



# ULTIMATE CONTROLLER

Control, comply, monitor, &  
maintain your assets.

**Easily Programmed Modular Unit  
with webserver remote control, DNP  
(WITS), and touch-screen HMI.**

Bringing together the world's leading non-contacting, ultrasonic, advanced pump controller with patented functions that reduce energy costs and improve compliance.

The Ultimate Controller is modular and expandable, with peripherals offering substantial I/O, pump power monitoring, battery back-up, and even a remote infra-red camera, allowing remote viewing of the well and the process.

## *Simple, Straightforward Setup*

A key strength of Pulsar Measurement equipment has always been the logical layout and straightforward menu-based programming approach. The Ultimate Controller is no different and takes the concept even further with a simple, visual setup made through the HMI touchscreen. You can, of course, program the unit and adjust parameters remotely.

Set up the application, add a transducer, and add peripherals with a few touches of the screen. The Ultimate Controller will fill in parameters automatically so you get immediate feedback on important elements such as maximum range, blanking distance, etc.

## *End-to-End Cost Savings*

- **Operational Cost Savings** by high energy cost avoidance (patented), pre-blockage detection, automatic reset, spill prediction, and most efficient pump selection.
- **Capital Cost Savings** by combining HMI, PLC, RTU, and level and flow control with no costly logic programming.
- **Remote Monitoring** of flow and level with photographic



## THE RIGHT METER FOR

- Advanced Pump Control
- Level Measurement
- Flow Monitoring
- Pump Performance Monitoring
- Asset Management

verification for compliance, reducing the carbon footprint.

- **Modular and Expandable** to suit simple and complex applications.
- **Convenience and Safety** in mind, the power monitor can be mounted away from the ICA section.
- **Asset Management** data calculated by the Ultimate Controller which can be displayed locally and remotely.
- Signals from **existing peripherals** or other instruments can usually be utilized if required.

## Advanced Functions

The Ultimate Controller gives you a depth of control and maintenance functionality that reaches far beyond the limits of a standard ultrasonic pump controller. Ultimate's Asset Management for Predictive Maintenance, support for compliance, and built-in remote access and communications build on its world-leading, non-contacting, ultrasonic level measurement and pump station control; aid compliance, reduce total expenditure (TOTEX), and improve usability and ease of implementation.

## Pump Control, Level, & Flow

The Ultimate Controller is a fully-functioned advanced pump controller with all the sophisticated multi-pump control that you would expect from Pulsar Measurement. Not only that, but the Ultimate Controller also offers level and volume measurement and control, with a measurement range from 125 mm to 50 m (0.41 ft to 164 ft), open channel flow monitoring, and differential level control using an additional transducer.

The unit allows you to view echo profiles both on the screen and remotely, allowing a dynamic application setup and giving you access to see exactly what is happening in the application.

## Advanced Control

From Tariff Management to minimize your energy costs to Burst / Block alarms to Pump Prioritization based on efficiency. Pulsar Measurement's Ultimate Controller is packed with the advanced control features that bring effortless sophistication to pumping stations, meaning every installation can benefit from Pulsar Measurement's wealth of experience.



The Ultimate Controller Battery Backup Module



The Ultimate Controller Flow Group of Accessories

## Asset Management & Compliance

With data logging up to 100,000 events, plus the option of adding the unique Pulsar Measurement FlowPulse sensor to measure actual flow, the Ultimate Controller will monitor your assets, report on pump performance, and provide crucial data to help your predictive maintenance. Optional pump monitors help to bring comparative data on these important assets. The Ultimate Controller helps you to confirm due diligence and to comply with consents.

It is now possible to compare pumping stations across a catchment using the Ultimate Controller's unique Asset Performance Indicator (API) algorithm. Which uses a range of measured data to calculate station efficiency.

## Communications (RTU, Ethernet, DNP3 WITS)

With a variety of communications available, including the UK Water Industry Standard DNP3 as well as a dedicated web server, you can monitor the Ultimate Controller from anywhere. An optional infra-red camera gives a perfect view of the wet well or the station so you know exactly what is going on, wherever you are. Battery backup means that the Ultimate Controller will continue to monitor even if all power is lost.

For ultimate flexibility, the Ultimate Controller can also integrate a GPRS / GSM 2G modem which can communicate via the UK Water Industry Standard DNP3 communication protocol (WITS 1.1) or external 3G modem so you can view data using a mobile phone or tablet.

Data may also be downloaded locally via a removable SD card, while an internal SD card memory ensures that data is secure. Ultimate also offers optional Wi-Fi connectivity allowing you to access, program, and interrogate the system wirelessly.

