



**MINIFLEX LR  
ULTRASONIC LEVEL  
MEASUREMENT**



***HYCONTROL***

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# LEVEL MEASUREMENT FOR LIQUIDS & SOLIDS

Non-contact ultrasonic level measurement is one of today's most versatile level measuring technologies. However, the **Miniflex LR** moves these boundaries further into the next generation.

**Miniflex LR**, with its wide range of transducers and advanced PULSE window echo tracking technology, can measure virtually any liquid or solid and can be used in a wide range of industries. Programming is via a simple five-button keypad behind an IP65 protection front cover. In addition, the two-line 16 digit display enables programming and configuration without using a manual by simply utilising a flow programming chart, reducing set-up time to a minimum.



## APPLICATION FLEXIBILITY

**LEVEL/DISTANCE/VOLUME:** A measuring range of up to 10m makes this unit very versatile for various applications, from small vessels to large process tanks; one unit suits many applications. Users can configure the instrument to display in litres, gallons, tonnes, kg, m<sup>3</sup> or %. Alarms and control relays can easily be programmed in actual units from this display. The multi-line display also allows simultaneous display of both contents and ullage space if required.



*When using **Miniflex LR** on open channel flow applications, it is possible to display both the total flow and the instantaneous flow simultaneously and display the units of measurement of the flow.*

**FLOW:** BS3680 flume and weir configurations are standard within the software, and 10 Parshall flumes. Instantaneous flow, total flow or head can be displayed. For non-standard flume applications, users can enter an option for 24 point linearisation.

**PUMP CONTROL:** Flexibility for pump control is essential. Every application can be different depending on the pumped product's nature or the required control philosophy. **Miniflex LR** includes:

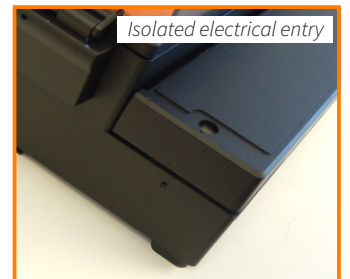
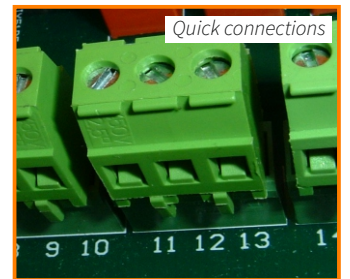
- Duty standby/assist:** To eliminate additional pump controls
- Alternating duty:** To even out wear of multiple pump installations
- Pump exerciser:** To periodically test pumps which have been lying idle for long periods
- Pump tolerancing:** To reduce fat build-up in wet wells
- Pump run-on:** For de-sludging tanks
- Pump monitoring:** To record pump starts and run time
- Pump maintenance:** Allows pump removal from sequence without re-programming

**ALARMS:** It is possible to program the three relays for various applications, including high and low alarms, stock re-order points, flow alarms and many other control functions.

**DIFFERENTIAL CONTROL:** Miniflex LR can have two transducers input to one controller to enable the monitoring of an upstream and downstream level for control of lock gates and screen rakes.

## APPLICATION FLEXIBILITY

With a simple flow diagram, programming the **Miniflex LR** is fast and straightforward compared to many instruments with similar capabilities. First, choose the program required through the menus; the screen will prompt you to enter the necessary parameters as you go. Then, enter the parameters via the five-button keypad, and no additional programmers are required. For extra security, the keypad can also be password-protected to stop any unauthorised changes.



# ADVANTAGES OF MINIFLEX LR

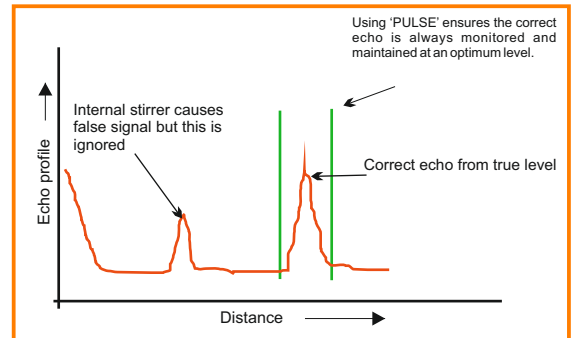
- ◆ Non-contact ultrasonic technology with no moving parts provides long life and reliability
- ◆ Versatile technology for liquids, slurries, pastes and solids
- ◆ Maximum range of 10 metres (consult Hycontrol with application details on solids)
- ◆ Multi-programmable for a wide range of applications, inc. level, flow, differential, pump control
- ◆ Advanced echo extraction routine (PULSE) for stirrer and spurious signal avoidance
- ◆ Simple to install, commission and retrofit with a wide range of transducer options
- ◆ Dual supply voltage as standard - will accept AC or DC
- ◆ Hazardous area approval as a standard on RWTK15EX transducer
- ◆ Chemically resistant transducer materials for maximum application flexibility
- ◆ Clear display with enhanced 16 digit, two-line backlit LCD
- ◆ Five-button programming with simplified commissioning via software flowchart
- ◆ Separate electrical terminals compartment to reduce risk of board damage when installing

