



AGAR CORPORATION

OW-300

OW-300 系列分析仪是 Agar 公司继 1985 年向市场首推测量范围 0-100% 含水分分析仪以后的第二代改良产品，是基于微波原理的液/液分析仪。





AGAR CORPORATION

- 1 在线连续测量原油含水量是原油开采、脱水、集输、计量、销售及炼制等过程中亟待解决的问题。若原油含水量测量不准确，将直接影响油井及油层的动态分析；破坏电脱水器中电场，降低脱水效果；给原油集输造成很大的能源浪费；在原油炼制中易引起突沸等恶性事故。
- 2 目前，监测原油含水量的方法较多：有传统的人工取样蒸馏法，有在线测量的电容法，近来又出现了射线法，重力分析法等。传统人工取样蒸馏法费时、费工、随机误差大，越来越不能满足油田生产自动化管理的要求。电容法受介质温度影响及制造工艺的影响，检测误差大，可靠性差。射线法人身安全问题引起用户的质疑，且造价高、使用和维修困难。重力分析法的分析精度还满足不了较高的要求。虽然采用上述方法的原油含水监测仪都有应用，但终因各自的不足使其应用受到限制。
- 3 应用微波法检测原油含水量是目前最先进的一种方法。它的主要特点是：在全量程范围内(原油含水0~100%)测量原油含水量，稳定可靠，且有较高的测量精度，弥补了以往各种测量方法的缺点和不足。经大量的实验及工业现场运行表明：采用该方法研制的原油含水监测仪较好地解决了原油含水在线连续测量的技术问题。



Out with the old过去...



In with the new现在... OW



On line Water content meter

Serie OW :

- OW-301
- OW-302
- OW-201
- OW-202





OW-300 系列含水分析仪，包括 OW-301 和 OW-302 两种，采用复合高频微波法，测量流体电介质性能。不受连续相影响，它们可测量浓度从 0-20% 整个范围烃/水混合物。不同于其它基于微波、密度或电容的测试仪器，AGAR 公司的油/水分析仪是唯一一种精确度不受分析组分盐度、密度、粘度、温度和速度等条件改变影响的仪表。即使在有会影响光学仪器准确性的工艺涂层工况下，高频信号的精确度也不会改变。



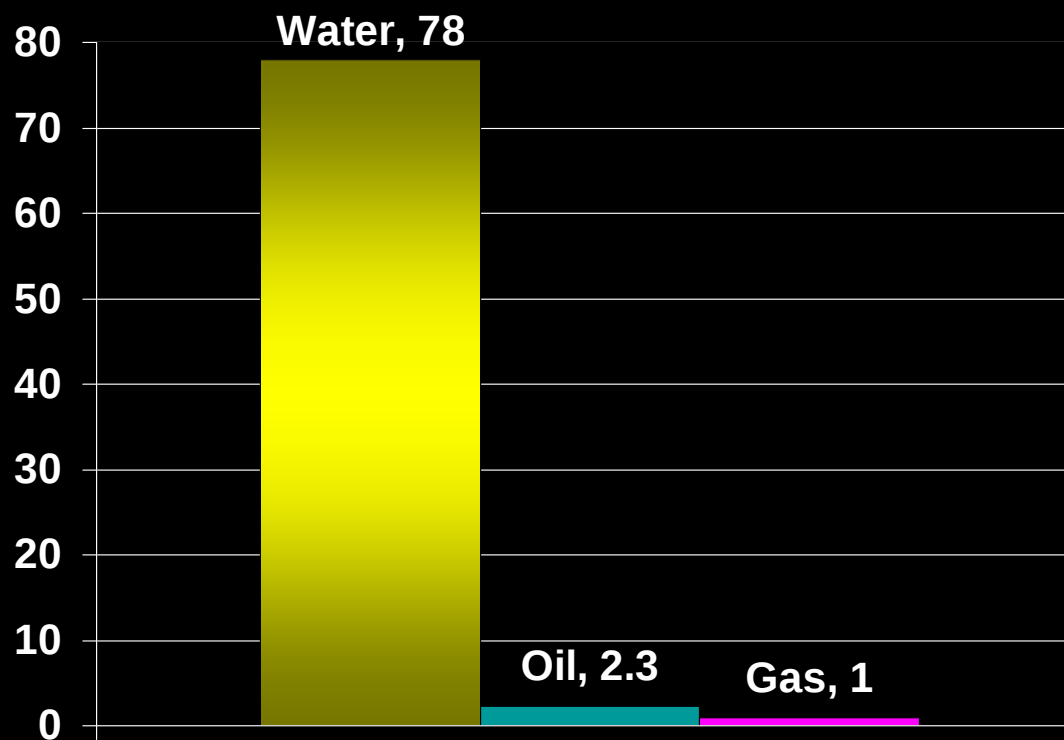
应用:

Crude Oil and finished pipeline monitoring 原油和成品油
管线监测

Glycol and water 乙二醇和水

Aqueous / organic measurement 水/有机物测量

Dielectric constant 介电常数



Basic Mechanical Design 基本机械设计



OW 302 Series

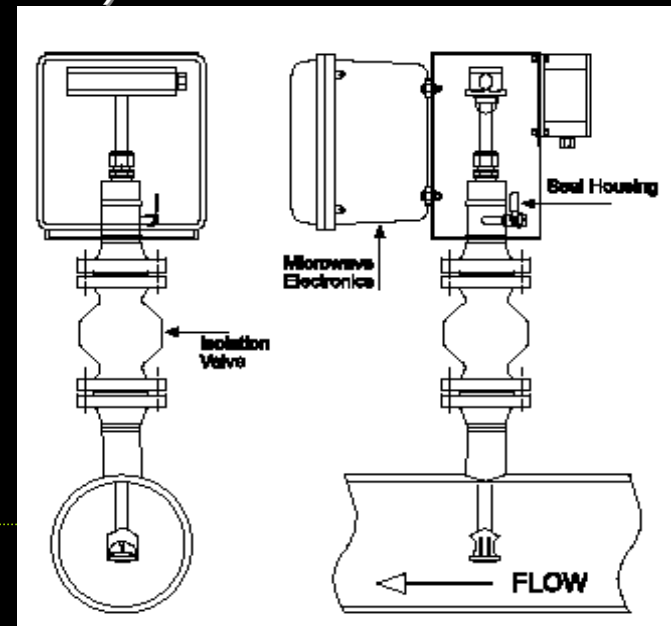
- Potted “puck” mounted on the top of the sensor
密封式变送器安装在传感器顶部
- Separate enclosure for the power supply and customer I/O
分离式的接线盒：供电和用户输入输出点
- Mini-Das single board computer and interface
迷你数据处理系统单板电脑和接口



