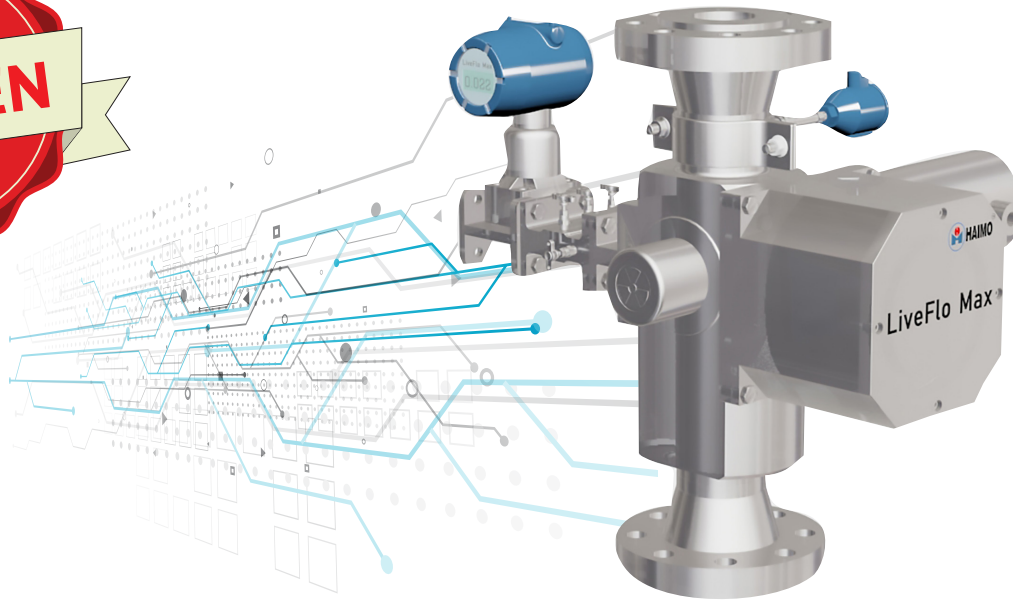


PROOF

LiveFlo™ MAX

Haimo's LiveFlo Multiphase Meter technologies are developed in a very compact design for full range monitoring and testing of oil and gas wells. The meter allows for highly accurate measurements of individual liquid and gas flow rates along with the water liquid ratio (WLR); as also confirmed at independent, third party test facilities.



The LiveFlo Max utilizes the combination of two technologies: Venturi and dual energy γ -ray absorption. By coupling them, the flow rates of oil, gas and water are computed in real time at production conditions. Flow rates at standard conditions are then computed with the line pressure and temperature through our embedded Haimo PVT package.

APPLICATIONS

- Oil / Gas well monitoring & optimization
- Flowback and Production Management
- Allocation metering
- Both land & offshore deployment
- Best choice for Centralized Facilities
- Individual wellhead or test manifold installation

FEATURES

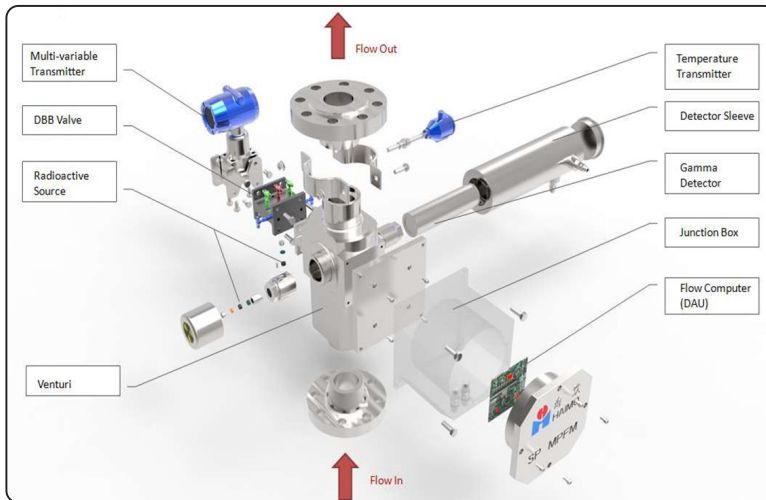
- Inline flow meter, non-intrusive
- Real-time, accurate & repeatable data
- Remote operation & data acquisition
- Low pressure drop & low power consumption

BENEFITS

- Facilitates both CAPEX & OPEX reduction
- Reduces cost of production facilities
- Can replace larger test separator / per well usage
- Low maintenance - no moving parts
- Simple installation - small footprint & light weight
- Reduces or eliminates Mobile Well Testing Services Needs
- Reduces production monitoring activities in hazardous areas
- Facilitates early detection of water breakthrough
- High Accuracy and True Real-Time Flowing Data
- Real-time Production Optimization for Gas Lift Systems
- Real-time Performance Monitoring for ESP and Pump Jack Systems

PROOF

MECHANICAL & ELECTRICAL SPECIFICATIONS



Meter Inlet Dimension	1.5" to 6"
Flange Connection	ANSI 150# to 2500#
Venturi Material	SS, DSS, Inconel, Hast-C
Gamma source	Am ²⁴¹ or Ba ¹³³
Electrical Certification	EEx d II BT4/T6
Hazardous Area Certification	UL Certified - Class I, Div I or Div III
Ingress Protection	(IP) IP 65/66
Communication Ports	RS-232/485 Ethernet
Communication Protocol	MODBUS RTU /TCP
Remote Access	4G/LTE, Satellite
Power Supply Voltage	24 V DC / 110 V AC

PERFORMANCE SPECIFICATIONS

Confidence Level= 95%, k=1.96

Gas Volume Fraction	Reference Uncertainty*	
0~95%	Liquid Flow Rate (Rel)	5%
	Gas Flow Rate (Rel)	5%
	Water Cut (Abs)	2%
95-100%	HC Flow (Rel)	5%
	Gas Flow (Rel)	3%
	Water Volume Fraction (Abs)	0.5%
Repeatability		1/3 of %

*At operating pressure ≥ 290 PSI (20 bar) - HC Flow Rate (Rel) error can be 5-10% if operating pressure < 100 psi

TYPICAL OPERATING RANGE

Water Liquid Ratio	0 to 100%	
Gas Volume Fraction	0 to 100%	
Operating Pressure	0 to 350 bar	0 to 5000 psi
Operating Temperature	-50 to 150 deg C	-58 to 300 deg F
Liquid Range	47 m ³ /d to 7,750 m ³ /d	400 to 65,000 BPD*
Gas Range	685 m ³ /d to 10,300 m ³ /d	0.2 to 36 MMscfd*

* Max. value 6" and min. value 1.5", Oil Density 850 kg/m³, Gas Gravity 0.7 Line P=10 bar and rP=5 bar



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LiveFlo™ MAX
Multiphase Metering Solutions