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Revision 1.7, 7-14-20

Water Max
Control System

12 Station Misting and Irrigation Control

The WATER MAX is a “state of the art” microprocessor based control panel. This control features twelve fully programmable outputs. Each output may be set for propagation mist or irrigation. The outputs will deliver 24 VAC to solenoid valves connected to the control panel. Each output is rated at a maximum of 2 amps (48 watts).

Features:

Large Digital Display
This large display will feature the time of day, a list of the operating stations, and assist in the programming of the control.

Manual Override Switches
Each station has a manual override switch that can be used to manually operate each individual station. In the automatic position, the station will work automatically. In the off position, the station will not operate.

Lighted LED Station Indicators
Each station has an individual lighted LED indicator. This indicator will light when that particular station is energized manually or automatically.

Programming Switches
These three switches are located on the front panel. These are used to advance through the settings and set the control panel up for operation.

Photocell
A panel-mounted photocell will automatically detect day and night.

Microprocessor
An advanced microprocessor controls all on-board functions. An internal EEPROM assures that all settings will be saved, even during power interruptions of extended periods of time.

DIP Switches
A set of DIP switches is featured on the internal circuit board. Use these to customize your particular needs. The maximum number of valves that can be in operation at any one time due to water pressure restraints and the ability to mist at longer intervals during the night mode of operation are offered.

Internal, 24-hour digital clock
A very accurate, crystal driven digital clock keeps the time of day internally. The time is maintained during power interruptions.

Non-Metallic enclosure
The entire control system is encased in a clear covered, hinged front, non-metallic enclosure.

Installation Procedures

Panel Mounting
Mount the control panel in an accessible location. Make sure that the location is free of vibration and in close proximity to the devices being controlled. Always consider voltage drop of electrical current when locating the control panel. Securely mount the panel.

Transformer – wire to the two AC screws. The ground screw is not used. Be careful not to cross the power cord wires or the solenoid wire. The short will burn out the transformer.
A 24 VAC transformer will power the control panel. The transformer must be a heavy-duty type that will be able to handle the load of all of the connected solenoid valves, in addition to the control power requirements. In any case, do not use less than a 40 VA transformer. It is highly recommended that a "Machine Tool" variety be used. A Machine Tool Transformer is a heavy-duty variety that will allow for high inrush currents that are associated with the use of valves.

Electrical Circuit
The electrical circuit that feeds the machine tool transformer should have no other loads connected to it. This will prevent damaging surges from other related electrical devices. Follow all local and national codes in the connection of all of the greenhouse equipment. Always allow for voltage drop conditions. Always consider that the greenhouse is a wet environment.

Wiring Methods
Always use stranded wire when connecting cables or conductors to the actual circuit board of the control panel. This will allow flexibility. Use no smaller than #20 gauge stranded wire for all valve connections. Use larger wire for greater distances.

Valve Conductors and Wiring
Route all valve wiring conductors separately from power wiring (120 VAC and above). This is very important so as to reduce electrical interference. Two conductors are needed for each valve, 24 VAC from the station output, and 24 VAC Common. You may use a multi-conductor cable with a single common line and individual lines for each valve if desired.

Valve Selection
You may use any standard 24 VAC watering or misting valve with a holding current of 10 watts or less. Be sure to not exceed a total of three valves on any one station. If you will require more than three valves on a station, contact your distributor for information on how to do this. Always make sure that your transformer is sized correctly for the number of valves that you will be using.

We would highly recommend using a surge protector when operating your misting controller so that it will stop voltage spikes and surges that could damage your controller, such damage is not covered by your warranty.

Program Switches	***Function:***
RUN-SET	**Depressing this switch will put the control in a program or "Set" mode of operation. Return the control to a "run" or operate mode by holding the switch up. The control will automatically return to the run mode after a period of time.**
PRIOR-NEXT	**This will advance through the items in the group selected while in the "set" mode. You may also use this switch to advance the display while the control is operating.**
VALUE	**Increases or decreases the flashing item's value or changes the selection available. Also, you may use this switch to "freeze" the display while in the "run" mode of operation.**

Indicator LED's	***Function:***
SET UP STATIONS	**Select whether a station is Propagation Mist (Pro), Irrigation (Irr), or not in use (OFF)**
SET CLOCK	**Set the internal clock. The flashing item will change by using the UP-DOWN switch. Advance to the next item by using the NEXT-PRIOR switch.**
SET MISTING	**This will set the misting on and off times. The first flashing number is the first station that is set for misting, the next number is the time that it is set for.**
START TIME	**When this LED is lighted, select the desired starting time. You may select a time of day, or when setting misting stations, you may select the photocell.**
END TIME	**Set the desired ending time for the misting stations. Again, you may also select the photocell to end the misting cycle at sunset.**
SET IRRIGATION	**This will set the irrigation run times on times, days of operation, and repeats (if desired).**

Getting Started

Connecting Solenoid wires

1. Remove the four screw holding the panel to the enclosure. On the back of the panel you will find the terminal plug that the solenoid wires are attached to. See page 7. While you have the panel removed make sure the DIP switches are set to your preferences. See page 6.
2. Make sure none of the solenoid wires are touching each other. This will cause a short and blow the transformer. This is not covered under warranty.

