RMG AUTOMATION
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Digital Fully Automatic Water Level Controller With Low/High Voltage, Over Load, Dry Run protection with Timer - Tank Only

Model : DFAWLC-040

User Manual

Version 2.1-09/23

1. INTRODUCTION

RMG automation proudly announces a brand new product "Digital Fully Automatic Water Level Controller With Low/High Voltage, Over Load, Dry Run protection with Timer " which satisfies all the needs of the customer with all maximum features incorporated in it. This product not only controls the motor based on level sensing, but also based on timer settings. It is an easily programmable device and customer can adjust the settings as per their requirements.

2. DESCRIPTION

- **Power ON/OFF switch**: Used to turn ON /OFF the controller unit.
- **Power ON LED**: It indicates the power supply to the unit.
- **Low/High Voltage LED**: It indicates Low/High Voltage power supply. Motor pump gets turned off and is protected from such condition.
- **Over/Under Load LED**: It indicates Over/Under Load. Motor pump gets switched off and is protected from such condition.
- **Motor ON LED**: It indicates the motor ON condition.
- **Dry Run LED**: It indicates the dry run of the motor pump. If there is no water flow in the inline pipe of the overhead tank for 90 seconds, motor gets switched OFF preventing it from Dry Run.
- **ON TIMER LED:** It blinks while ON timer is running and gets OFF when set time is over.
- **OFF TIMER LED:** It blinks while OFF timer is running and gets OFF when set time is over.
- **Tank Level Indication LEDs (L1, L2,L3 and L4)**: It indicates water levels in the tank. 25%, 50%, 75% and 100% level indications are available.
- **Seven Segment Display:** Displays settings/status of the controller.
- **SET button:** Used to enter into settings/status..
- **NEXT button:** Used to move between settings/ menus.
- **INC button:** Used to set the decimal value (0-9 can set).
- **Manual/Auto mode switch**:

Auto mode: In AUTO mode, motor will automatically switch ON when the water level in the tank is low and automatically switch OFF when the tank becomes full.

Manual Mode: Helps to switch ON the motor manually. In this mode, the motor will be constantly running.

Semi-Automatic (Manual ON and Auto OFF) function is achieved by changing this switch position from Manual mode to Auto mode.

3. TOOLS REQUIRED

- Single or 2 pair communication cable.
- 1.5Sq.mm Wire for power connections
- Drill gun
- Simple hammer
- Line tester
- Wooden gattas
- Wire stripper,
- Screws for mounting units on wall
- Cable - 6 core
- Insulation tape

4. INSTALLATION PROCEDURE

Caution: Switch off the main power while doing the Power Connection steps.

Step 1: Wall mount the Controller unit nearby motor pump switch/starter location.

Step 2: As per the model purchased, check the label and connect AC supply (230V / 440 V) to red and black wires refer figure 1 and figure 2.

Step 3: For switch or MCB, Connect blue pair wire of the controller to the switch/MCB of the motor in parallel as shown in figure1.

Step 4: For starter, Connect blue pair wire of the controller to ON button of starter in parallel and black pair wire to OFF button in series(Refer to figure. 2 and figure. 3