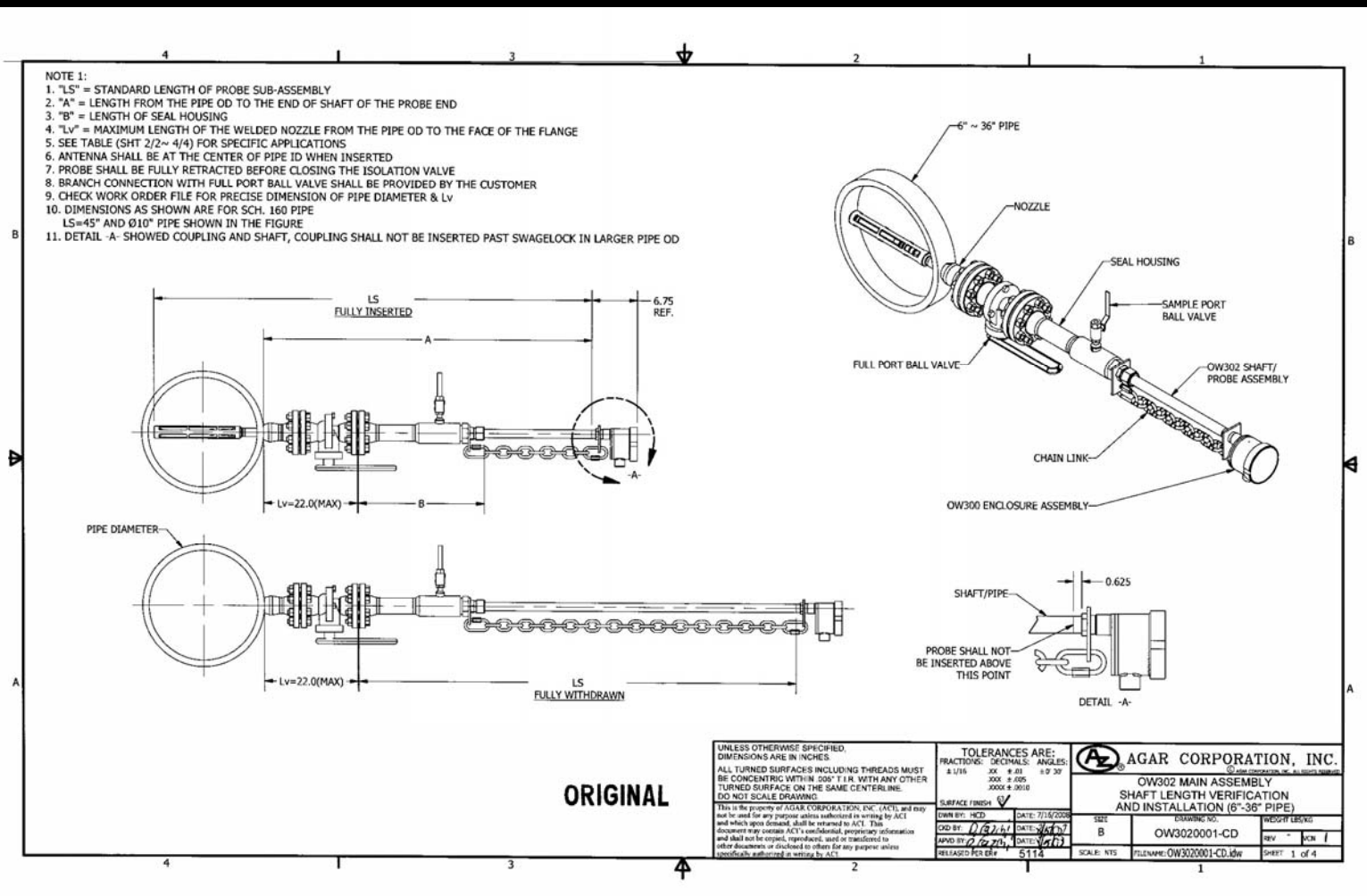
OW Sensor :

Installation 安装:

- According with API MPMS Cap. 8 and ISO 3171.
- It works in any pipe orientation, but it is recommended to install it in a vertical pipe to avoid effects of gravity acceleration on the fluid.
可以在任何管道方位使用，但是推荐安装于垂直管道以避免流体重力加速度的影响
- It could be used as a spool (diameter smaller than 6")
直径小于6"，采用套筒式，OW301
- Pipe insertion (diameter equal or greater than 6").
直接大于6"，采用插入型，OW302



OW 302 – no insertion tool 无插入工具



OW 302 – no insertion tool 无插入工具



NOTE 2:

1. TO DETERMINE UN-INSERTED LENGTH ("A") SEE TABLE BELOW
2. TO LOCATE SHAFT/PROBE ASSEMBLY TO THE CENTER OF PIPE ID, MAINTAIN "A" DIMENSIONS WITH GIVEN TOLERANCES

STANDARD ANTENNA/ PROBE - 2" CUSTOMER CONNECTION

ANTENNA LENGTH	PIPE DIAMETER (in.)	LS=52"	LS=65"	SEAL HOUSING LENGTH w/ APPLICABLE ANSI RATING		
				150#	300#	600#
		A	A	B	B	B
SHORT	6"	47.00 ± .500		13.00	13.00	13.25
	8"	46.00 ± .500		13.00	13.00	13.25
	10"	45.00 ± .500		13.00	13.00	13.25
	12"	44.00 ± .500		13.00	13.00	13.25
	14"	43.50 ± .500		13.00	13.00	13.25
LONG	16"		53.75 ± .500	18.50	18.50	19.00
	18"		52.75 ± .500	18.50	18.50	19.00
	20"		51.75 ± .500	18.50	18.50	19.00
	24"		49.75 ± .500	18.50	18.50	19.00
	28"		47.75 ± .500	18.50	18.50	19.00
	32"		45.75 ± .500	18.50	18.50	19.00
	36"		43.75 ± .500	18.50	18.50	19.00

ORIGINAL

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES.