## Technical Specifications

### PHYSICAL: MOUNTING OPTION SPECIFIC

Mounting Option:	Standard Wall Mount:	Fascia Mount:
<b>Controller Body Dimensions:</b>	225 mm H x 262 mm W x 105 mm D (8.9 in x 10.3 in x 4.1 in)	124 mm H X 224 mm W x 114 mm D (4.9 in x 8.8 in x 4.5 in). 116 mm x 179 mm (4.6 in x 7.05 in) cut out, 34 mm (1.3 in) in front of panel, 80 mm (3.1 in) behind
<b>Weight:</b>	Nominal 2 kg (4.4 lb)	Nominal 1.5 kg (3.3 lb)
<b>Enclosure Material / Description:</b>	Polycarbonate	Polycarbonate / stainless steel
<b>Cable Entry Detail:</b>	11 off; 9 x M20 and 2 x M16 knockout underside	
<b>Transducer Cable Extensions:</b>		2-core screened, 1,000 m (3,280 ft) max
<b>Mounting:</b>	Indoor / Outdoor	Indoor, 2,000 m (6,561 ft) altitude max
<b>IP Rating:</b>	IP65, pollution degree 2, IK06 at -20 °C (-4 °F)	IP64 (front of panel)

### ENVIRONMENTAL

<b>Max. &amp; Min. Temperature (Electronics):</b>	-30 °C to +55 °C (-22 °F to +131 °F) ambient
<b>Flammable Atmosphere Approval:</b>	For installation in non-flammable area only. Most compatible transducers suitable for flammable atmospheres. See sensor / transducer datasheet or brochure.
<b>CE Approval:</b>	See EU Declaration of Conformity

### PERFORMANCE

<b>Accuracy:</b>	±0.25% of the measured range or 6 mm (0.2 in), whichever is greater. ±2 mm (0.08 in) for dBR16 mmWAVE RADAR
<b>Resolution:</b>	±0.1% of the measured range or 2 mm (0.08 in), whichever is greater
<b>Measurement Range:</b>	Dependent on transducer, max 40 m (131.2 ft) (dB40), min zero (dBMA3)
<b>Rate Response:</b>	Fully Adjustable
<b>Echo Processing:</b>	DATM (Digital Adaptive Tracking of Echo Movement)

### PROGRAMMING

<b>Onboard Programming:</b>	By capacitive touchscreen
<b>Data Security &amp; Integrity:</b>	Security: via passcode (user selectable / adjustable). Integrity: non-volatile memory
<b>Memory:</b>	2 (1 x internal) 4 GB supplied as standard (up to 32 GB optional)

### SUPPLY

<b>AC Supply:</b>	Universal 85-264 V AC (400 Hz), 50 W maximum input power (2 A 'T' 20 mm (0.8 in) fuse)
<b>DC Supply:</b>	22-28 V DC (internally fused 2 A 'T')

### CONNECTIVITY

<b>Mini USB (External):</b>	Connecting of laptop / PC, located under a flap on side of the unit
<b>USB A Socket (Internal):</b>	Connecting of peripherals such as modems
<b>'D' Type 9 Pin (Internal):</b>	Connecting of optional comms (Modbus RTU, Profibus)
<b>Camera Port (Internal):</b>	Power and comms of Pulsar camera

### RTU / COMMUNICATIONS

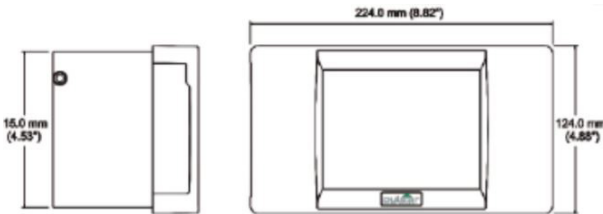
<b>Protocol Supported:</b>	DNP3 Level 4, WITS Protocol 1.1 via Ethernet or mode (optional) Modbus RTU, TCP/IP (optional), Profibus V1 (optional), GSM/GPRS/PSTN, RS485 Pulsar expansion bus
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INPUTS

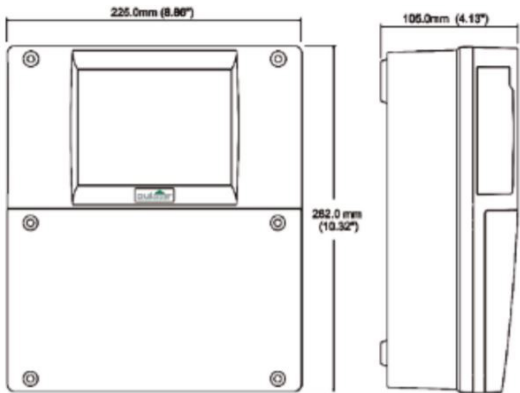
Digital Inputs:	8 digital inputs, min input voltage 5 V DC, max input voltage, 30 V DC (max current 3 mA). 24 V DC input supply maximum total current 24 mA
Analog Inputs:	2 off 4-20mA or 0-20mA sink or source (user programmable and adjustable) 0.1% resolution, open circuit voltage (source mode) at 4-20mA, 22 V at 20mA, 18 V

OUTPUTS

Digital Outputs:	8 Form C (SPDT), rated at 5 A at 240 V AC
Analog Outputs:	2 off, isolated (floating) outputs (to 150 V) 4-20mA or 0-20mA into 1 kΩ. 0.1% resolution
Display:	144.8 mm (5.7 in) TFT color display with a capacitive touchscreen



Ultimate Controller fascia mount drawing front and side



Ultimate Controller wall mount drawing front and side

Delivering the Measure of Possibility.

Pulsar Measurement offers worldwide professional support for all of our products and our network of distributors all offer full support and training. Our facilities in Malvern, UK and Largo, USA are home to technical support teams who are always available to answer your call or attend your site when required. Our global presence, with direct offices in the UK, USA, Canada and Malaysia allow us to create close relationships with our customers and provide service, support, training and information throughout the lifetime of your product.

For more information, please visit our website:

[www.pulsarmeasurement.com](http://www.pulsarmeasurement.com)



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