

# Micro ML1

## Introduction

The Micro ML1 is a **bi-directional, single meter run**, custody flow computer with an ultra-low power, 32-bit microprocessor. It is primarily used for **Metering** and **Well Injection Testing**.

A **forward and reverse** totalizer is established for the meter run using the DP signal or a digital input for direction indication. In addition, a pulse frequency or 4-20 mA analog signal can be accepted from a **Densitometer**.

An optional **Multivariable Module 205 Sensor** may be integrally mounted to the Micro ML1 to allow accurate determination of **differential pressure, static pressure, and temperature**.



## Micro ML1 Details

### Specification

32 Bit Processor  
7-28 VDC @ 0.5 WATT  
NEMA 7, 4X Class 1 Div. 1  
Group B, C and D Housing

### Display

4 Lines, 20 Characters  
Backlit Display  
Minutes, Hours or Days  
Automatic Scrolling

### Standard Interfacing

Serial Modbus  
(3) Frequency Channels  
(4) Analog Inputs  
(1) Analog Output  
(4) Digital I/O's  
(1) RS-232 Port  
(2) RS-485 ports  
(1) Printer Output  
Rosemount Multivariable-  
DP, Press., & Temp.  
.075 % Accuracy of  
Calibrated Range

**\*\*Input or Output Expansion  
Module available**

### Interrogation Upgrade Options

TCP/IP Encapsulated Modbus  
GSM/ Radio  
Satellite

### Applications

Metering  
Well Injection Testing  
Well Head Measurement  
Custody Measurement  
Allocation Measurement  
Gas Process Plants  
PID Control  
Smart Field I/O

### Standardization

API, ISO, AGA

### Units of Measurement

US Customary

### Metered Products

Saturated Steam  
Crude Oil (5A/6A, 6A, 23A/24A, 24A)  
Refined Products (5B/6B, 6B,  
23B/24B, 24B)  
Specialized Products (6C, 24C)  
LPG (New 23/24, Old 23/34, Old 24)  
Propane/Propylene Mix  
Liquid CO<sub>2</sub> (NIST 14)  
Butadiene (ASTM 1550A/B, 1550B)  
Water  
Propylene (API2565)  
Ethylene (API2565/NBS1045)

### Instrumentation

Orifice Meter (API 14.3/AGA3)  
Turbine/ Freq. Meter (AGA7)  
SmartCone® (Dynamic)  
Other Cone Meters  
Wedge  
Annubar™  
Venturi

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<b>Technical Data- Micro ML1</b>	
<b>POWER</b>	
VOLTAGE RANGE	7-28 VDC
POWER CONSUMPTION	0.5 WATT
<b>OPERATING CONDITIONS</b>	
UNITS	US
TEMPERATURE	- 40 TO 185 °F
HUMIDITY	100%
HOUSING	NEMA 4X CLASS 1 DIV. 1
<b>FEATURES</b>	
DISPLAY	PLASMA 4 LINES 20 CHARACTERS BACKLIT DISPLAY WITH FOUR (4) INFRARED REFLECTIVE SENSORS
PROCESSOR	32-BIT MOTOROLA 68332 @ 16.7 MHz
FLASH ROM	4 MB @ 70 NANO SECONDS
RAM	2 MB @ 70 NANO SECONDS
FREQUENCY INPUT	THREE (3) CHANNELS CHANNELS 1 & 2 ARE SINE/SQUARE WAVE CAPABLE CHANNEL 3 IS SQUARE WAVE ONLY SQUARE WAVE RANGE: 0-6000 HZ SINE WAVE RANGE: 0-1200 HZ SIGNAL > 40 Mv FOR SINE WAVE SIGNAL > 3v FOR SQUARE WAVE
MULTIVARIABLE	BUILT-IN ROSEMOUNT MULTIVARIABLE TRANSMITTER WITH DIRECT SPI DIGITAL CONNECTION. MAXIMUM UPDATE SPEED ONCE EVERY 109 MILLISECONDS.  TEMPERATURE RANGE: - 200 thru 1200 F PRESSURE RANGE: 0 thru 3626 PSIG DP RANGE: 0 thru 250 inches OR 0 thru 1000 inches
ANALOG INPUT	FOUR (4) INPUTS STANDARD EXPANDABLE UP TO NINE (9) ANALOG INPUTS OR SEVEN (7) WITH ADDITIONAL 3-WIRE RTD
ANALOG OUTPUT	ONE (1) 16-BITS OPTICALLY ISOLATED OUTPUT EXPANDABLE TO FOUR (4)
DIGITAL I/O	FOUR (4) DIGITAL INPUTS OR OUTPUTS DIGITAL OUTPUTS HAVE 0.25 AMPS RATING
SERIAL COMMUNICATION	TWO (2) RS-485 @ 19200 BAUDS VARIABLE ONE (1) RS-232 @ 9600 BAUDS VARIABLE ONE (1) PRINTER OUTPUT
COMMUNICATION PROTOCOL	MODBUS