

# Mobrey MCU900

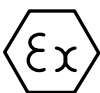
## Universal control units



- IS Supply to transmitter
- 4-20mA / HART input
- Isolated 4-20mA output
- 5 Control relays
- Multi-function back lit display
- Wall or panel mount
- Pre-programmed linearization  
- Volume

### Control unit features and application

- Accepts any 4-20mA or HART compatible input, allowing standardization of control room layout.
- Tough polycarbonate NEMA4 wall mount enclosure for internal or external mounting. Panel mount units require just 165mm/6.5" clearance behind the panel.
- Control units are 230/115V ac or 24V dc powered and provide an Intrinsically Safe 24V dc power supply to the transmitter.
- Supports two voltage free contact closure inputs, allowing override of control functions on external triggers.
- Pre-programmed tank shapes, flow algorithms and pump control routines simplify configuration. A 20 point user programmable facility is provided for non-standard applications.
- Real time clock allows energy saving routines and pump efficiency calculations.
- 5 voltage free SPDT relays for alarm and control duties.
- 4-20mA 12 bit isolated current output proportional to calculated value.
- Clear visual display of measured value with units and relay status.  
Also used to guide user through programming menu.
- Wizard assisted programming, with password protection to prevent unauthorized access.
- MCU902 model accepts input from two transmitters and performs sum or differential calculations, providing a single current output proportional to the answer.
- MCU90F model provides on-board logging of PV and totalised flow values in flow measurement applications



**Introduction**

The MCU900 series of wall and panel mount control units provide comprehensive control functionality for any 4-20mA or HART compatible transmitter. A back-lit display gives clear visual indication of the measured value and status of all inputs and outputs. Mounted in a non-hazardous area, the MCU900 provides a protected 24V dc power supply to the transmitter, which may be installed in a hazardous area.

The input signal from the transmitter may be offset, dampened, scaled and linearized as required. A range of pre-programmed linearization algorithms are user selectable.

The 4-20mA output signal may also be scaled to re-transmit all or just part of the input signal or calculated value.

Five relays are provided and are fully field programmable to perform a wide variety of control, fault indication or alarm duties.

The MCU900 is configured using an integral 6 button keypad and an easy to navigate menu structure. Many popular configurations are "Wizard assisted", enabling fast and accurate programming.

Typical measurements include level, volume and distance measurement, as well as open channel flow measurement in Parshall flumes & over weirs.

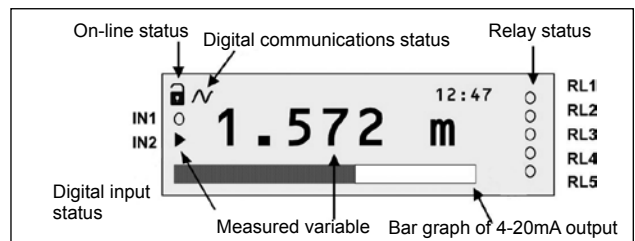
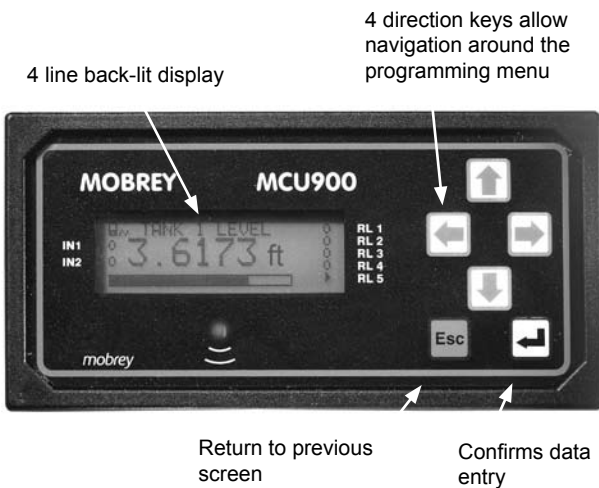
**Transmitter capability**

When any Mobrey HART transmitter is connected, the MCU will recognise the transmitter and allow full access to and programming of the transmitter configuration parameters, eliminating the need for any other HART programming device.

Any other HART transmitter can be connected to the MCU - in this case the MCU will recognize the transmitter as an "unknown instrument" and will allow access to and programming of the Universal and Common Practice HART commands.

MCU will operate with any 2 wire 4-20mA transmitter, providing power to the loop. In the case of I.S. transmitters mounted in hazardous areas, the power supply is fully protected and there is no need for any external I.S. barrier.

**Display**



Front panel display and keypad (imperial display shown)

## MCU Flow logging system

In many instances, it is required that the flow and totalised flow be logged for download at a later date. The MSP flow logging system has an on-board logger which can log up to 7000 samples at user definable intervals. In the event of flow exceeding a limit value, fast logging is automatically triggered until the flow reverts to normal.

In addition, 365 daily totalised flow values are also logged along with the maximum instantaneous flow during each 24 hour period.

A second totaliser is provided to totalise cumulative flow through the flow structure.

All data is real time stamped and stored for download via an RS232 connection on the control unit.

Data can be collected using a portable PC, and is easily stored and manipulated using the Mobrey LogView windows software. See brochure IP122 for full details of Mobrey LogView.



