

Greenhouse Irrigation Control Application Note



Intelligent Irrigation Based On

- Soil Moisture
- Rainfall
- Temperature or
- Soil Absorption Dynamics

Benefits

- Minimize over-watering and run-off
- Minimize plant stress
- Minimize percolation losses
- Enhance crop quality

Network Capabilities

Up to (10) GP1's can be networked together to create a total solution for your irrigation scheduling needs. When connected to your computer, irrigation schedules can be created, modified, or monitored continuously, to provide complete control of the irrigation cycle, thus improving crop quality and overall irrigation efficiency. Water can be applied to each irrigation zone as needed and soil moisture levels maintained within the optimum range for your crop.

With a variety of cable lengths and sensors available, the GP1 network can be configured to fit almost any irrigation requirements.

For convenience you may use a PDA with Pocket DeltaLINK software to download or collect and view the data. You can even reconfigure the logging and irrigation control set-up in the field.

Protect your investment and add intelligence to your existing irrigation controller, or use the GP1 as a stand alone irrigation controller and monitor. Either way, the GP1's unique features and advantages will help you optimize your irrigation system and apply water only when the plants need it.

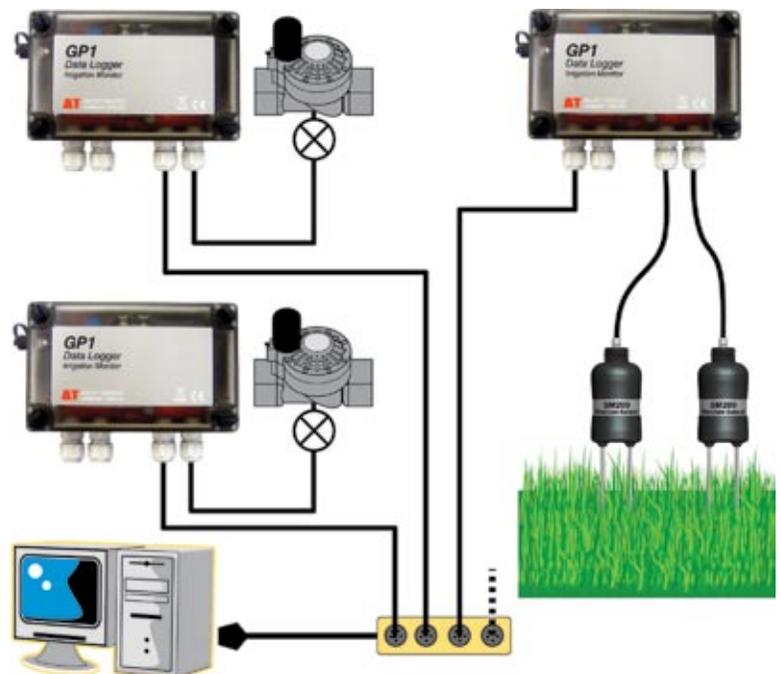
The GP1 data logger can be used with the ML2 Theta soil moisture probe, the SM200 soil moisture probe, a rain gauge, a soil or air temperature probe, and a flow meter, all simultaneously. Start and stop control levels may be programmed independently and there's even a pulse mode to allow for short duration water applications to match your soils particular infiltration rate. Also, up to 600,000 data points (a full seasons data) can be stored in memory, output to your PC, and imported into spreadsheets or other software programs, making monitoring and control easier than ever.

Applications

- Turf grass Lawns and Sports Fields
- Horticulture and Greenhouses
- Landscaping
- Agriculture
- Gardens
- Climate Research & Meteorology

Modem Options

Battery powered GSM Modem communications systems can be used to extend the range of GP1 logger applications. Solar recharging is possible and all options can be integrated into the GP1 network as well.



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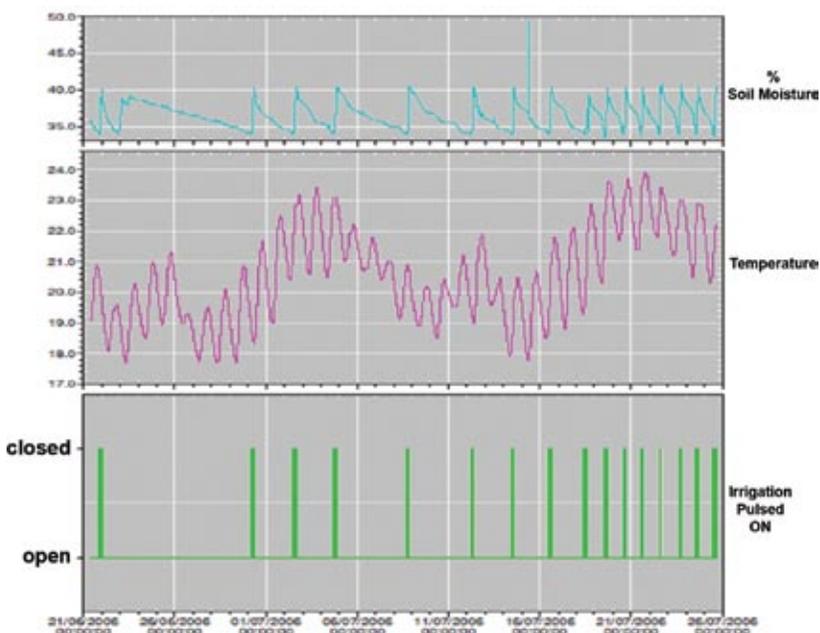
Irrigation Monitoring and Control

A networked GP1 is connected to soil moisture and temperature sensors, and controls 24 VAC or 12 V DC irrigation valves.

Delta-T has developed a new low cost local area network system, allowing remote access to 10 GP1 or DL6 data loggers from a PC or PDA. The local network data can be remotely accessed using a range of 'traditional' technologies including local area networks and GSM cellular telephones.

The greenhouse manager can see the results, and change settings for control of moisture or temperature. Water is then automatically micro-irrigated with drippers, spray heads, or flood tray water injection. The methods will avoid run off, leaching, and over watering. The controller always monitors the water levels to determine when to add more. Multiple station timers are also regulated by moisture by connecting the GP1 relay switch to the timer sensor input.

Cost effective irrigation systems can be built with 'off' the shelf irrigation fittings and control valves. The GP1 controls any standard 24 VAC such as the TORO irrigation valve using the GP1's on board relay.



Irrigation control chart above shows an example of rapid duration pulses (5% duty cycle, 3 second each) when soil water is less than 34%. The controller turns off irrigation when soil moisture exceeds or equals 40%.



Flood tray irrigation systems.



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