ALL TURNED SURFACES INCLUDING THREADS MUST BE CONCENTRIC WITHIN .005" T.I.R. WITH ANY OTHER TURNED SURFACE ON THE SAME CENTERLINE. DO NOT SCALE DRAWING.

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TOLERANCES ARE:

FRACTIONS: DECIMALS: ANGLES:
 ± 1/16 .001 ± .01 ± 0° 30'
 .0005 .005 ± 0° 01'

SURFACE FINISH: ☒ 32

DWN BY: HCD DATE: 7/16/2008

CKD BY: J. L. Z. DATE: 8/5/08

APVD BY: J. L. Z. DATE: 8/5/08

RELEASED PER ENR# 5114



AGAR CORPORATION, INC.

OW302 MAIN ASSEMBLY
 SHAFT LENGTH VERIFICATION
 AND INSTALLATION (6"-36" PIPE)

DRAWING NO. OW3020001-CD

WEIGHT LBS/KG

REV - VCN

SCALE: NTS FILENAME: OW3020001-CD.iwd SHEET 2 of 4

OW 302 – no insertion tool 无插入工具



NOTE 3:

1. TO DETERMINE UN-INSERTED LENGTH ("A") SEE TABLE BELOW
2. TO LOCATE SHAFT/PROBE ASSEMBLY TO THE CENTER OF PIPE ID, MAINTAIN "A" DIMENSIONS WITH GIVEN TOLERANCES

STANDARD ANTENNA/ PROBE - 3" CUSTOMER CONNECTION							
ANTENNA LENGTH	PIPE DIAMETER (in.)	LS=52"	LS=65"	SEAL HOUSING LENGTH w/ APPLICABLE ANSI RATING			
				150#/300#	600#	900#	1500#
		A	A	B	B	B	B
SHORT	6"	47.00 ± .500		16.50	17.25	18.00	18.50
	8"	46.00 ± .500		16.50	17.25	18.00	18.50
	10"	45.00 ± .500		16.50	17.25	18.00	18.50
	12"	44.00 ± .500		16.50	17.25	18.00	18.50
	14"	43.50 ± .500		16.50	17.25	18.00	18.50
LONG	16"		53.75 ± .500	18.50	17.25	18.00	18.50
	18"		52.75 ± .500	18.50	17.25	18.00	18.50
	20"		51.75 ± .500	18.50	17.25	18.00	18.50
	24"		49.75 ± .500	18.50	17.25	18.00	18.50
	28"		47.75 ± .500	18.50	17.25	18.00	18.50
	32"		45.75 ± .500	18.50	17.25	18.00	18.50
	36"		43.75 ± .500	18.50	17.25	18.00	18.50

ORIGINAL

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TOLERANCES ARE:
FRACTIONS: DECIMALS: ANGLES:
± 1/16 .001 ± .01 ± 0° 30'
.0005 ± .005 .0005 ± .0010

SURFACE FINISH: ☒ 32
DWN BY: HCD DATE: 7/16/2008
CKD BY: J. B. 7/16/08 DATE: 7/16/08
APVD BY: J. B. 7/16/08 DATE: 7/16/08
RELEASED PER ER# 5114

AGAR CORPORATION, INC. © AGAR CORPORATION, INC. ALL RIGHTS RESERVED			
OW302 MAIN ASSEMBLY SHAFT LENGTH VERIFICATION AND INSTALLATION (6"-36" PIPE)			
SIZE A	DRAWING NO. OW3020001-CD	WEIGHT LBS/KG	
SCALE: NTS	FILENAME: OW3020001-CD.iDW	REV	SHEET 3 of 4

OW 302 – no insertion tool 无插入工具



NOTE 4:

1. TO DETERMINE UN-INSERTED LENGTH ("A") SEE TABLE BELOW
2. TO LOCATE SHAFT/PROBE ASSEMBLY TO THE CENTER OF PIPE ID, MAINTAIN "A" DIMENSIONS WITH GIVEN TOLERANCES

STANDARD ANTENNA/ PROBE - 4" CUSTOMER CONNECTION							
ANTENNA LENGTH	PIPE DIAMETER (in.)	LS=52"	LS=65"	SEAL HOUSING LENGTH w/ APPLICABLE ANSI RATING			
				150#/300#	600#	900#	1500#
		A	A	B	B	B	B
SHORT	6"	47.00 ± .500		17.50	18.50	19.00	19.50
	8"	46.00 ± .500		17.50	18.50	19.00	19.50
	10"	45.00 ± .500		17.50	18.50	19.00	19.50
	12"	44.00 ± .500		17.50	18.50	19.00	19.50
	14"	43.50 ± .500		17.50	18.50	19.00	19.50
LONG	16"		53.75 ± .500	19.50	18.50	19.00	19.50
	18"		52.75 ± .500	19.50	18.50	19.00	19.50
	20"		51.75 ± .500	19.50	18.50	19.00	19.50
	24"		49.75 ± .500	19.50	18.50	19.00	19.50
	28"		47.75 ± .500	19.50	18.50	19.00	19.50
	32"		45.75 ± .500	19.50	18.50	19.00	19.50
	36"		43.75 ± .500	19.50	18.50	19.00	19.50

