360
Tuesday 20/1/15 07:14	2.1	Front Lawn	31	181	350
Tuesday 20/1/15 06:29	1.1	Front Flowers	10	60	360
Monday 19/1/15 14:39	1.2	Front Flowers	10	60	360
Monday 19/1/15 07:14	2.1	Front Lawn	31	181	350
Monday 19/1/15 06:29	1.1	Front Flowers	10	60	360
Monday 19/1/15 06:14	3.1	Back Trees	135	804	357
Monday 19/1/15 05:48	4.1	Back Trees Fertilizing	100	6	4
Sunday 18/1/15 14:39	1.2	Front Flowers	10	60	360
Sunday 18/1/15 07:15	2.1	Front Lawn	31	182	352
Sunday 18/1/15 06:29	1.1	Front Flowers	11	60	327
Saturday 17/1/15 14:39	1.2	Front Flowers	10	60	360
Saturday 17/1/15 07:14	2.1	Front Lawn	31	181	350
Saturday 17/1/15 06:29	1.1	Front Flowers	10	60	360
Friday 16/1/15 14:39	1.2	Front Flowers	10	60	360
Friday 16/1/15 07:14	2.1	Front Lawn	31	181	350
Friday 16/1/15 06:29	1.1	Front Flowers	10	60	360
Thursday 15/1/15 14:39	1.2	Front Flowers	11	60	327

Figure 5 - Irrigation Report

Alerts Definition

Alerts will be logged in “Alerts” screen and also may be e-mailed and/or sent by SMS to user.

User may define a “Low-flow” and “High-flow” thresholds for generating an alert for any volumetric irrigation.

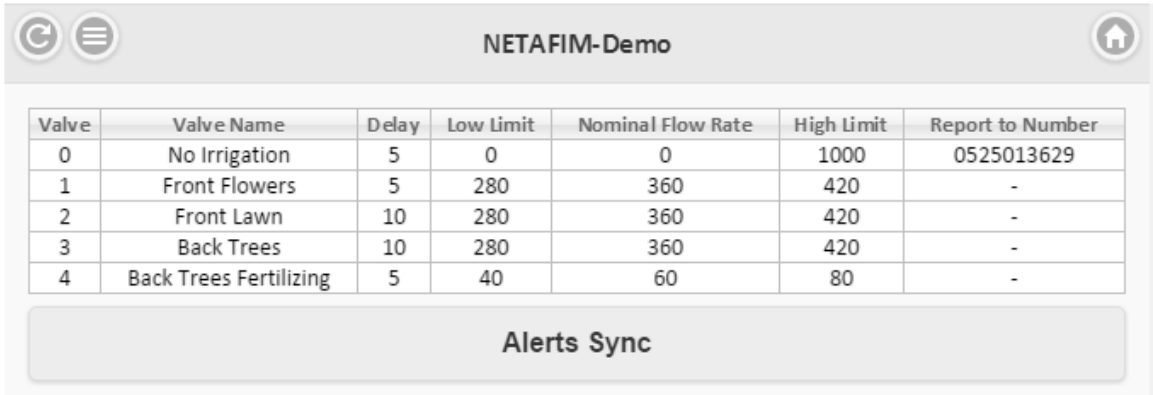
A wrong threshold value will be colored in red to emphasize a problem and user will not be able to finish data updating till fixing it.
For example: for a nominal flow of 500 L/H, a low flow threshold of 650 L/H will be colored in red.

Another type of alert is for time which there is no active watering, a “High flow with no irrigation” alert is automatically generated in order to point on un wanted water usage such as pipe break or water abuse. Only a high flow threshold should be set in this case.

For any alert type, in order to reduce false alarms, user may define a delay in minutes in which the alert will not be generated.

Optional - User cellular number may be defined for SMS alerting (10 digits) in this screen, and e-mail address list in servers administration screen.

Note: Alerts mechanism can be enabled or disabled by user's command.



Valve	Valve Name	Delay	Low Limit	Nominal Flow Rate	High Limit	Report to Number
0	No Irrigation	5	0	0	1000	0525013629
1	Front Flowers	5	280	360	420	-
2	Front Lawn	10	280	360	420	-
3	Back Trees	10	280	360	420	-
4	Back Trees Fertilizing	5	40	60	80	-

Figure 6 - Alerts Definitions

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Valves Properties

For each valve user may define a name (free string) and a nominal flow.

The nominal flow can be edited at any time and it is being used for reference in both the "Alerts Report" screen and in the Irrigation accumulative report.

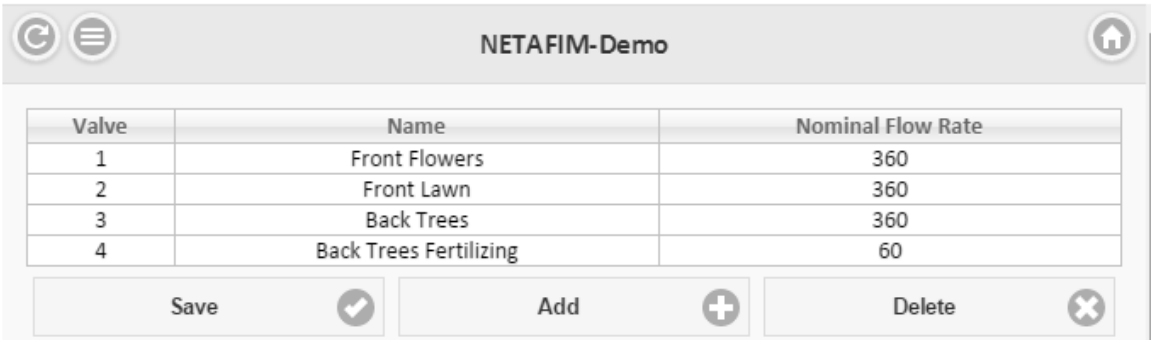

Figure 7 - Valves' Properties

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3. SMS Commands

Irrigation Program

Adding an irrigation program

S[Valve#],[start#],[start time HHMM],[duration minutes],[watering days][period],[volume w. meter pulses].
VALVE #1, days Sun, Mon, The, & Fri. Hrs 04:30-05:10 - **S1,1,0430,40,1256,0,0,;**!