## ADVANCED ECHO TRACKING

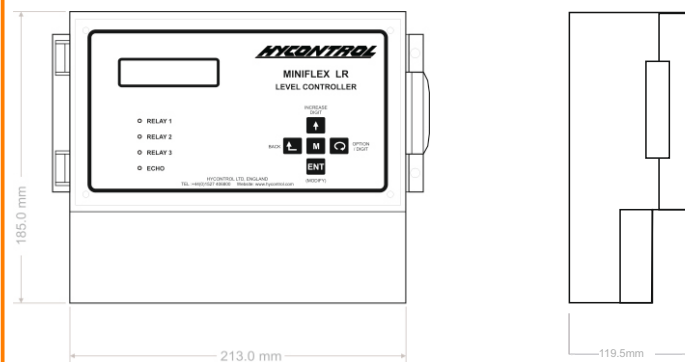
**Hycontrol** has designed and manufactured ultrasonic level measuring systems for nearly forty years. In addition, the company has developed patented echo tracking software capable of ignoring spurious echos, which other manufacturers may detect.

**PULSE (Proven Ultrasonic Level Signal Extraction)** utilises a unique window technology. This system can distinguish between false and true echos and avoids obstacles such as ladders, crossbeams, stirrers and fill pipes. Complex applications, including narrow tanks and wells with complicated internal structures, can now be easily monitored. This system includes well-proven **Automatic Gain Control (AGC)**, enabling the instrument to automatically adjust for different applications and return echoes that constantly vary. **Miniflex LR** carries out this function without requiring any user interface.

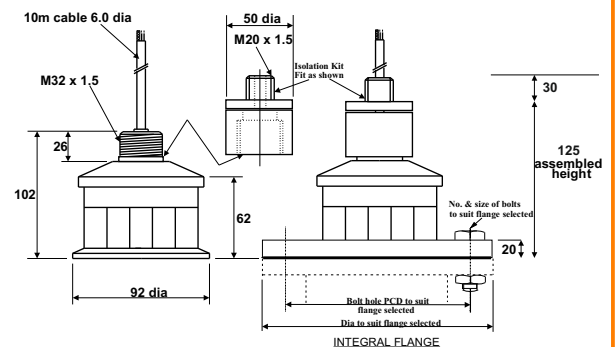
The application shown (*right*) is on a clay slurry (slip) tank used to manufacture bathroom appliances. The manufacturer required a non-contact level measuring device that could measure the level and ignore the very large stirrer rotating in the tank to keep the slurry fluid. The build-up on the stirrer is very significant. Therefore, it provides a massive target for a false echo. However, PULSE window technology ignores this and only measures the correct level.



## MINIFLEX LR



## TRANSDUCERS



# SPECIFICATION

## PERFORMANCE SPECIFICATION

<b>Measuring range:</b>	Up to 10 metres on liquids and solids
<b>Measuring mode:</b>	Level, distance, differential, flow
<b>Accuracy of change in level:</b>	+ 0.25% of measured distance from the transducer at constant temperature of 20°C
<b>Resolution:</b>	2mm or 0.1% of range, whichever is the greater
<b>Failsafe:</b>	High, low & hold
<b>Damping:</b>	Fully adjustable 0-10 metres per minute
<b>Blanking:</b>	Fully adjustable, minimum 0.3 metres
<b>Functions:</b>	7 standard tank shapes for volume conversion 10 Parshall flume curves BS3680 flow laws + penstock control 24-point linearisation 7 separate pump control functions


## HARDWARE SPECIFICATION

<b>Power supply:</b>	95/110/230VAC + 10%. 50/60Hz, 12VA 24VDC + 25%, -10%, 7.5W
<b>Analogue output:</b>	4-20mA into 750 Ohms. 16 bit Short circuit protected and opto-isolated on AC powered unit
<b>Relay outputs:</b>	3 multi-function SPDT relays rated 8A/250VAC/30VDC resistive, with gold contacts for low power switching
<b>Indication:</b>	Integral display, 2 lines 16 digit alphanumeric backlit LCD 3 red LEDs to indicate relay status
<b>Ambient temperature:</b>	-20°C to +70°C for Miniflex LR enclosure
<b>Interface:</b>	5 button keypad with security code
<b>Temperature compensation:</b>	Integral in transducers
<b>Enclosure:</b>	IP65, NEMA 4X, polycarbonate enclosure with hinged lid
<b>Dimensions:</b>	185H X 213W X 119.5D (mm) - see diagram
<b>Weight:</b>	1.55Kg

