

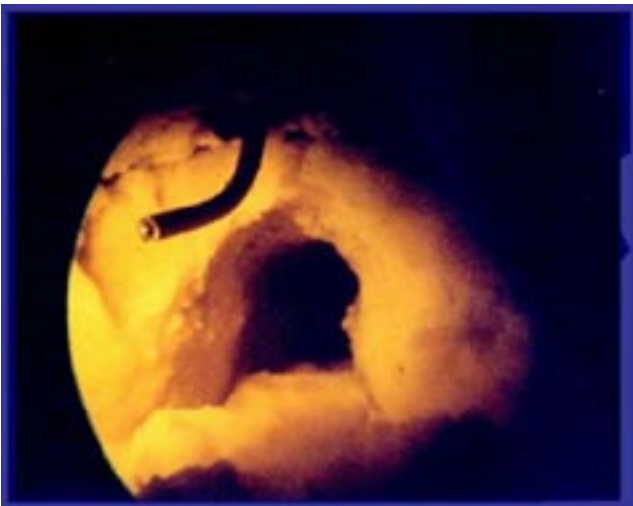


AGAR CORPORATION

Process Measurement & Control



Hydrate Detection HD-101





HD 101 Provisional Specification Data Sheet - Hydrate Detector

Principle of Operation:

Measurement of the water cut and hydrate presence is performed by measuring the complex permittivity properties of the flow stream using the multiple high frequency method. This method will compensate for the effect of changing hydrocarbon composition and water salinity while providing two unique outputs, one for water cut, the second for hydrate concentration.

Configuration:

The HD-101 is a Spool Piece design available for 1" to 4". The sensor should be mounted in a location where the fluid will be well mixed. The spool piece is available in a straight through, single, or double Elbow design.

Typical Applications:

Pipeline BS&W measurement and hydrate detection for pipelines. Hydrate presence can impair fluid flow and require regular pigging. Low Dosage Hydrate Inhibitor or Methanol injection is used to impair hydrate formation. By detecting presence of hydrate, LDHI or methanol injection can be optimized.

Measurement Capabilities & Accuracy:

Model	Range	Water Absolute Accuracy
HD-101	0 to 5%	±0.05%
	0 to 10%	±0.1%
	0 to 20%	±0.2%
	0 to 100%	±2.0%
Hydrate Repeatability:		±1.0%

Approximate Dimension:

Electrical enclosure: Diameter: 6", Length 12"

Flange to Flange: Strait Through: 24"

Single Elbow: 12" from bottom flange to center line of elbow flange

Double Elbow: 16" from center line to center line of flanges

Pipeline Sizes:

Spool Design: 1" – 4"

Flange Rating: 150#, 300#, 600#, 900#, 1500# Consult factory for others

Maximum Pressure: 5000PSI

Shipping Weight: Approximately 25 lbs (For 2" ANSI 150#)



Data Output / Input:

Standard:

- Analog Output: Two analog 4-20 mA for water cut and hydrate or flow (with flow meter input).
4-20 mA output is powered by external power or internal
- Input Data: Flow; 1 pulse or frequency (0-5 to 0-30 V <2KHz) or 1 analog (4-20 mA)
- User Communication: Hart protocol or Modicon Modbus protocol via RS232, RS422 or RS485
- Update time: 1.0 sec.
- Net Oil, Net Water, Total Flow, Flow Rates accessible via Modbus and display are calculated when flow rate input is provided
- Display with four lines: % Water, Temperature, Total Oil, Total Water or Flow rates configurable

Options: Pulse or Relay: 3- SPST relay isolated output (30V - 0.5a) – Selectable for totalizer or alarm

Configuration:

Configuration can be done Local Buttons, via HART, Modbus, and OWMWin software.

Data Storage:

Process (calculated) data can be stored on 1 minute intervals for 10 days and diagnostic (raw signal) data can be stored for 2 days with 1 minute intervals.