ORIGINAL

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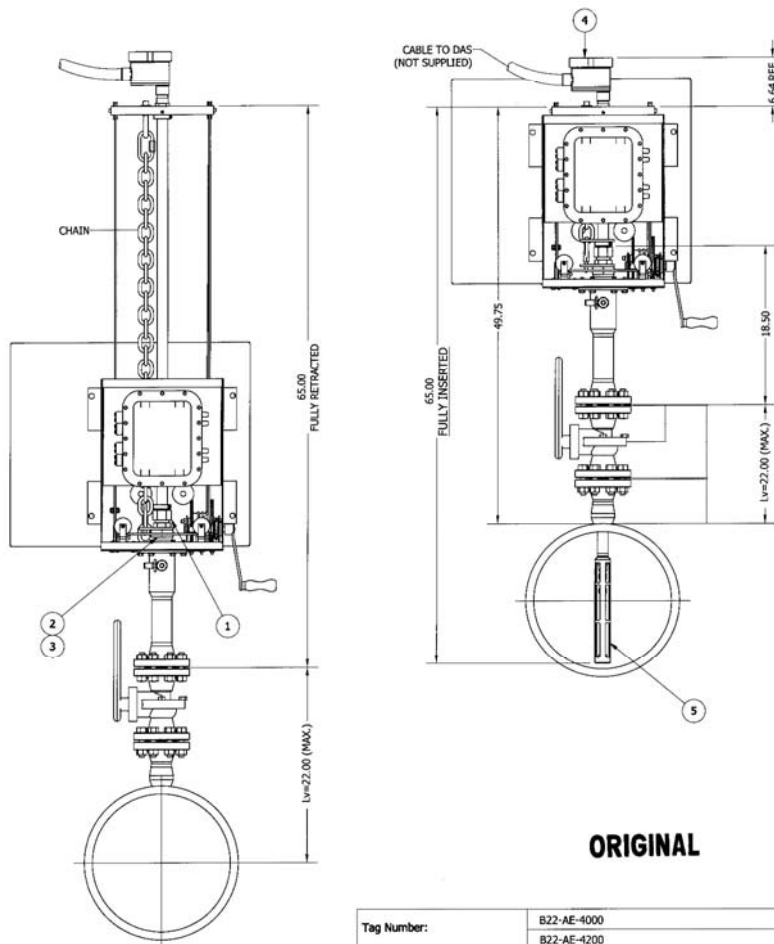
TOLERANCES ARE:
FRACTIONS: DECIMALS: ANGLES:
± 1/16 .005 ± .01 ± 0° 30'
± .005 ± .005 ± .005
± .0005 ± .0010

SURFACE FINISH: ☒ 125
OWN BY: HCD DATE: 7/16/2008
CKD BY: J. J. J. DATE: 7/16/2008
APVD BY: J. J. J. DATE: 7/16/2008
RELEASED PER ER# 5114

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OW302 MAIN ASSEMBLY
SHAFT LENGTH VERIFICATION
AND INSTALLATION (6"-36" PIPE)
DRAWING NO. OW3020001-CD
WEIGHT LBS/KG
REV - PCN -
SHEET 4 of 4
SCALE: NTS
FILENAME: OW3020001-CD.lvw

- NOTE 1:
 1. 65.00" = STANDARD LENGTH OF PROBE SUB-ASSEMBLY
 2. 49.75" = LENGTH FROM THE PIPE OD TO THE END OF SHAFT OF THE PROBE END
 3. 18.50" = LENGTH OF SEAL HOUSING
 4. "LV" = MAXIMUM LENGTH OF THE WELDED NOZZLE FROM THE PIPE OD TO THE FACE OF THE FLANGE
 5. ANTENNA SHALL BE AT THE CENTER OF PIPE ID WHEN INSERTED
 6. PROBE SHALL BE FULLY RETRACTED BEFORE CLOSING THE ISOLATION VALVE
 7. BRANCH CONNECTION WITH FULL PORT BALL VALVE SHALL BE PROVIDED BY THE CUSTOMER
 (3" - 300# CONNECTIONS AS SHOWN)
 8. CHECK WORK ORDER FILE FOR PRECISE DIMENSION OF PIPE DIAMETER & LV
 9. FULL PORT 3" BALL VALVE SHALL BE SUPPLIED BY CUSTOMER
 10. CONSIDER 1/8" THICKNESS FOR GASKET BETWEEN FLANGE CONNECTIONS



ITEM	PART NUMBER
1	M2-0026
2	M0-0016
3	H3-0002
4	OWEC1144
5	OW-3020035

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Tag Number:	B22-AE-4000 B22-AE-4200
Work Order Number:	OR080017
Purchase Order Number:	017229-8539-01
End User:	Saudi Aramco
Reference Work Order:	---
Customer Connection:	3" - 300#
Country of Installation:	SAUDI ARABIA

