



## ***Tank & Silo 'Cloud' Monitoring***



[www.zigsense.com.au](http://www.zigsense.com.au)

# Tank & Silo 'Cloud' Monitoring Standalone Controller

GPS modem

M2M 3G modem



MicroLAN  
Local sensors

ETHERNET port  
10 / 100

RS485 port  
Modbus RTU

4 x Inputs  
Analog / Digital / Pulse  
2 x Relay outputs



# Tank & Silo 'Cloud' Monitoring

## Wireless mesh Network

### GRAIN SILOS

Grain Temperature  
Silo Weight  
Conveyor Run/Stop  
Air Flow



### LIQUID TANKS

Tank Level  
Liquid Pressure  
Pump Run/Stop  
Liquid Flow



### CHEMICALS TANKS

Tank Level  
Ph Level  
EC Level  
Pump On/Off





### Wireless Network Communications

**Network Topology:** Mesh  
**Network ID:** Automatic 64 bits  
**Station ID:** Manual 16 bits

### RF Communications

**2.4GHz:** 256Kbps  
**900MHz:** 10Kbps / 200Kbps  
**Radio technology:** DSSS, FSHH, ISM  
**RF Channels:** 16 max  
**RF Antenna:** Internal / External

### Radio TX Power

**2.4GHz:** +18dBm (63mW) max  
**900MHz:** +24dBm (250mW) max

### Radio RX Sensitivity

**2.4GHz:** -102dBm  
**900MHz:** -101 to -110dBm

### Communications Range

**2.4GHz:** 100m Urban, 2Km Outdoors  
**900MHz:** 600m Urban, 14Kms Outdoors  
**Test antenna:** 2.1dBi, 6.0dBi

### Power Supply (wireless nodes)

**External:** 12 – 24VDC  
**Internal backup battery:** 3.6VDC  
**Battery life:** 1 – 5 years\*  
**Sleep cycle:** Configurable 5Sec – 30Min

### Inputs / Outputs (wireless nodes)

2Ain + 2Din+2Dout **OR** 4Ain (max)  
**Ain(V):** 0-1 / 0-5 / 0-10VDC, 12bits  
**Ain(I):** 0 / 4 - 20mA, 12bits  
**Din:** Dry Contact to GND. 10mA max  
**Dout:** 0-30VDC, NPN, 250mA max.  
**RS232/485:** Modbus RTU master  
**Pulse Counters:** 2x32bit 100Hz max

### General

**Enclosure:** UV stable IP65 Polycarbonate  
**Wiring:** sealed glands or IP68 connector  
**Power Supply:** 12 – 24VDC / 3.6VDC

### Dimensions

**Wireless Node:** 120L X 90W X 60H (mm)  
**Gateway:** 160L X 90W X 60H (mm)

\* Combined sleep cycle and battery A/h



### Communications

**Ethernet:** Standard. TP 10/100 RJ45 port  
**Cellular:** Tri - Band GSM/GPRS: Optional  
**GPS + Antenna:** Optional  
**RS485 Port:** RJ45. Modbus RTU 'master'

### 'Cloud' Communications Security

**Internet Traffic:** UDP only  
**LAN Risks:** None (No TCP & No OS)  
**Comms Startup:** Dynamic IP via DHCP  
**Payload Protocol:** Proprietary  
**Payload Security:** 128bits encryption  
**Payload Size:** <10Mbyte per month  
**Data Buffer:** 4MB Non - Volatile Memory  
**Redundancy:** Three Data Centres

### 'Cloud' Monitoring Technology

**I/O Sample Rate:** 1Sec  
**I/O Data:** Raw, Scale, Calculate  
**Data Logging:** Configurable 5Sec – 4Hrs  
**Data Access:** Online, CSV, XML  
**Graphics:** Metres, Tables, Graphs  
**Reports:** pre - defined Statistical reports  
**Alerts:** email, SMS, Twitter OR Voice  
**Alarm Triggers:** 4 levels per input  
**Script Language:** 'C'-Like syntax  
**Timers:** 20. Hourly, Daily, Monthly  
**Schedules:** 20. Each with four intervals  
**Location:** GPS coordinates and map

### 'Cloud' Security

**Access:** Administrator, Manager, User  
**Security:** SSL  
**Site Audit:** ONLINE

### 'Cloud' Controller Inputs / Outputs

**Local I/Os:**  
4xInputs (Analog OR Digital)  
2xOutputs (Digital dry contact)  
**Remote I/Os:** Modbus Registers  
**Local Sensors Network:** MicroLAN  
**Total I/O:** 40 (max)

### General

**Enclosure:** UV stable IP54 Polycarbonate  
**Power Supply:** 12 – 24VDC

### Dimensions

**Controller:** 153L X 100W X 38H (mm)



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