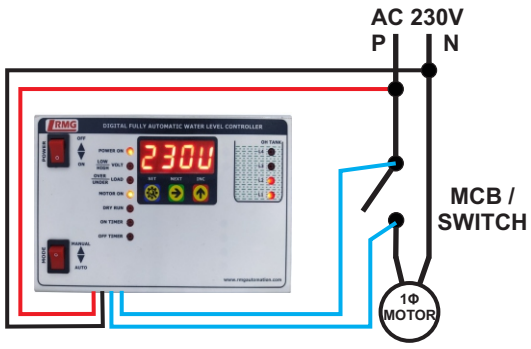


Figure1: 1Φ SWITCH/MCB

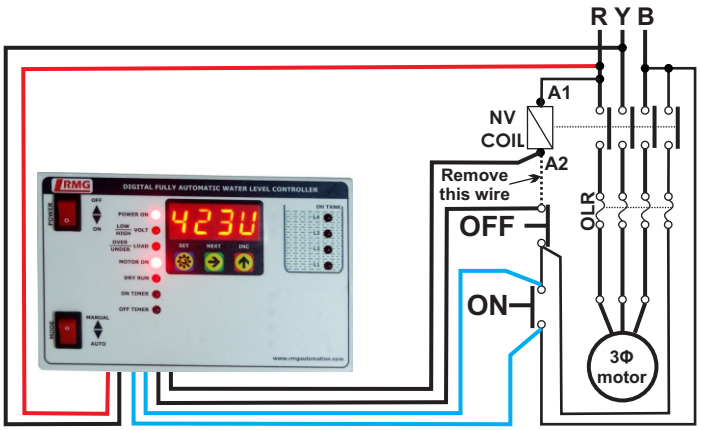


Figure2: 3Φ Starter

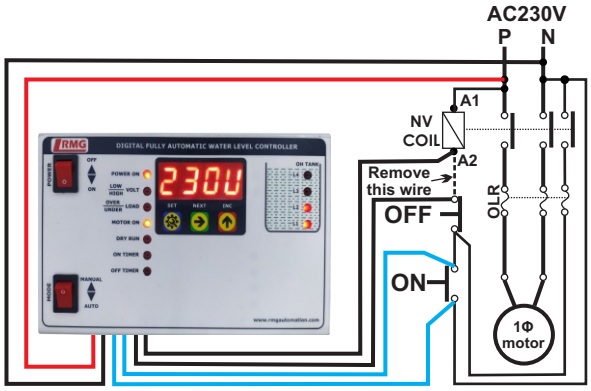


Figure3: 1Φ Starter

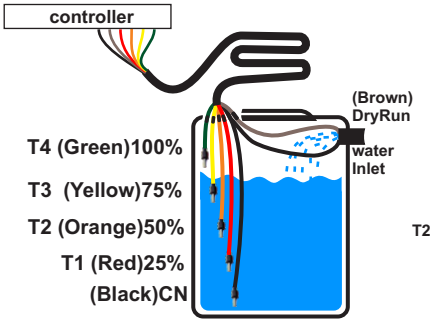


Figure4: CT sensor connection

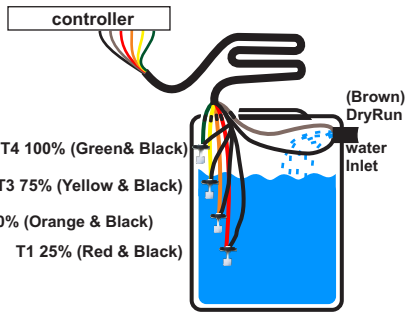


Figure5: MF sensor connection

Note: In case of doubts please call 044 - 43180017 or What's App 9940594413 from Monday to Saturday 10 am to 6 pm.

Step 5: Lay 6 core cable between controller and tank. Join one end of the 6 core cable to sensor line connector of controller as per label. In tank side, **Contact type sensor connection:** Take the sensors and cut them according to the levels of tank and join them with the 6 core cable as per label coded.(Refer figure.4) **Magnetic float sensor connections:** These Sensor has 2 wires, Use any one wire in each sensor as common. Other wires left in each can be used for levels. Join them with the 6 core cable as per label coded.(Refer figure. 5).

Step 6: Connect common sensor line and dry run sensor line to two terminals of dry sensor and screw it. Tape the sensor on the water inlet pipe. Two metal rods in dry run sensor should be in contact with water while water is pouring into tank.

Step 7: Immerse the Sensors inside the Over Head Tank (OHT) and tape it. Sensors should be in 25%, 50%, 75% and 100% of tank. (Refer figure. 4 & 5)
This completes installation.