Set Up Stations

1. Depress the **RUN-SET** switch to advance to the "SET UP STATIONS" indicator. The flashing digit will indicate the station number to be set. The station number may be changed while it is flashing by using the **VALUE** switch.
2. Using the **PRIOR-NEXT** switch while at the desired station, the type assignment for this station can be changed. Change the flashing type assignment by using the **VALUE** switch. Select from "Pro" (propagation misting), "Off", or "Irr" (irrigation). You may use the **PRIOR-NEXT** switch to advance through all of the stations.

When finished, return to the **RUN** mode by holding up the **RUN-SET** switch.

Set Clock

1. Depress the **RUN-SET** switch until the "SET CLOCK" indicator is lighted.
2. Change the first digit of the displayed time by using the **VALUE** switch.
3. Depress the **PRIOR-NEXT** switch to change to the minute setting. Use the **VALUE** switch to set the correct minutes.
4. Depress the **PRIOR-NEXT** switch to change to the AM/PM status. Use the **VALUE** switch to change the AM/PM status.

When finished, return to the **RUN** mode by holding up the **RUN-SET** switch.

Set Misting Stations On and Off Times

If any stations have been set to misting, these will appear under this mode.

1. Use the **RUN-SET** switch to advance to the "SET MISTING" mode. The first flashing digit will be the station number that is being set.
2. Use the **VALUE** switch to advance to any station, or you may use the **PRIOR-NEXT** switch to advance through all of the misting stations.
3. Depress the **PRIOR-NEXT** switch to set the misting on-time in seconds for that particular station. Use the **VALUE** switch to increase or decrease the on-time settings.
4. Depress the **PRIOR-NEXT** switch to set the desired off-time in the same manner. The off-time will be in minutes.

Repeat for all stations by using the **PRIOR-NEXT** switch. You may use this mode to check the settings for all stations.

Set Misting Start and End Times

1. Depress the **RUN-SET** switch to advance to the "SET MISTING" and "START TIME" indicators. The desired misting starting time will appear here.
2. Use the **VALUE** switch to advance to the desired hour of day to start misting. Use the **VALUE** switch to change the desired setting.
3. Use the **PRIOR-NEXT** switch to advance to the minutes, and also AM or PM. Use the **VALUE** switch to change the desired setting.

4. Use the **PRIOR-NEXT** switch to advance to the end time. Set the ending time in the same manner.

You may select “PHO” as a start time or end time in place of the hour setting. What this means is that the misting will start or stop based on the photocell detection of sunrise and sunset.

When finished, return to the **RUN** mode by holding up the **RUN-SET** switch.

Set Night Time Misting

In order to make the Water Max mist 24 hours all the time, set the Misting Start time at 1:00 AM and End Time at 12:59 AM. The photo cell will automatically switch the controller over to night misting based on the light level. See the DIP switch settings below for night misting options. If it is not desired for the controller to go into night mode and mist only 50% “on” then installing a 10K 1/4W resistor in place of the photocell so the control will think it's in day mode all the time. Contact Phytotronics to have one mailed to you.

Set Irrigation Station On Times

If any stations have been set to irrigation, these will appear under this mode.

1. Use the **RUN-SET** switch to advance to the “SET IRRIGATION” mode. The first flashing digit will be the station number that is being set.
2. Using the **VALUE** switch you may advance to any station, or you may use the **PRIOR-NEXT** switch to advance through all of the irrigation stations.
3. When the desired station appears, depress the **PRIOR-NEXT** switch to set the irrigation on-time in minutes for that particular station. Use the **VALUE** switch to increase or decrease the on-time settings.
4. Depress the **PRIOR-NEXT** switch to set the desired days of operation for that particular station. You may select ALL (every day), 2nd or 3rd.

Repeat for all stations by using the **PRIOR-NEXT** switch. You may use this mode to check the settings for all stations.

When finished, return to the **RUN** mode by holding up the **RUN-SET** switch.

Set Irrigation Start Times, Days of Operation, and Repeats

1. Use the **RUN-SET** switch to advance to the “SET IRRIGATION” and “START TIME” indicators. The desired irrigation starting time will appear here after two seconds. The display will first flash the station being set.

Remember that you may have a separate starting time of day for each irrigation station.

2. Use the **VALUE** switch to advance to the desired hour of day to start irrigation for that station.
3. Use the **PRIOR-NEXT** switch to advance to the minutes, and also AM or PM. After setting the desired start time, you may then select if you would like to repeat this irrigation station.

What this will do, is to automatically run the station again after a selected time delay. If this is desired, enter the number of repeats here. The display will indicate “rEP” (Repeats), enter the desired number from 0 to 9. If no repeats are desired, enter 0. If any repeats are entered other than 0, the display will then indicate the desired time between repeats for that particular station. Enter that waiting time at this point by using the **VALUE** switch to select the waiting delays. You may select from 1/2 to 8 hours.