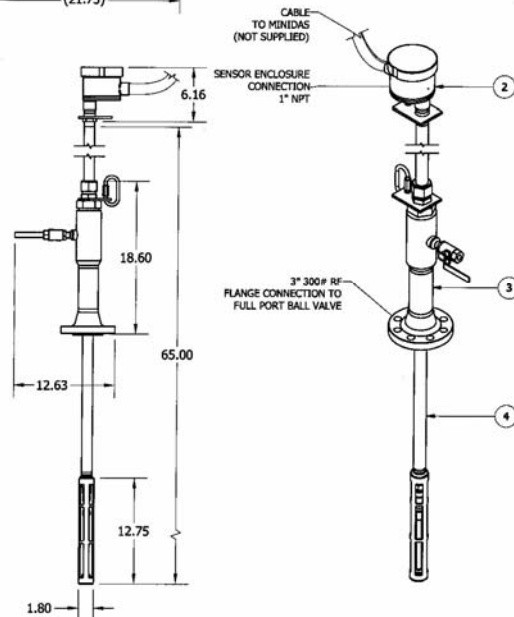
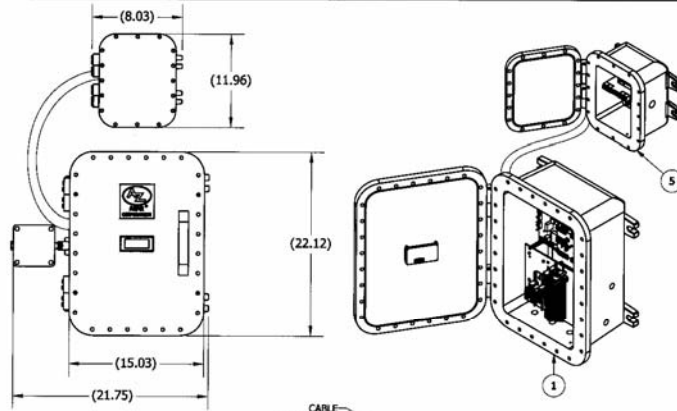
TOLERANCES ARE: FRACTIONS: DECIMALS: ANGLES: ±.100 ±.01 ±.5 ±.005 ±.005 ±.010		AGAR CORPORATION, INC. OW302 MAIN ASSEMBLY SHAFT LENGTH VERIFICATION AND INSTALLATION (24" PIPE)	
SURFACE FINISH: ☒ V		SIZE: B	REV: 3
OWN BY: MCD	DATE: 8/18/2004	DESIGNED BY: B	REVISED BY: B
CHK BY: S	DATE: 8/15/04	OW3020000-CD1	REV: 3
APVD BY: S	DATE: 8/15/04	OW3020000-CD1.dwg	SHEET 1 OF 1
RELEASED PER DRW: 5006	SCALE: NTS		



OW 302
 with insertion tool
 管道压力大于
 80PSI (5.5公斤)
 机械插入设备



OW 302 – with DAS 数据采集分析系统



NOTES:
1. 3" 300# RF FLANGE USED ON THIS FIGURE
AS SHOWN FOR 20" PIPELINE

Tag No.
024-AIT-3301

Order #: OR080277
PO #: 32757-024-IN-7260-PO
Customer: SK ENGINEERING & CONSTRUCTION
End User: KOC-KUWAIT
Project: Building New Gathering Center GC-24 at
Sabriyah Field North Kuwait

Parts List			
ITEM	QTY	DESCRIPTION	MATERIAL
1	1	OWM MINIDAS ENCLOSURE ASSEMBLY	CAST IRON
2	1	OW300 SENSOR ENCLOSURE SUB-ASSEMBLY	HASTELLOY
3	1	ID 202 SEAL HOUSING ASSEMBLY	SST
4	1	SHAFT/PROBE SUB-ASSEMBLY	SST
5	1	BARRIER ENCLOSURE SUB-ASSEMBLY	CAST IRON

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TOLERANCES ARE:
FRACTIONS: DECIMALS: ANGLES:
± 1/16 .005 ± 1° 30'

SURFACE FINISH: ☒ 32 ☐ 63 ☐ 125 ☐ 250 ☐ 500 ☐ 1000 ☐ 2000 ☐ 4000 ☐ 8000

AGAR CORPORATION, INC.
OW302 MAIN ASSEMBLY
STANDARD LONG ANTENNA
DIMENSIONAL DRAWING

DATE: 06/23/08
DWG BY: AS
CHKD BY: [Signature]
APP'D BY: [Signature]
RELEASED PER: 5108

SIZE: B
SCALE: NTS
FILENAME: OW3020002-CD1.dwg
SHEET: 1 of 1

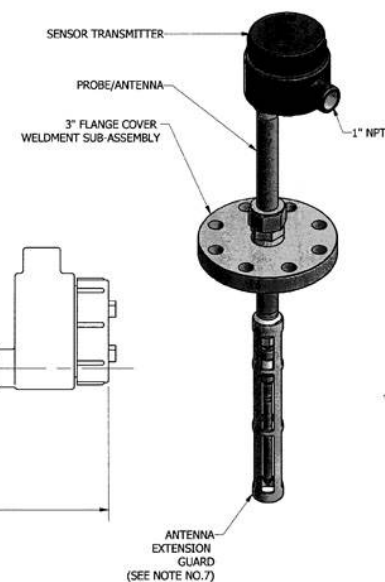
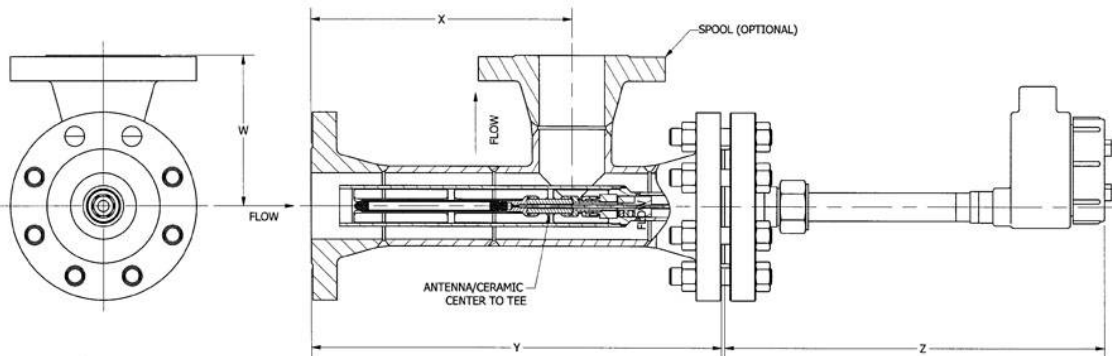
ORIGINAL

OW 302



RECOMMENDED SPOOL DIMENSIONS AND PRESSURE RATING:

