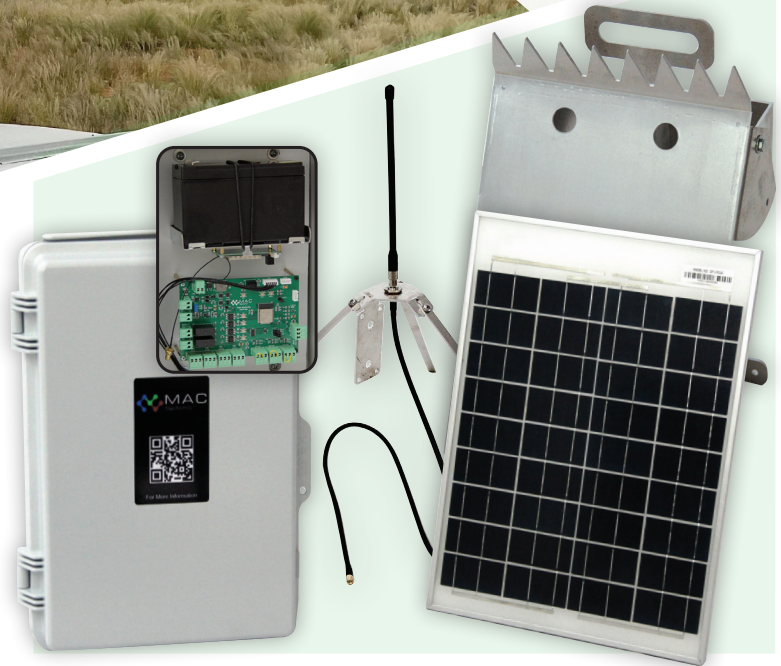


SATELLITE FMC

The MAC Systems satellite monitoring and control system has been designed around the latest satellite communications technology.

The field control and monitoring board (FMC) has been designed to provide the flexibility of being able to read a range of sensors depending on site requirements. Our standard package accommodates the most used sensors for stock water monitoring, including water level and flow, with the option for a rain gauge.



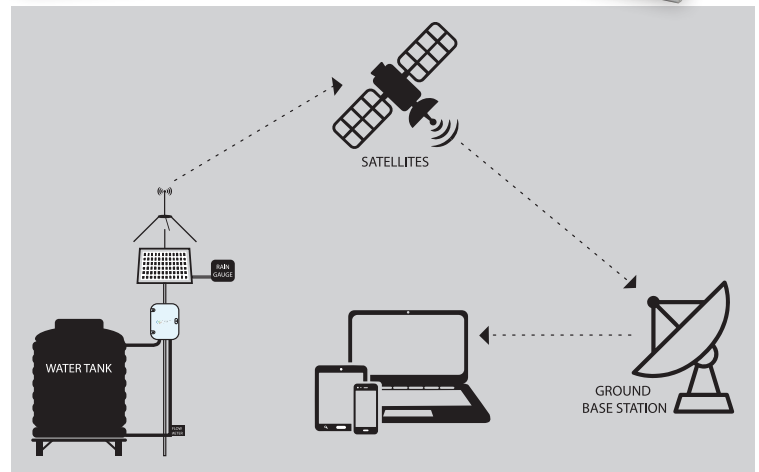
The Standard Package Comprises:

- Satellite modem and antenna
- Field Monitoring and Control board
- 20-watt solar panel
- Enclosure
- 9AH SLA battery

Optional mounting solutions may include a tank top mounting kit with plate and post, or a separate enclosure and solar panel mount.

Data is viewed via a web site from any web enabled device including PC, laptop, tablet or mobile phone. Current and historical data can be viewed with SMS and email alerts for specific values and levels such as high or low tank levels.

Data is stored within the internal memory in the FMC board and depending on the satellite connectivity, data is generally uploaded every hour. If a connection to a satellite is delayed due to the flight path, the data stored within the FMC is uploaded when the connection to a satellite is next established.



This means that even when a satellite pass is missed, no data is lost.

Units have in built GPS, so the location of field sites can be displayed on a map view. Open sourced weather data from closest sites to the FMC satellite units can also be displayed.

Cost effective hardware and data/platform fees.



FMC BOARD CONFIGURATION

- 3 x Analog Inputs - Note: A1 & A2 can be configured for relay control (see below)
- 2 x Relay Outputs (Currently 3 modes - Disabled, Float or Level) - (see below)
- 1 x Flow Meter input (supports up to 8000 PPS)
- 1 x Rain Gauge Input
- 2 x Float Sensor Inputs - (see below)
- 1 x SDI Input - Currently Supports 80cm EnviroProbe (Soil moisture & temperature)

Using the WiFi link on the FMC board, the unit can be configured and tested wirelessly using a laptop in the field. This feature assists with field installation and post installation testing. At the present time, manual remote starting and stopping of pumps is not yet available. Below are the solutions that can be provided for pump control.

Relay Control

For local pump control, there are two relay outputs that can be configured in any of the following modes:
 Mode 0 - Disabled (default mode)

Mode 1 - Float Switch

- Float Switch wired to Input 3 (Relay 1) or Input 4 (Relay 2)
- When float activated, relay will turn on the pump
- When float drops to lower level, relay will turn off stopping the pump
- Water level sensor (if fitted) will only record water level.

Mode 2 - Water Level

- A 0-5vDC level sensor can be used to locally control the pump based on water levels. A low setpoint level will turn the pump on and a high-water level setpoint will turn the pump off.
- If a float switch is fitted to Input 3 (Relay 1) or Input 4 (Relay 2), it will also turn off the pump if activated (this is an optional safety feature & will not be used to turn on the pump when the float lowers).

Maximum Runtime

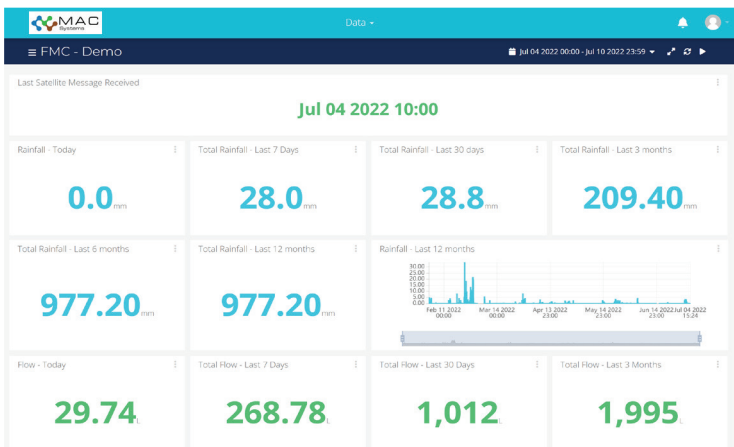
- A Maximum Runtime value can be set for both relays that operate in ALL Modes (0 - No Max time, 1-24 - 1hr to 24hrs max)

Wireless Links

Our Wireless Control Link (WCL) can also be used to turn a remote pump on/off, to do this the installer would simply connect the FMC Relay output to the Input of the WCL Input unit. This option is ideal where the pump is located away from the tank and running a cable is not practical.

The WCL, using Lora radio technology can also be used for monitoring other tank sites within radio range of the FMC satellite unit. Using a plug in Lora transceiver to the FMC satellite unit, data from other tank sites can be transmitted back to the satellite unit. Transmission distances will be dependent on terrain and vegetation. There are several antenna options available, depending on the required transmission distances.

SATELLITE FMC DEMO



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