Read or Set Real Time Clock

Set time on controller - STIME[hhmmssd];

Set time to Thursday - **STIME1630005;!**

Read current time on controller - **PTIME;!**

Manually open or close a valve

Set valve on - MON[valve],[period in minutes],;

Manually open irrigation of valve #3 for an hour and a half - **MON3,90,;!**

Set valve off - MOFF[valve];

Manually stop irrigation of valve #3 - **MOFF3;**!

Enable / Disable irrigation

Enable irrigation - **SET ENA 1;!**

Disable irrigation - **SET ENA 0;!**

Irrigation programs erase

Erase all programs - **DAP;!**

Seasonal Adjustment (10%-150%)

Set parameter's value - SET PMU [value]

Get parameter's value - **GET PMU;!**

(Factory default vlaue: PMU:100)

Set seasonal adjustment to 80% of current values - **SET PMU 80;!**

Set seasonal adjustment to 150% of current values - **SET PMU 150;!**

Note: On web all commands can be cascaded. SMS single command without the "!".

4. Advanced Read\Write Commands

User may read or write parameters' values by the "Online Commands" menu, using the input field. Note: The same may also be done by SMS with the same syntax.

Few seconds after using the "SEND" button, command will be accepted by the controller Execution verifying may be done on the "Communication Log" screen.

Any command syntax should be finished with comma ";". Before a following command an exclamation mark should be used "!".

Writing a parameter's value

Set value - SET [PARAM] [VAL];

Example: Set seasonal adjustment to 100% - SET MU1 100;

Reading a parameter's value

Read parameter's value - GET [PARAM];

Example: Get seasonal adjustment to 100% - GET MU1;

Parameters' names and description

Command	Description	Default syntax
BAL	Threshold for low battery detection on DC controllers	set bal 115;!
DEB	Counter de-bounce value	set deb 20;!
STA	Hourly status report interval [1..23]	set sta 1;!
ENA	Enable (1) or disable (0) irrigation plan	set ena 1;!
MU1	Counter multiplier	set mu1 1;!
PMU	Seasonal adjustment [10%..150%]	set pmu 100;!
ALE	Enable (1) or disable (0) alerts	set ale 1;!
ADU	Delay (minutes) from detection to active alert alarm	set adu 2;!
MAS	Set system ith (1) or without (0) master valve	set mas 1;!
AMI	Return alert notification interval (minutes)	set ami 15;!
ADO	Water close policy upon high flow detection: 0 – do nothing ; 1 – close all system's valves ; 2 – close only detected valve	set ado 1;!
REP	End of irrigation report policy: 0 – no report ; 1 – report automatic irrigation only ; 2 – report manual irrigation only ; 3 – report both	set rep 3;!
DPW	DC latch solenoid puls width [mSec]	set dpw 80;!

Note: all these commands can be used with a "get" prefix and without state valve in order to read current set-point.

Additional Commands

Command	Description	Syntax
STATUS	Read irrigation plan status	Status;!
VALVES	Read current valves state. 1st valve is represented in the most left digit.	Valves;!
FLOW	Read current periodic flow rate	Flow;!
BAT	Read current battery charge level	Bat;!
ALERTS?	Read current defined alerts	Alerts;!
ALERT	Set a new alert	ALERT=[Index],[Delay],[Min],[Max],[Phone Number],;!
ADD	Set a cell-phone number for Sms	ADD<1234567890>;!
DAL	Delete all alerts definitions	Dal;!
NET	Read current signal strength [0..32]	Net;!
VER	Read firmware version	Ver;!

Notes:

1. These commands do not make use of the prefix "get" or "set".
2. Any online command should be finished with comma & an exclamation mark "**;!**". This way few commands can be cascaded in one command sesssion.
3. SMS supports only single command finished with "**;**" (without the "!").

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5. Technical Specifications

Dimensions

- **Width**: 6.5", 165mm
- **Height**:4.9", 125mm
- **Depth**: 3.15", 80mm
- **Weight:** 26.5oz, 750gr

Operating Specifications

- Time based & volume based irrigation
- Loop irrigation (Misting)
- Proportional fertigation
- 4 starts a day
- Master valve by programing (otherwise as irrigation valve)
- Remote manual irrigation ON/Off
- Remote irrigation plan enable disable
- Remote seasonal adjustment – 10% - 150%
- Low/High flow detection (volume irrigation only)
- Un-planned flow detection (volume irrigation only)
- Auto water close on high flow detection (volume irrigation only)
- Online alerts to cell phone or to e-mail list
- Online reports such as water consumption, alerts by user, communication state
- Online hourly status report: valves state, accumulator, periodic flow rate, battery charge level (DC only)
- Weekly water consumption report by e-mail
- Periodical battery charge level trend
- Excel sheet report export by click

Electrical Specifications

AC Controller

- Input voltage: 24VAC | Output voltage for N.C. solenoids: 24VAC
- Dry contact sensor input

DC Controller

- Input voltage: 12VDC | Output voltage for DC latch solenoids: 13.4VDC
- Dry contact sensor input

Communication

- 2.5G (or higher) Cellular network GSM 850MHz, EGSM 900MHz, DCS 1800MHz, PCS 1900MHz.

This product is using radio communication.
One must keep at least 25cm from human body in standard working.