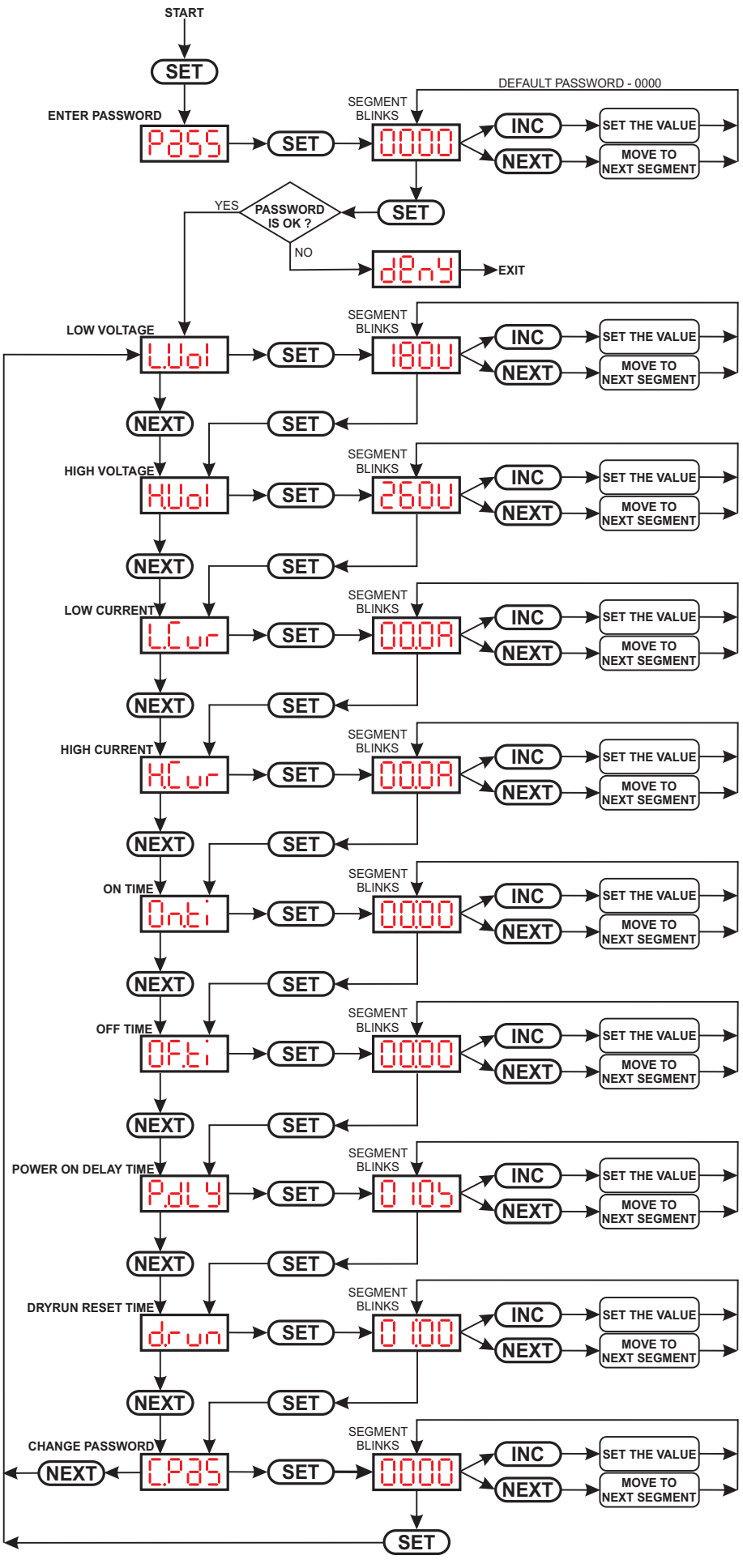
5. OPERATING PROCEDURE

- Keep the Manual/Auto mode switch in Auto mode for automatic operation.
- Turn on the Power On/OFF switch. Power ON LED will glow.
- Depending upon the water level in tank, level indicator LEDs will be ON.
- Using the input keys (SET key, NEXT key and INC key), program the device as per your choice. (Refer Programming methods).
- When all the tank LED indications are OFF (tank is empty), the controller turns ON the motor. The motor ON LED will glow. The tank starts filling and the corresponding LEDs starts lighting up.
- When the L4 (tank is full) LED indication goes ON, motor gets turned OFF. Motor ON LED indication goes OFF.
- In manual mode, the motor will be constantly running. MOTOR ON LED will be ON.
- In Semi-automatic Mode: Just keep the controller in MANUAL mode for the motor to get switched ON and then change it to AUTO mode for Automatic OFF.
- Dry Run Operation: When the motor is in ON condition, it checks the water flow in the inline pipe of the tank. If there is no water flow for 90 seconds, it turns OFF the motor preventing it from Dry Run. Dry Run LED indication will be ON. This function occurs only when dry run reset time is set. This reset time can be adjusted and the methods are explained below under Programming Method.
- Operation of Low/High Voltage, Over/Under Load: Motor will be in ON condition for the set values. In any condition, the values goes low or high with set values, motor trips and will be OFF. Based on the Trip time set, motor gets off. If any of these setting are not needed or To Disable Operations – Set the Values as 0.
- Timer Operation: This controller can be also used as a cyclic timer. ON time and OFF time can be set and the motor will be ON for the set time and will be OFF for the set time and the cycle repeats. In case if the tank is full, the cycle stops and motor is Off and the display shows the voltage. The motor starts again only when tank is low. The product can also be used as a Stop Timer. ON time can be set and motor is ON for the SET time and will be continuously OFF after the SET time is over. ON time and OFF time can be set as per below method

6. TROUBLE SHOOTING METHODS

Sl. No	Error	Solutions
1	Device dead / Not Powered ON	**a.** Check the power connection wires for loose contacts. **b.** If problem continues, contact RMG Automation for support
2	Tank level indicator LEDs are off	**a.** In the controller unit, join common terminal with a small wire to other terminals one by one and verify the tank LEDs are glowing. This means the controller unit is fine. **b.** Check the cables between controller and tank for cable breakage. If so correct it. **c.** Check common sensor and other sensor connections are correctly made. If any loose contacts correct it.