NOM. PIPE DIA.	ANSI RATING											
	150 LBS.				300 LBS.				600 LBS.			
	W	X	Y	Z	W	X	Y	Z	W	X	Y	Z
2"	5.13	12.25	17.38	16.63	5.38	12.00	17.38	16.38	5.50	11.88	17.38	16.25
3"	6.25	12.13	18.38	15.50	6.63	11.75	18.38	15.13	6.75	11.63	18.38	15.00
4"	7.25	14.63	21.88	14.50	7.63	14.25	21.88	14.13	8.25	13.63	21.88	13.50
	900 LBS.				1500 LBS.							
2"	6.63	10.75	17.38	15.13	6.63	10.75	17.38	15.13				
3"	7.50	10.88	18.38	14.25	8.13	10.25	18.38	13.63				
4"	8.75	12.63	21.38	13.00	9.13	12.25	21.38	12.63				



NOTES:

1. ALL PIPING SHALL BE IN ACCORDANCE WITH ANSI/ASME B31.3 & NACE MR0175
2. PRESSURE TEST IN ACCORDANCE WITH THE ASME/ANSI B16.5
3. ASSEMBLY SHOWN IS 3" PIPE, 300# ANSI RATING FLANGE CONNECTIONS
4. MATERIAL WILL BE STAINLESS STEEL 316
5. CONSIDER 1/8" THICKNESS FOR GASKET BETWEEN SPOOL AND SPOOL COVER
6. **OVERALL LENGTH OF PROBE/ANTENNA SHALL BE 30.50" WITHOUT GUARD; WITH GUARD SHALL BE 31.25"**
7. NOMINAL PIPE DIAMETER 2" WILL NOT HAVE A GUARD ON ANTENNA EXTENSION
8. SPOOL SUB-ASSEMBLY AND FASTENERS SHALL BE AN OPTION BY CUSTOMER
9. RECOMMENDED SPOOL DIMENSIONS WITH RESPECTIVE PRESSURE RATINGS ARE PROVIDED FOR REFERENCE ONLY
10. BREAK VIEW IS SHOWN FOR CORRECT LOCATION OF PROBE/ANTENNA CERAMIC
11. SPOOL WELDMENT SPECIFICATIONS SHALL BE SCHEDULE 80 ON ALL FITTINGS AND RFWN FLANGES FOR ALL DESIRED PRESSURE RATINGS
12. WELD IN ACCORDANCE WITH ANSI/ASME B31.3.
13. ALL FLANGE BOLT HOLES ARE TO STRADDLE COMMON CENTERLINE.
14. ALLOW 1/8" GAP AT EACH BUTTWELD JOINT TO PROVIDE A MOMENT CONNECTION.

ORIGINAL

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TOLERANCES ARE:
FRACTIONS: DECIMALS: ANGLES:
± 1/16" ± .01" ± 0° 30'
± .005" ± .005" ± .0010"

SURFACE FINISH: ☒ 125
DWN BY: HCD DATE: 4/2/2009
CND BY: B. G. L. DATE: 4/6/10
APVD BY: B. G. L. DATE: 4/5/10
RELEASED PER ENR 4789

AGAR CORPORATION, INC.
OW301 MAIN ASSEMBLY,
150# - 1500# ANSI RATING
DRAWING NO.
OW3010004-CD
SCALE: NTS
FILENAME: OW3010004-CD.idw
SHEET 1 of 1

OW 300 Series Data Sheet – pages 1 and 2



AGAR CORPORATION

Process Measurement & Control



OW 300 Series Watercut Monitors *Liquid/Liquid Concentration*

DESCRIPTION

The AGAR OW-300 Series watercut monitors measure liquid-in-liquid concentrations by measuring the complex permittivity properties of the flow stream using a multiple high frequency method. Typical applications include crude oil and finished product pipeline monitoring, water in slop oil, glycol and water, and aqueous/organic measurement. The OW-300 series is the third-generation design, liquid/liquid analyzer developed by Agar Corporation. Agar introduced the industry's first 0-100% water cut monitor to the market in 1985.

System Configuration

The OW-300 system consists of a primary probe, the measurement electronics, and a data analysis system (DAS) that can be remotely mounted from the field sensor. The OW-300 probe is offered in a spool type configuration and insertion type assembly.

The instruments are calibrated using Windows based software from a laptop computer. The software is also used for troubleshooting, viewing trends, and retrieving historical data.

The OW-300 series utilizes a combination of explosion proof type enclosures and intrinsically safe electronics that provide signal outputs/inputs to the probe. The DAS is also a flow computer that can provide net oil, net water and flow rates when a flow meter input is supplied. The data system is transmitted with 4-20mA signals, HART and Modbus.



TYPICAL APPLICATIONS:

- Pipeline BS&W measurement for refined products
- Crude pipelines
- Desalter crude feed
- Well testing
- LACT units
- Separation control
- Shipping terminals

www.agarcorp.com

All Agar Corporation Instruments are covered by one or more of the following U.S. Patents: 4,503,383; 4,774,680; 5,099,697; 5,101,163; 5,101,367; 5,263,363; 5,503,004; 5,551,305; 5,589,642; 5,741,977, RE 36,597. Other patents pending in the USA and other countries.



OW-301 Spool Piece Design

Sizes: 1" to 4"

DESCRIPTION

The AGAR OW-301 is a Spool Piece design available for 1" to 4" flow lines. The sensor should be mounted in a location where the fluid will be well mixed (normal recommendation is vertical flow upwards). The spool piece is available in an "L" or "S" shaped upwards).

The design. In addition, the OW-301 will have a stable performance in common pipelines when the fluid composition changes regularly.

The AGAR OW-300 measures hydrocarbon/water mixtures over the range of 0-40%, water (oil continuous emulsions). The Agar OW-301 accuracy of measurement will not be affected by changing salinity, density, viscosity, and temperature of the components being analyzed.

SYSTEM CONFIGURATION

The OW-301 system consists of a in-line probe, the measurement electronics, and a Data Analysis System (DAS) that can be remotely mounted from the field sensor. The probe is offered in spool type configuration.