## Differential level system

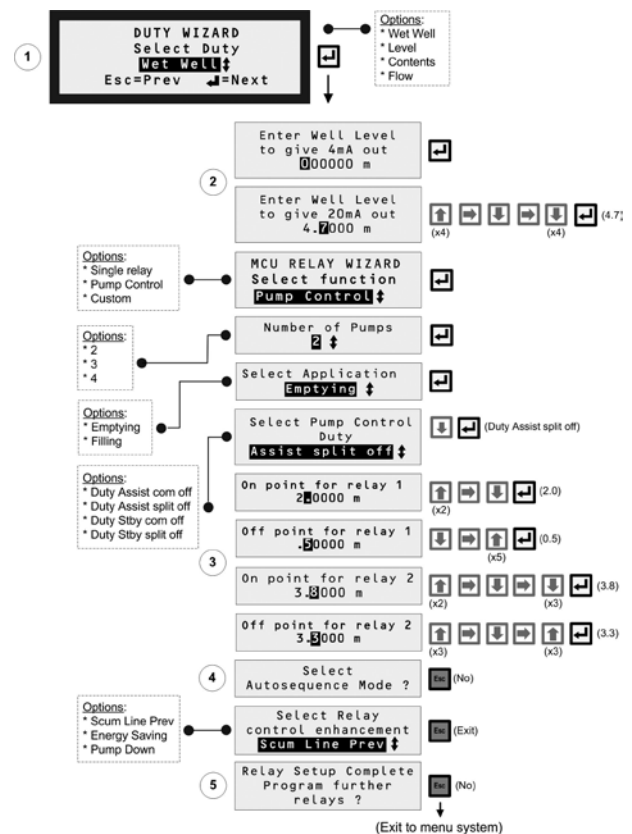
It is sometimes necessary to know the difference in two levels, for example, across an inlet screen where the level difference is an indicator of the state of the screen

The MSP differential level system is designed to operate with two HART level transmitters, and can be programmed to perform calculations on the two input signals –

- Level, contents/volume or flow under transmitter 1
- Level, contents/volume or flow under transmitter 2
- Level difference between transmitter 1 and 2
- Sum of the level, contents or flow under both transmitters

The control relays and current output can driven by any of these functions, and the display can be configured to show the reading of each transmitter plus either the difference or the sum of the readings. The MSP transmitters used in this application are HART/SMART and are connected in series on a simple two wire bus.

## Set-up procedure



# Level

## Controller technical specification

Electrical	ATEX certified	UL Certified
Supply	AC: 98 - 132Vac, 198 - 254Vac 50/60Hz, Power consumption: 10VA nom, 18VA max. DC: 15-30V dc / 9W max.	As ATEX  N/A
Current input	4-20mA and/or HART Digital comms (Rev. 5) Supplies 23 Volts from 400Ω source resistance	✓
Trigger inputs	2 voltage free contact closures	✓
Current output	4-20mA isolated into 1 Kohm (12 bit)	✓
Relays	5 SPCO, 5A at 240V ac	✓
Cable entry	5 positions pre-drilled. 2 glands and 3 blanking plugs provided	✓
Cable connection	<i>Wall mount:</i> Cage clamp terminal blocks in separate terminal compartment <i>Panel mount:</i> 2 part cage clamp terminal blocks at rear	✓
Mechanical		
Material	<i>Enclosure &amp; keypad:</i> Polycarbonate	✓
Size	<i>Wall mount:</i> 213mm/8.72" wide x 185mm 7.28" high x 84mm/3.3" deep <i>Panel mount:</i> Cut out 139mm 5.47" wide x 69mm/2.7" high. Allow 165mm/6.5" clearance behind panel	300w x 300h x 133d (122 x 12" x 5.2")
Enclosure rating	<i>Wall mount:</i> IP65 indoor/outdoor <i>Panel mount:</i> IP42 (indoor mount); IP65 Hood kit available	NEMA4X
Environmental	Installation category: 115V: Cat.III, 230V: Cat.II Pollution degree: 2 Altitude: 2000m/6500ft max. Relative humidity: 100%	✓ ✓
Temperature	-40°C to +55°C/-40°F to +130°F (Use of an air circulation fan is recommended if 3 or more panel mounting units are installed in the same cabinet)	✓
Approvals	ATEX II (1) G [EEx ia] IIC	UL: CL1 Div1 Grps A, B, C, D CL1 Zone 0 IIC -40°C to +50°C (-40°F to +130°F)

## Ordering information

MCU901	Control unit for pump control, level, contents & flow duty	
MCU902	Control unit for differential level or summated flow duty	
MCU90F	Control Unit with on-board logging capability for open channel flow duty	
WX	Wall mounting enclosure	
PX	Panel mounting format (not available with UL certificate)	
-A	ATEX certified	II (1) G [EExia]IIC : IP65 enclosure
-U	UL certified	CL1 Div1 Grps A, B, C, D : NEMA 4X enclosure

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### International:

#### Emerson Process Management

#### Mobrey Measurement

158 Edinburgh Avenue, Slough,  
Berks UK SL1 4UE  
T +44 (0)1753 756600  
F +44 (0)1753 823589  
www.mobrey.com

### Americas:

#### Emerson Process Management

#### Rosemount Inc.

8200 Market Boulevard  
Chanhassen, MN USA 55317  
T (US) (800) 999-9307  
T (International) (952) 906-8888  
F (952) 949-7001