## TRANSDUCERS

	<b>RWTK15EX</b>	<b>RWTK15-NA</b>	<b>RWTK15Fxxx</b>
<b>Model number:</b>			
<b>Range:</b>	10 metres	10 metres	10 metres
<b>Temperature compensation:</b>	Yes	Yes	Yes
<b>Frequency (in kHz):</b>	41.5 kHz	41.5 kHz	41.5 kHz
<b>Beam angle at -3dB:</b>	14 degrees	14 degrees	14 degrees
<b>Face material:</b>	PVDF	PVDF	PVDF
<b>Process temperature °C:</b>	-40° to +60°	-40° to +90°	-40° to +90°
<b>Protection:</b>	IP68	IP68	IP68
<b>Weight (Kg):</b>	0.6	0.6	0.8-2.0
<b>Mounting connection:</b>	M20	M20	Flange*
<b>Hazardous area approved:</b>	Yes**	No	No

\* For flange options contact Hycontrol. Standard material PE1000.

\*\* Approvals:  Ex II 2 GD  
Ex mb IIC T6 Gb  
Ex mb IIIC T85°C Db  
EU certificate Sira 14ATEX5083X  
UKCA Certificate CSAE 21UKEX5185X



# HYCONTROL - THE COMPLETE LEVEL SOLUTION

**Hycontrol** has been at the forefront of level control and measurement technology for over thirty-five years, providing practical solutions for diverse applications across many industries ranging from quarrying to food, nuclear power to chemicals, and animal feed to waste recycling. From our manufacturing base in Redditch, Worcestershire, we have overseen thousands of applications across the UK and around the world.

At Hycontrol, we pride ourselves on providing a 'complete solution' service to our UK customers. We provide a turnkey solution for level equipment requirements, with the experience and skill to design, manufacture, install, and maintain bespoke measurement and control systems crafted to suit each customer's particular needs.

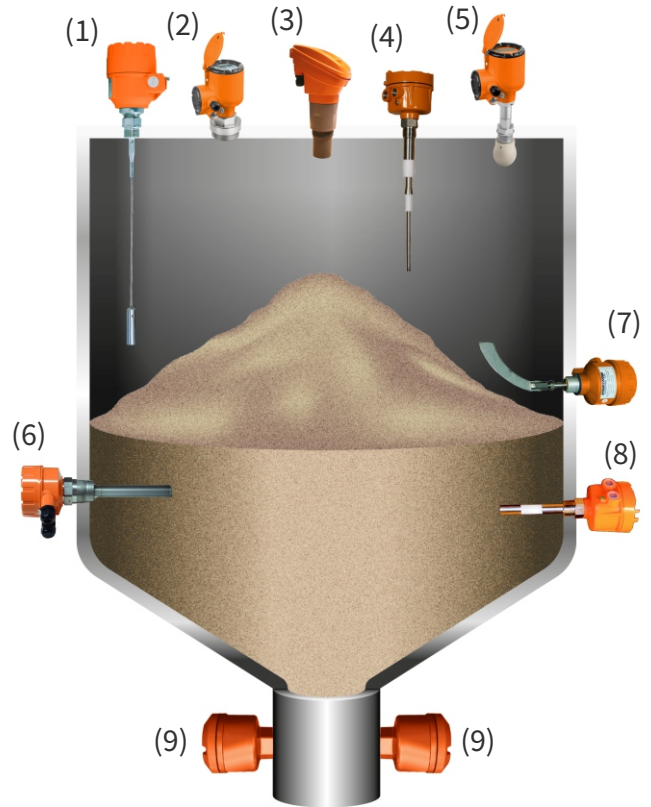
We understand the consequences of inaccurate or unreliable level systems. Therefore each Hycontrol installation is tailored precisely to match your application. Our goal is simple: to provide the best-engineered solution - without compromise.

With one of the widest ranges of level measurement technologies on the market, including award-winning silo pressure safety systems and a patented range of foam detection and control equipment, backed up by a team of experienced engineers and technicians, Hycontrol is a leading force in the manufacture and supply of advanced level solutions.



## Product Range for Solids:

- (1) TDR radar
- (2) 80 GHz FMCW radar
- (3) 2-wire ultrasonic transmitter
- (4) RF admittance level switch
- (5) 24 GHz FMCW radar
- (6) Vibrating level probe
- (7) Rotary paddle switch
- (8) Capacitance level switch
- (9) Microwave flow & blockage switch



## Product Range for Liquids:

- (1) Bypass level indicator
- (2) 80 GHz FMCW radar
- (3) Foam control system
- (4) 24 GHz FMCW radar
- (5) 2-wire ultrasonic transmitter
- (6) TDR radar
- (7) Capacitance level switch
- (8) RF admittance level switch
- (9) Tuning fork vibrating level switch