PHYSICAL DIMENSIONS

Electrical Enclosure	Diameter: 6" Length: 12"
Spool Design	for 1" to 4" pipeline sizes
Flange Rating	150#; 300#; 600#; 900#; 1500# Consult factory for others
Maximum Pressure Rating	5000PSI
Shipping Weight	Approximately 25lbs for 2" ANSI 150#



"L" Shaped Configuration

World-Class Process Measurement & Control Solutions

OW 300 Series Data Sheet – pages 3 and 4



OW-302 Insertion Type



DESCRIPTION

Unlike other microwave, density or capacitance based instruments; Agar's OW series are the only devices in which the accuracy of the measurement is not affected by changing salinity, density, viscosity, temperature or velocity of the components being analyzed. The high frequency signal will maintain accuracy in the presence of process coatings that would be detrimental to optical instruments.

Sizes 4" and above

The Agar patented "seal-housing" connects to the isolation valve. After installation, the OW-302 probe is inserted through the valve and nozzle into the flow line. Agar's OW-302 monitor features an insertable sensor with a seal housing for installation and retraction while the pipeline is in service and under pressure for flow lines 6" and larger. An insertion tool is available for insertion into high pressure lines. The sensor has a blow-out preventer to ensure that the sensor is not removed from the seal housing without the isolation valve being closed.

SYSTEM CONFIGURATION

The OW-302 system consists of a primary insertion-type probe, the measurement electronics, and a Data Analysis System (DAS) that can be remotely mounted from the field sensor. The probe is offered in an insertion type assembly. The OW-302 probe is mounted perpendicular to the flow in a vertical section with ascending flow at a point where the fluids are well mixed to ensure proper measurement. Common installation requires a 2" full port isolation valve connected directly to the nozzle on the flow line.



PHYSICAL DIMENSIONS

Electrical Enclosure	Diameter: 6" Length: 12"
Probe Diameter	1.25" diameter shaft 1.8" diameter sensor
Probe Length	Active Length: 6" to 12" to match the diameter of the pipe Overall Length is determined by the pipe diameter, nozzle, and valve size with standard lengths
Insertion Design	for 6" and larger pipeline sizes Process connection minimum 2" full port ball or gate valve 2" schedule 80 or larger ID nozzle
Flange Rating	150#; 300#; 600#; 900#; 1500# Consult factory for others
Maximum Pressure Rating	5000PSI
Shipping Weight	Approximately 25lbs for 2" ANSI 150#
Insertion Tool	Recommended for OW-302 when operating pressure is over 60PSI and flange rating is 600# or less

PROCESS CONDITIONS

Ambient Temperature	0°F to 140°F (-15°C to 60°C) Optional Low Temp -40°F to 140°F (-40°C to 60°C) with insulation
Process Temperature	Standard Model 32°F to 212°F (0°C to 100°C) High Temperature Model 32°F to 450°F (0°C to 232°C)
Wetted Parts*	Stainless Steel; Ceramic; PEEK; Viton
Options	Metallic parts: Duplex, Monel, Hastelloy, Elastomers - Teflon, PDMA
Vibration	5g at 500 Hz

* Consult factory for other available materials

MEASUREMENT CAPABILITIES & ACCURACY

Model	Range*	Absolute Accuracy	Repeatability of Span
OW-301/302	0 to 1%	±0.05%	±0.1%
	0 to 5%	±0.05%	±0.1%
	0 to 10%	±0.1%	±0.1%
	0 to 20%	±0.2%	±0.1%

* Water Concentration. Contact Factory For Additional Range Options

POWER SUPPLY

Standard: 12 to 36 VDC ± 15% Isolated Optional: 110 to 220 VAC
Others available upon request
Power Requirements: less than 6 Watts

Optional: Solar powered and battery back-up

SAFETY CERTIFICATION

ATEX: Sensor - (Ex) II 1G Ex ia IIB T4 (-20°C<Ta<60°C)

DAS Enclosure - (Ex) II 2 G Ex d[ia] IIB T6 (-20°C<Ta<60°C)

Barrier Enclosure - (Ex) II 2 G Ex d[ia] IIB + H2 T6 (-20°C<Ta<50°C)

UL/C-UL - Class 1, Division 1, Group C&D, T6 (Pending)

DATA OUTPUT/INPUT

Standard

Output Data: Oil/water concentration, error status, and temperature standard.
Input Data: Flow; 1 pulse (0-5 to 0-30 V <2KHz) or 1 analog (4-20 mA)
User Communication: RS-232/422/485 Full Duplex Protocol: Standard N/C - ASCII or Modicon Modbus.
Update time: 1.0 sec

If customer's flow meter input provided, Net Oil, Net Water, and Flow Rates are calculated.

Display with four lines: %Water, Temperature, Total Oil, Total Water or Flow rates configurable

Options

Pulse or Relay: 3-SPST relay isolated output (30V - .05a) - Selectable for totalizer or alarm