3	Dry run LED is ON continuously	Normally Dry Run LED will reset after 1 hour if dry run occurs, If it is not OFF **a.** Check whether water is coming in the inlet of the tank **b.** Check if any loose contacts present in the dry run connection and correct it. **c.** Check the cable between the controller and tank for cable breakage. If so, correct it.
4	L/H Voltage LED is ON continuously	**a.** Check whether voltage fluctuations are there in the input lines. **b.** L/H voltage LED resets after 1 minute, if the input lines becomes normal.

7. PROGRAMMING METHODS



DEFAULT PASSWORD - 0000
Here You have to give the correct password to Enter in to the Menu.

DEFAULT LOW VOLTAGE - 180V
When the Input Voltage is lower than the Set Value, the L/H voltage LED glows and it will Turn OFF the motor pump and protects from running in low voltage.

This feature applies only for AUTO MODE.

DEFAULT HIGH VOLTAGE - 260V
When the Input Voltage crosses the Set Value, the L/H voltage LED glows and it will Turn OFF the motor pump and protects from running in high voltage.

This feature applies only for AUTO MODE.

DEFAULT LOW CURRENT - 00.0A
When the motor pump consumes CURRENT lower than the Set value then the DRY RUN LED glows and it will Turn OFF the motor pump and protects from running in dry run.

This feature applies only for AUTO MODE.

DEFAULT HIGH CURRENT - 00.0A
When the motor pump consumes CURRENT greater than the Set value then the OVER LOAD LED glows and it will Turn OFF the motor pump and protects from OVER LOAD.
This feature applies only for AUTO MODE.

**The normal operation will resume only when the controller is switched OFF and switched ON.*

DEFAULT ON TIME - 00:00 (Hours : Minutes)
When tank becomes low, the motor pump will start and run for the set time. Once the set time is over / tank is full, motor pump gets off.

This feature applies only for AUTO MODE.

DEFAULT OFF TIME - 00:00 (Hours : Minutes)
The motor pump will be in OFF condition for the set time. When both ON & OFF time is set, the motor pump will run in a cyclic pattern until tank is full.

This feature applies only for AUTO MODE.

DEFAULT POWER ON DELAY TIME - 010Seconds
Whenever controller gets power, it starts doing the normal operation after the POWER ON DELAY TIME is over. Display will blink RMG for the set time.

DEFAULT DRY RUN RESET TIME - 01:00(Hours:Minutes)
The motor pump will be OFF during this SET TIME due to dry run. The controller thus resumes the auto operation after this set time is over.

DEFAULT PASSWORD - 0000
Here you can change the new password.