

QUANTUM 3

Adds the ability to add up to four FlowPulse non-invasive flow monitors.

Superior Pumping Station Control

The Quantum 3 is a fully-featured pump controller, using Pulsar's unique non-contacting, ultrasonic technology including DATEM digital echo discrimination to provide sophisticated level management. Quantum 3 can be programmed to provide an alarm based on the time remaining before the station or well spills over, vital for utilities who face the risk of prosecution if a station pollutes the local environment.

The Quantum 3 includes all the same unique features seen in the Quantum 2 controller but adds the ability to interface with up to four FlowPulse non-invasive flow monitors, for flow-rate based alarms and control based on measured rather than calculated flow.

The Tariff Guard

All intelligent pump controllers by Pulsar Measurement operate in a highly intelligent and predictive manner: with the objective to have a 'full' or 'empty' well as the tariff charges.

The liquid level and the inflow rate is continuously measured and assessed in the well. Both these variables are then related to the time the next tariff charge occurs. If the next tariff charge is for a higher unit cost rate, the well will be allowed to fill to enable pump down immediately before the tariff charge. This then provides maximum storage capacity in the well during the higher tariff period, once in the lower tariff cost period the level is pumped down as normal using the minimum number of pumps.



THE RIGHT METER FOR

- Pump Control
- 'Time to Spill' Warning Requirements
- Reduction in Power Costs
- Pump Monitoring & Control
- Pump Station Control

The level and inflow condition of the well is continuously monitored to optimize the liquid level and intelligently control the pumps according to the impending tariff charge. By doing this, high tariff charge pumping may be reduced significantly, or avoided entirely, to provide real cost savings on pumping energy charges during higher energy cost periods.

Ten set points for tariff variations may be installed, these can be assigned per day, week, or other reoccurring periods to be site-specific.

It is important to note that the normal pump on and off points are maintained in storm conditions, thus eliminating the possibility of spills.

Actual energy savings achieved will depend on the capacity of the wet well, the frequency of the tariff charges, the size of the pumps, and the relative tariff charges applied. However, cost savings are usually significant.

'Time to Spill' & Alarm Programming

The Quantum 3 can be programmed to provide an alarm based on the time remaining before the pumping station or well spills over. This is vital for utilities, who face the risk of prosecution if a station pollutes the local environment.

The likelihood of a spill depends both on the rate of change of the level and the operating efficiency of the pumps, which can be affected by a catastrophic failure, blockages, or general wear and tear. If a pump has failed, the rate of change may not be important, because the level may creep up slowly to reach a dangerous level. Knowing how much time remains before a critically high level or an overspill level is crucial. The Quantum 3 takes into account the inflow and outflow rates and calculates the time remaining before a spill, warning via Modbus RTU register or any other protocol or relay closure for the site operators to take remedial action.



dB transducers work in conjunction with the Quantum 3 to calculate 'time to spill'



A typical wet well installation.

DATEM Analysis

The unit features Pulsar Measurement's unique non-contacting, ultrasonic technology including DATEM digital echo discrimination to provide rock-solid performance and sophisticated level management.

Digital Outputs & Communications

Quantum 3 includes ten relays (digital outputs) and seven digital inputs. Digital inputs are used to detect the status of the pump trip circuit. If a pump has tripped, digital outputs can be assigned to provide a reset to the trip circuit (after a programmable time delay). The unit counts the number of consecutive trips and the number of trips in a rolling 24-hour period. If any of these counts reach a predetermined maximum, the pump is considered to be faulty and the auto-reset process is ceased. A digital output can be assigned to indicate that a pump is faulty and site attendance is required.

The Quantum range of controllers has optional RS485 digital communications (Modbus RTU and Profibus DP V0 and DP V1) allowing the status to be monitored and the unit to be programmed remotely. Additionally, it has the option of a large onboard data-logging facility.

Technical Specifications

PHYSICAL: MOUNTING OPTION SPECIFIC

Mounting Option:	Fascia Mount:
Controller Body Dimensions:	200 mm x 112 mm (7.9 in x 4.4 in) front, 165 mm x 105 mm (6.5 in x 4.1 in) cut-out
Weight:	Nominal 1.3 kg (2.9 lb)
Enclosure Material/Description:	Stainless steel and polycarbonate, flame resistant to UL94 V0
Transducer Cable Extensions:	Twin Screened
Maximum Separation:	1,000 m (3,280 ft)

