



Weatherford®

Production Optimization

Optical-Sensor Reservoir Monitoring System RMS and RMS-MR Models

Weatherford's RMS and RMS-MR reservoir monitoring systems are surface data-acquisition systems designed to monitor optical sensors installed in multiple wells and provide Web-enabled accessibility to readings on demand. With considerable local storage capacity, the systems can hold an extensive amount of high-frequency data over broad time periods.

The modular design of these systems allows expansion of the number of pressure and temperature gauges to meet application requirements. Both models accommodate other sensor types, such as distributed-temperature-sensing (DTS) and flow and phase-fraction sensors. In addition, the RMS and RMS-MR systems were designed to be scalable so that sensor interrogation modules can be added as required.

Applications

- Offshore and onshore developments with air-conditioned control rooms
- Multiple-gauge installations
- Permanent DTS monitoring
- Seamless integration with intelligent completion hydraulic control panels



RMS for 18 Gauges



Optical-Sensor Reservoir Monitoring System RMS and RMS-MR Models

Features, Advantages and Benefits

- The operating software is designed for maximum flexibility and requires no custom programming, simplifying operations.
- All output options and setup configurations can be performed at the wellsite for operational efficiency.
- Modular design allows phased expenditure for multi-well and multi-sensor projects, which spreads commercial commitment and client expenditure over time.
- Systems are designed to record data at the highest density, even if only a slow update rate is sent to the production facility's control system—enabling detailed analysis of any production anomalies.
- Systems can be used to support DTS by simply adding a DTS interrogation module and either a 9- or 18-position optical switch. This versatile system can also support up to eight flowmeters and phase-fraction meters by adding a Rheos™ module.
- Passive downhole components facilitate upgrading of the system hardware and software as enhancements become available, improving overall sensing system performance.
- The operator can view real-time and historical data through a Web browser on demand, enabling production optimization.



RMS for 18 Gauges and
8 Flowmeters





Optical-Sensor Reservoir Monitoring System

RMS and RMS-MR Models

Specifications

Cabinet				
Standard Cabinet Sizes	Weight (lb/kg)	Overall Dimensions (in./mm)		
		Height	Width	Depth
20 U	235 106.6	39.37 1,000	23.62 600	23.60 600
33 U	338 153.3	62.99 1,600	23.62 600	31.50 800
38 U	407 184.6	70.87 1,800	23.62 600	31.50 800
42 U	438 198.7	78.74 2,000	23.62 600	31.50 800
47 U	473 214.5	86.61 2,200	23.62 600	31.50 800

Components—RMS				
Item	Weight		Height	
	(lb)	(kg)	(in.)	(mm)
Bragg grating interrogator	6.0	2.7	—	—
Optical subassembly 6 gauges	25.0	11.5	4.00	102
Monitor	18.5	8.4	0.67	17
Keyboard	13.5	6.0	0.50	13
RMS computer	31.0	14.0	2.00	51
Fan	4.0	1.8	2.00	51
UPS	48.0	21.6	2.00	51
Line conditioner	46.0	21.0	3.00	76
Network hub	4.5	2.1	1.00	25
Snap server	19.6	8.9	1.00	25
Rheos™ flow system	134.0	65.0	14.00	356
DTS system	37.0	17.0	7.00	178

Components—RMS-MR				
Item	Weight		Height	
	(lb)	(kg)	(in.)	(mm)
Bragg grating transmitter/receiver	6.0	2.7	4.00	102
Bragg grating receiver	0.9	0.4	—	—
Monitor	18.5	8.4	0.67	17
Keyboard	13.5	6.0	0.50	13
RMS computer	31.0	14.0	2.00	51
Fan	4.0	1.8	2.00	51
UPS	48.0	21.6	2.00	51
Line conditioner	46.0	21.0	3.00	76
Network hub	4.5	2.1	1.00	25
Snap server	19.6	8.9	1.00	25
Rheos™ flow system	134.0	65.0	14.00	356
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Specifications (continued)

Model	RMS	RMS-MR
General Specifications		
Number of P/T gauges monitoring capability*	18	24
Number of flowmeters supported	8/Rheos™ module	
Number of DTS channels supported	9 or 18/DTS switch	
Update rate selectable range	1 sec to no limit	
Storage capacity	>2 yr	
Storage capacity with NAS option	Typically 5 yr	
Units of measure (selectable)	Metric, Imperial, oilfield	

Output Options	
MODBUS®, serial 232, 422, 485, and TCP/IP	ASCII, RTU, master or slave
Simple serial 232, 422, 485	ASCII
OPC 2.0 data access standard	Client and server
Profibus	Optional
Data files by LAN or WAN	Flat-file ASCII, LAS format for DTS
Web-enabled data visualization and transfer	Optional
Direct SQL database access	ODBC Driver

Electrical Power Specifications	
Voltage 110 nominal	90 to 135 V AC, 57 to 63 Hz
Voltage 220 nominal	180 to 255 V AC, 47 to 53 Hz
Maximum current 110	5.0 amp
Maximum current 220	2.5 amp
CE low-voltage directive 73/23/EEC compliant	IEC 60204-1

Environmental Specifications	
Operating temperature range (°F/°C)	41° to 104° 5° to 40°
Shipping and storage temperature range (°F/°C)	-104° to 185° -40° to +85°
Thermal shock	<18°F/hr <10°C/hr
Relative humidity, non-condensing, operating range	10 to 80%
Relative humidity, non-condensing, shipping and storage range	0 to 95%
CE electromagnetic compatibility 89/336/EEC compliant	EN 61000-3-2, 3-3 EN 61326-1
Operational vibration	5 to 100 Hz, 0.1 g, 90 min/axis
Transportation vibration	3.0 grms, random and sine

*20,000-psi (1,379-bar) P/T gauge

MODBUS is a registered trademark of Schneider Automation Inc.



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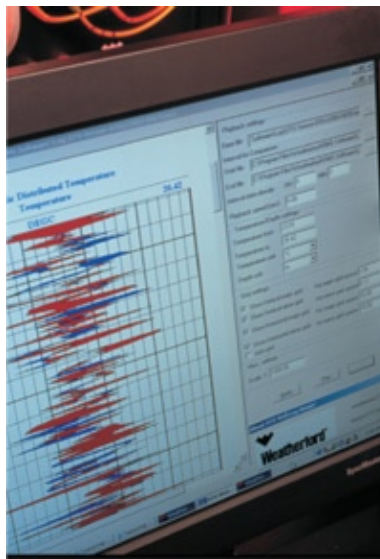
Options

Accessories	
Line conditioner	Universal
UPS	110 or 220
Profibus	Interface card
Cabinet	Standard sizes, custom available
Network-attached storage 240 GB	Quantum Snap 4100
System clock enhancements	Clock card or GPS

Configurations	
Additional Component	Applications
Pressure/temperature gauge	Provides accurate temperature and pressure readings with no measurable drift
Distributed temperature sensor (permanent installation)	Provides continuous monitoring
Distributed temperature sensor (provided as a logging service)	Enables characterization of well performance
Single-phase and multiphase flowmeter	Delivers accurate measurement of downhole oil, gas, and water flow rates on demand
Array temperature sensor	Provides stable, high-resolution distributed temperature readings along areas of interest in the wellbore



Remote Data Monitoring



DTS Log Plotting Software



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This diagram depicts all available RMS options and can be used to configure a system for a specific application.

