MT4AD16W1 Operational Description

The MT4AD16W1 is a remote tank level monitoring device. It is intended to be powered by a non-rechargeable lithium battery pack for a predicted average lifetime of at least 10 years.

The unit uses a BLE (Bluetooth Low Energy) microcontroller which manages all wireless communications. BLE advertising is also used to allow infield testing and diagnostics as well as enabling possible firmware upgrade. A 2.14dBi PCB (Printed Circuit Board) antenna over a ground plane is used as main BLE antenna. Basic GPS functionality is also available to locate a lost unit or locate tanks that can be physically moved.

The device reads the tank level sensor every few minutes. When a significant level change is detected, the microcontroller (MCU) activates the BLE transceiver to advertise the tank's level. If there is no level change after 24 hours, the unit performs a daily report using the same procedure. The MT4AD16W1 uses low data volume: up to 100KB per month, but usually around 10KB per month.

In the circuit, a load switch is used to power the external sensor. The sensor's signal is then read by the MCU through one of its analog to digital converter. The MCU sends the data using the BLE transceiver.

BLE wireless communication is the only wireless transceiver used in this product.