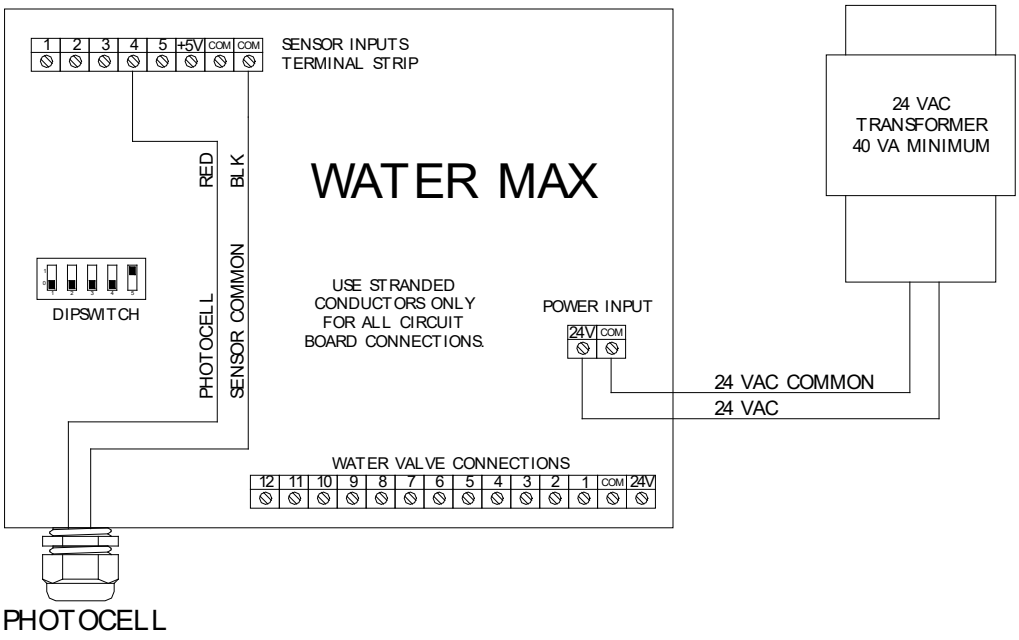
Dip Switch Settings:

For maximum stations on at any one time, use the following settings:

Twelve Stations	1:On 2:On 3:On
Ten Stations	1:Off 2:On 3:On
Eight Stations	1:On 2:On 3:Off
Six Stations	1:On 2:Off 3:On
Four Stations	1:Off 2:Off 3:Off
Three Stations	1:Off 2:Off 3:On
Two Stations	1:Off 2:On 3:Off
One Station	1:On 2:Off 3:Off

Night Misting Mode:

50% on, 100% off	4:Off 5:Off
25% on, 100% off	4:Off 5:On
50% on, 200% off	4:On 5:Off
25% on, 200% off	4:On 5:On



TRANSFORMER NOTE: Use machine tool variety, 40 VA minimum is recommended. If a larger transformer is used, adjust the fuse protection accordingly.

OUTPUT NOTE: The control outputs are rated at 2 amps each (48 watts) maximum. Do not exceed this or damage may result.

FUSE NOTE: Do not exceed 2 amps for the fuse rating when using a 40 VA transformer. Always use a slow-blow type fuse.

LIMITED WARRANTY

Phytotronics Inc. warrants that all of the products Phytotronics Inc. manufactures are free from defects at the time of shipment by Phytotronics Inc. This warranty covers defects in workmanship and materials. No warranty is extended on any parts, materials, or components manufactured by others and purchased by Phytotronics Inc., and any warranty on these materials is limited to the warranty supplied by the original manufacturer or supplier of said products only. This warranty excludes any and all damages cause by power surges, lightning, installation by unqualified individuals, and damage by misuse or neglect, shipment damage, alterations to original manufacturing, and improper installation or use for any reason than intended by manufacturer. This warranty may not be altered in any manner except with the written authorization of one the officers or owners of Phytotronics Inc. The only and sole liability of Phytotronics Inc. under this warranty is limited to repairing, replacing or the issuance of credit for any products returned to Phytotronics Inc., during the warranty period of twelve (12) months from date of shipment. This warranty is specifically conditioned upon Phytotronics Inc. being notified in writing promptly upon discovery of any product defects by the buyer or end user. The product must then be returned prepaid to Phytotronics Inc. within the twelve month warranty period for inspection by Phytotronics Inc. Upon inspection of said product, Phytotronics Inc. will notify buyer or end user of its findings. At Phytotronics Inc. sole discretion, the product will be replaced, repaired or a credit will be issued for the original sale price of the product, provided that damage has not occurred due to misuse, neglect, improper use or installation as outlined above, shipping damages or accident.

Phytotronics Inc. SHALL NOT BE LIABLE FOR ANY DAMAGES BEYOND THE ACTUAL ORIGINAL COST OF THEIR PRODUCT EITHER DIRECTLY OR INDIRECTLY ARISING FROM DEFECTIVE PRODUCTS OR WORKMANSHIP.