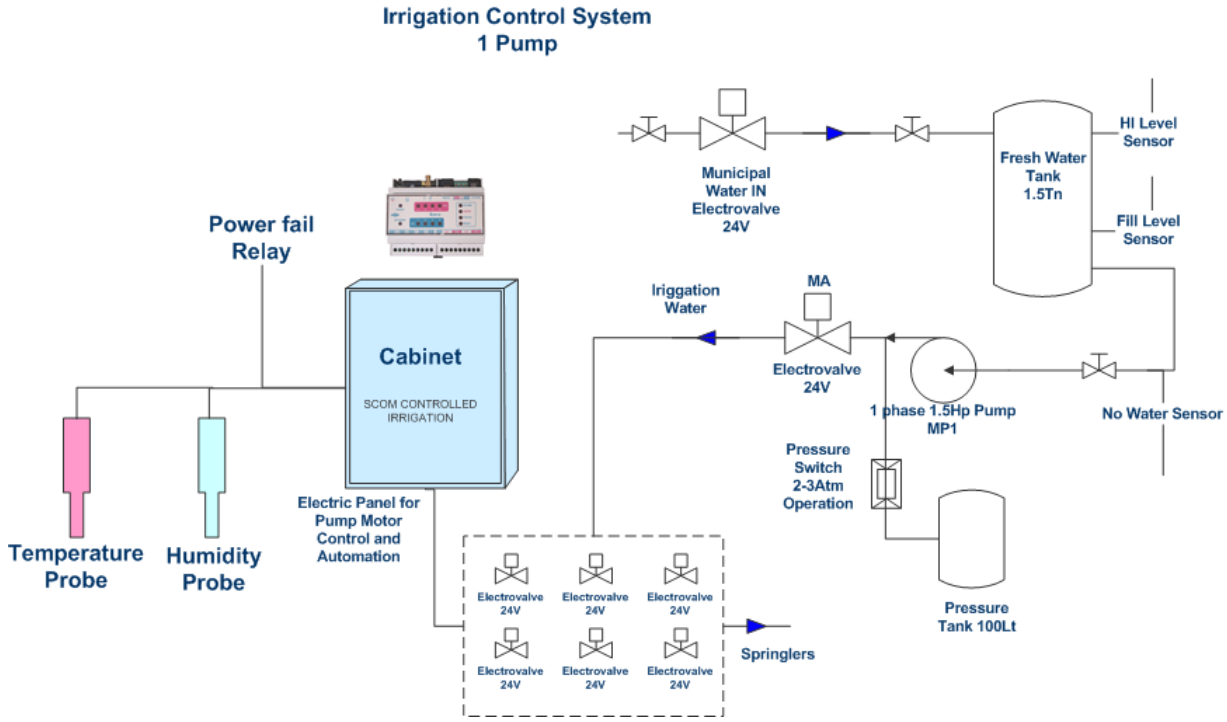
SCOM-100
GSM Controller

Simple Irrigation System Control & Monitoring

Version: 1.0 – January 2012

Introduction

SCOM-100 is an SMS alarming, remote control & monitoring unit. It is a low cost, expandable I/O unit that can fit a vast series of applications ranging from domestic to industrial. In order to use it all that is needed is a SIM card and a mobile phone.



It is desired to setup and operate a simple irrigation system based on SCOM-100.

Measurements & Monitoring

- Measure temperature and receive alarms when limits are exceeded,
- Measure humidity and receive alarms for exceeding limits,
- Receive alarms whenever there is an automation related problem,
- Receive alarms whenever there is a power failure,
- Receive notifications when the system operated,
- Receive notifications that the system has failed to operate.

Security

Receive alarms whenever the pumping station door opens without a key.

Control

- Issue remote commands to configure seasonable irrigation schedules.
- Issue remote control commands to start the irrigation system on demand.
- Issue remote control commands to postpone an irrigation schedule.

- Issue remote control commands to reset the system.
- Issue remote commands to configure set points and limits.
- Issue remote control commands to monitor current measurements and system status.

System setup

Elements needed to set up such a system:

- An SCOM-100
- A 12V DC power supply to power the SCOM-100
- A GSM antenna to attach on the SCOM-100
- A GSM SIM card to insert in the SCOM-100 unit
- A small plastic electric panel-cabinet to mount all the elements.
- A temperature probe (typically an AD592)
- A humidity probe (typically a 5-95% 4-20mA).
- A typical magnetic door contact to attach on a digital input of SCOM
- A power loss detection relay to be attached at a SCOM-100 digital input to monitor power failures.
- A series of relays to monitor pump thermal/magnetic protection switch, power asymmetry, no water conditions, water level, etc. These relay contacts should be connected to appropriate SCOM digital inputs.

Additionally appropriate switches, relays and contacts can allow the user to configure the system for time scheduled lighting control and swimming pool monitoring & control.

Functionality

SCOM-100 offers advanced features to create and manage daily and weekly schedules. A user can create seasonable schedules and remotely decide on which will be used from now on.

<u>According to temperature</u>

If the temperature rises above 30°C an SMS alarm will be issued to a list of recipients which can decide and decide on:

1. Increase the irrigation schedule,
2. Monitor the temperature and decide to issue remotely an immediate irrigation schedule,
3. Change the schedule by attaching and detaching an auxiliary schedule.

<u>Similarly for humidity,</u>

1. High levels, which mean that it has rained, can immediately restrict irrigation schedules to take effect.
2. Potential water leakage in the pump room can also be immediately alerted.

<u>Fire</u>

Remotely instruct the irrigation system to start in case of a nearby fire.

<u>Power & automation management</u>

1. Receive an alarm via SMS when there is a power failure.
2. Remotely start a power generator.
3. Remotely reset thermal/magnetic switches of pump motors.
4. Remotely issue commands to fill water tanks.
5. Remotely reset the system.

6. Automatically control irrigation electrovalves.
7. Extend the SCOM-100 unit with GE- AI-4 analog input expansion module and also measure the quality of power e.g. voltage, current, frequency.

Advanced Functionality

1. Automatically engage and disengage the irrigation system during change of seasons or high rain seasons.
2. Monitor online the system from everywhere.
3. Issue remote commands to configure the entire system from a mobile phone.

Note: A single SCOM-100 unit which has by default 2 analogue inputs, 4 digital inputs, and 4 relay digital outputs can manage all the above. The SCOM-100 can be extended for more digital inputs and outputs, more analog sensors using extension units.