Options: Consult factory for additional memory requirements

Process Conditions:

Ambient Temperature: 0°F to 140°F (-15°C to 60°C), Optional -40° to 140°F (-40°C to 60°C with Insulation)

Process Temperature: Standard Model 32°F to 212°F (0°C-100°C), Optional Max. Temp 450°F (232°C),
Consult Factory for higher temperature

Wetted Parts: 316L Stainless Steel; Ceramic, Peek, Viton

Options: Metallic Parts - Duplex, Monel, Hastelloy C

Elastomers - Teflon, PDMA

Other materials – Consult Factory

Vibration: 5g at 500 Hz

Power Supply:

Standard: 12 to 36 VDC +/-15% Isolated, Optional: 110 to 220 VAC, others available upon request

Power Requirements: Less then 6 Watts

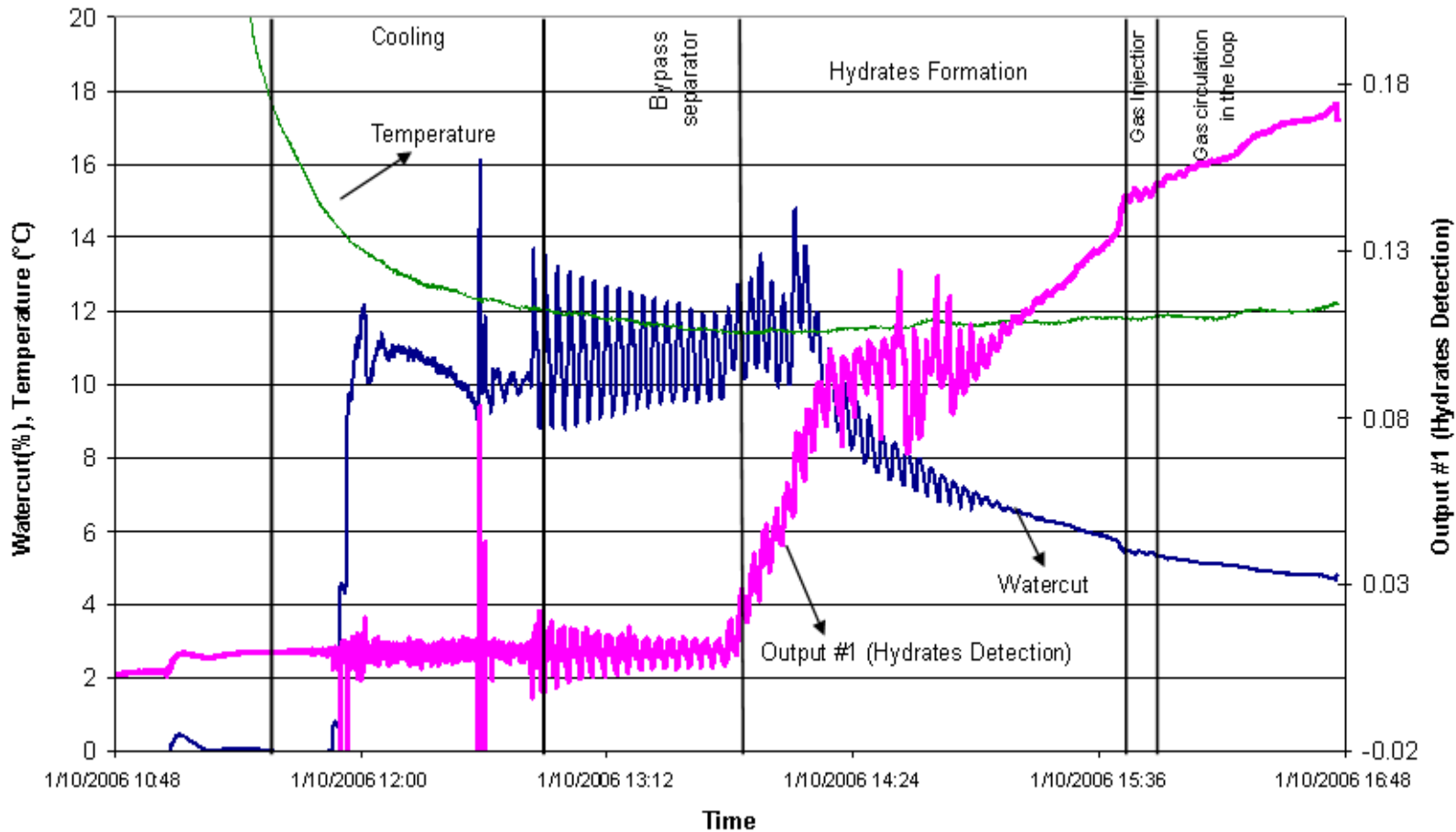
Optional: Solar Powered and Battery Back Up

Hazardous Area Classification:

UL/C-UL - Class 1, Division 1, Groups C & D, T6 - Pending

ATEX - EEx ia IIC T6 - Pending

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Flow data showing hydrate formation. As temperature drops the HD-101 shows higher Hydrate volume and lower water concentration.



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