ENVIRONMENTAL

IP Rating:	IP64
Max. & Min. Temperature (Electronics):	-20 °C to +55 °C (-4 °F to +131 °F)
Flammable Atmosphere Approval:	Safe area: compatible with approved dB transducers allowing installation to zone 0
CE Approval:	EMC approval to BS EN 50081-1: 1992 for emissions and BS EN 50082-2:1995 for immunity and to BS EN61010-1:1993 for low voltage directive.
Power Supply:	115 V AC +5-10% 50/60 Hz, 220 V AC +5-10%, 18-36 V DC

PERFORMANCE

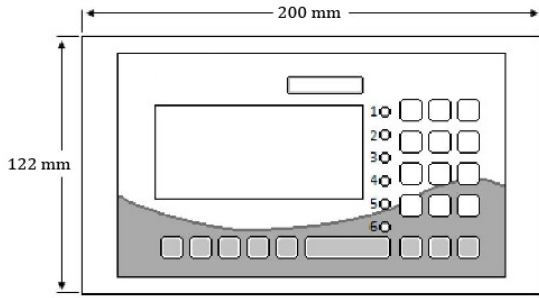
Accuracy:	+0.25% of the measured range or 6mm whichever is greater
Resolution:	dBMACh3 0.3 mm (0.01 in), dB3 0.5 mm (0.02 in), dB6 and dB10 1 mm (0.04 in), dB15 1.5 mm (0.06 in), db25 2.5 mm (0.1 in), dB40 5 mm (0.2 in)
Range:	Depending upon transducer, from 125 mm to 40 m (4.9 in to 131.2 ft)
Echo Processing:	Patented DATEM (Digital Adaptive Tracking of Echo Movement)
Digital Communications:	RS485 Modbus RTU or Profibus DP V0 or V1

INPUTS / OUTPUTS

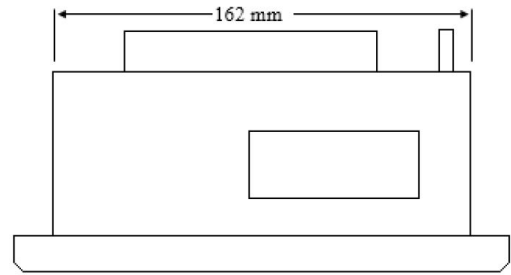
Volt-free Contacts:	10 in total. Relays 1-5 form C (SPDT) 5A, 220 V AC. Relays 6-10 form C (SPDT) 3A, 220 V AC
Digital Inputs:	7 NO or NC with 24 V DC internal supply, available max. 20mA
Analog Output (Adjustable):	2 off Isolated output of 4-20mA or 0-20mA into 500 Ω (user programmable and adjustable) 0.1% resolution
Serial Output:	RS232 via RJ11 port
Display:	6 digits plus 12 character text, plus bar graph with direction indicators, remote communicator indicators, and program / run / test mode indicators

PROGRAMMING

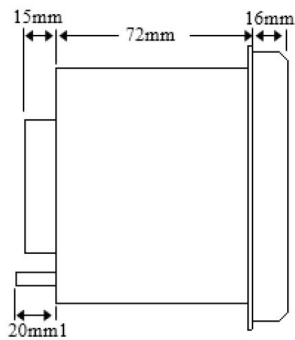
Onboard Programming:	Standard with integral keypad
PC Programming:	Via RS232 (RJ11 port)
Programming Security:	Via passcode (user selectable and adjustable)
Programmed Data Integrity:	Via non-volatile RAM, plus backup



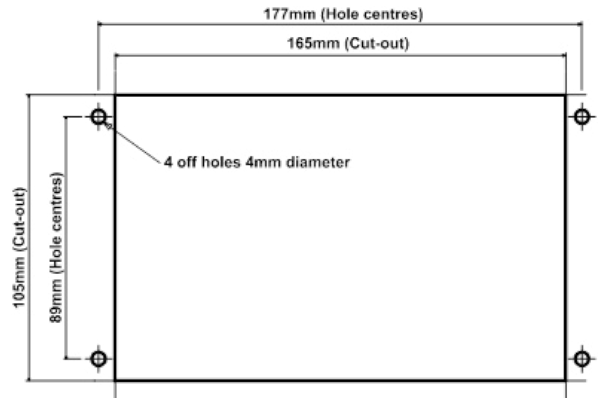
Quantum 3 Front Drawing



Quantum 3 Top Drawing



Quantum 3 Side Drawing



Cut-Out Dimensions

Delivering the Measure of Possibility.

Pulsar Measurement offers worldwide professional support for all of our products, and our network of global partners 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 allows 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



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