

GLOBAL POWERTRONICS

Specialists in Drives and PLC

SOLUTION-3

Industrial Wireless Multi_Pump Multi_Tank Water Level Controller

Introduction

Microcontroller based, fully automatic Wireless Water Controller is designed to sense and control most of the water pumps, including submersible pumps. This device work 24/7/365, to maintain the level of water in water storage tanks at defined levels and to keep the water pumps ON, only when required. All controllers are mounted in outdoor type IP54 enclosures.

Wireless Control is established using Modbus Protocol between the following

1. Pump Controller
2. Tank Controller with Motorized Butterfly Valve
3. Bore Pump controller
4. Common Alarm Unit

Pump Controller

The Master Pump controller wirelessly collects data from Slave Tank/Bore Pump Controllers and automatically controls start/stop of Pump. It also broadcasts Sump levels for the use of remotely located Slave Bore Pumps for maintaining Sump level.

Pump controllers are grouped in a Block/Area/Campus as Modbus network and wirelessly connected to Monitoring Computer/Data Logger/Common Alarm Unit. The Monitoring Computer/Data Logger collects data from all Pump controllers in the group for further processing and Time stamped data logging in MS Excel compatible '.csv' file.

The Pump controller is provided with a Local Text display which shows the current status of the following.

- | | | | | |
|------------------------|----------------------|----------------------------|-------------------------|--------------------------|
| 1. Tank Level Very Low | 6. Tank Valve Open | 11. Pump ON | 16. Bore Pump ON | 21. Sump Level Normal |
| 2. Tank Level Low | 7. Tank Valve Closed | 12. Pump OFF | 17. Bore Pump OFF | 22. Sump Level High |
| 3. Tank Level Normal | 8. All Tanks High | 13. Pump Power not ok | 18. Bore Pump Dry Run | 23. Sump Level Very High |
| 4. Tank Level High | 9. All Tanks Normal | 14. Pump Starter not Ready | 19. Sump Level Very Low | 24. Total Run hrs |

5. Tank Level Very High

10. All Tank Valves Closed

15. Pump not Loading

20. Sump Level Low

25. Last Run min

Front Panel Indicating Lamps/Selector switch/Push Button are also provided for the following

1. Power
2. Ready
3. Alarm
4. Manual/OFF/Auto
5. Emergency Stop

The Water Pump is switched ON when any one of the Tank level goes Low and switched OFF when all tank Levels go high or when All Tank valves are closed or when Sump level goes very low or when Pump is not loaded or when Power is not ok. SPP is built-in.

Tank Controller

The Tank controller senses Water levels as Very Low, Low, High and Very High and also actual Water Flow thru sensors and Controls the Motorized Butterfly Valve. The Valve is open when water level goes Low and closed when water level reaches High. The simple water level sensors are made of stainless steel and 12 VAC is used for sensing. Each Tank Controller has unique Modbus Slave Address and sends data to Master Pump Controller wirelessly.

The Tank Controller provides the following data.

1. Tank Level Very Low
2. Tank Level Low
3. Tank Level High
4. Tank Level Very High
5. Valve Fully Open
6. Valve Fully Closed
7. Valve Alarm
8. Water Flow hrs
9. Valve Open hrs

Front Panel Indicating Lamps/Push Button are also provided for the following

1. Power

2. Flow
3. Alarm
4. Valve Open
5. Valve Closed
6. Emergency Stop

Bore Pump Controller

The Bore Pump controller as a Modbus Slave gets the following data broadcast by Master Pump Controller.

1. Sump level Very Low
2. Sump level Low
3. Sump level High
4. Sump level Very High

The Bore Pump Controller sends out the following data whenever requested by Master Pump Controller

1. Pump status ON/OFF
2. Power status Ready/Not Ready
3. Dry Run Stop status
4. Long Run Stop status
5. Alarm status
6. Total Run hrs
7. Last Run min
8. Restart secs

The Bore Water Pump is switched ON when Sump level goes Low and switched OFF when Sump Level reaches high or dry run or when Power is not ok. SPP is built-in. Optionally the Bore Pump can remain ON when Sump level reaches High and divert excess water to another Starving Sump.

The Bore Pump controller is also provided with a Local Text display which shows the current status of the following

1. Bore Pump ON/OFF
2. Power Not Ready
3. Starter Not Ready
4. Sump level Very Low
5. Sump level Low

6. Sump level Normal
7. Sump level High
8. Sump level Very High
9. Alarm status
10. Last Run min
11. Restart secs

Front Panel Indicating Lamps/Selector switch/Push Button are also provided for the following

1. Power
2. Ready
3. Alarm
4. Manual/OFF/Auto
5. Emergency Stop

Common Alarm Unit

The Common Alarm unit wirelessly monitors status of all Pump controllers and collects status of Pumps, Bore Pumps, Tanks and Sumps. The unit is provided with local Text display/Alarm and optional remote wireless printer.

The Common Alarm Unit alerts for the following for maintenance with location info.

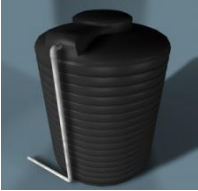
1. Pump Dry Run
2. Pump Alarm
3. Tank Dry
4. Tank Over flow
5. Tank Valve Malfunction
6. Bore Pump Dry Run
7. Sump Dry
8. Absent of Pump data
9. Time stamped printing of the above

15, Kasthuribai St-2, R.K. Puram, Opp. Ramakrishna Mills, Ganapathy, Coimbatore – 641 006. INDIA
Phone 91-422-2511204, 096555 45175, E-mail: globalpowertronics@gmail.com

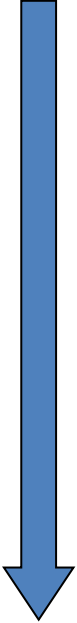
TYPICAL INDUSTRIAL SETUP



Tank Level



Valve Open
Valve Close



Pump
ON/OFF



Sump / Tank
Levels