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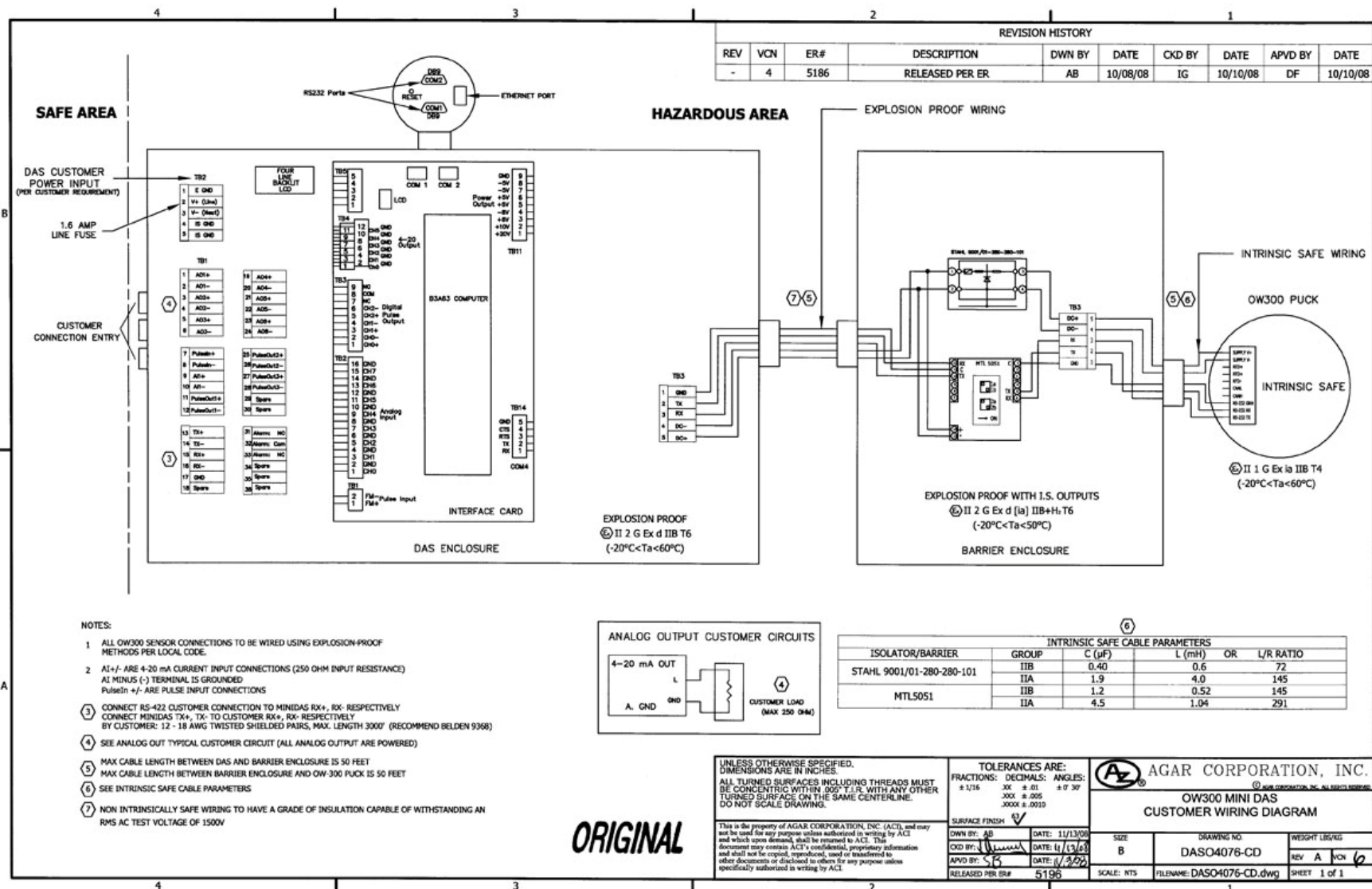


AGAR CORPORATION
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Customer Wiring 用户配线





FACTORY ACCEPTANCE TEST (FAT) PROCEDURES 工厂测试验收程序

Calculations 计算



- The OW-300 uses an L-C-R oscillator circuit to measure the properties of the fluid. 使用L-C-R谐振电路测量流体特性
- Each “data point” consists of resonant frequency and a peak voltage measurement. 每个数据点包括谐振频率和峰值电压测量
- For a single water cut measurement we take 8 “data points” 8点测量
 - High Frequency Water Continuous Reference
 - High Frequency Oil Continuous Reference
 - High Frequency Water Continuous Sensor
 - High Frequency Oil Continuous Sensor
 - Low Frequency Water Continuous Reference
 - Low Frequency Oil Continuous Reference
 - Low Frequency Water Continuous Sensor
 - Low Frequency Oil Continuous Sensor

Test Application Details Screen Shot

测试应用细节画面



OWM300 Test Application

Command Info System Diagram Comm List DDS/RES Test Graph Table **Efim** OW-300

Save

Number of samples to take
30

1.412 - 1.997

Set Dry Oil Reference

Set Loop Concentration

Loop Concentration
0

Single Step

Load Eps Dry Oil Delta

Set Temp Correction 1 Values

☒ Celcius
☒ Grid Lines
☐ Autosave Loop Data

Time 2/8/2007 11:40:41 AM

	High Freq		Unit	Low Freq		Unit	E tbi	E ef HFC	E ef LFC	RawTemp
	Inst			Inst						
Chip Temp	22.869		degrees				0.000	0.000	0.000	17.931
Int Temp	24.224		degrees							
Ext Temp	17.632		degrees							
ref 3200 Fo	285.062	285.062	kHz	20.600	20.600	kHz				
ref 3200 raw	35922	285.064	Fcounts	62133	20.600	Fcounts				
ref 3200 pkCnt	1681	0.980	Acounets	2424	1.422	Acounets				
ref 3200 pkAmpl	0.979	0.980	Volts	1.423	1.422	Volts				
ref 90 Fo	1884.951	1884.968	kHz	131.187	131.189	kHz				
ref 90 raw	43460	1884.973	Fcounts	9757	131.190	Fcounts				
ref 90 pkCnt	993	0.569	Acounets	2073	1.217	Acounets				
ref 90 pkAmpl	0.569	0.569	Volts	1.218	1.216	Volts				
sens W/C Fo	2044.728	2044.728	kHz	141.233	141.233	kHz				
sens W/C raw	40064	2044.724	Fcounts	9063	141.233	Fcounts				
sens W/C pkCnt	793	0.449	Acounets	1518	0.880	Acounets				
sens W/C pkAmpl	0.450	0.450	Volts	0.879	0.880	Volts				
sens OC Fo	2044.779	2044.738	kHz	141.233	141.233	kHz				
sens OC raw	40063	2044.727	Fcounts	9063	141.236	Fcounts				
sens OC pkCnt	795	0.450	Acounets	1514	0.880	Acounets				
sens OC pkAmpl	0.451	0.450	Volts	0.880	0.880	Volts				
Loop Conc	0.000									
Loop Temp	0.000									
Loop Flow	0.000									
Loop ID	0.000									
Loop Press										
Water Cut	0.000									

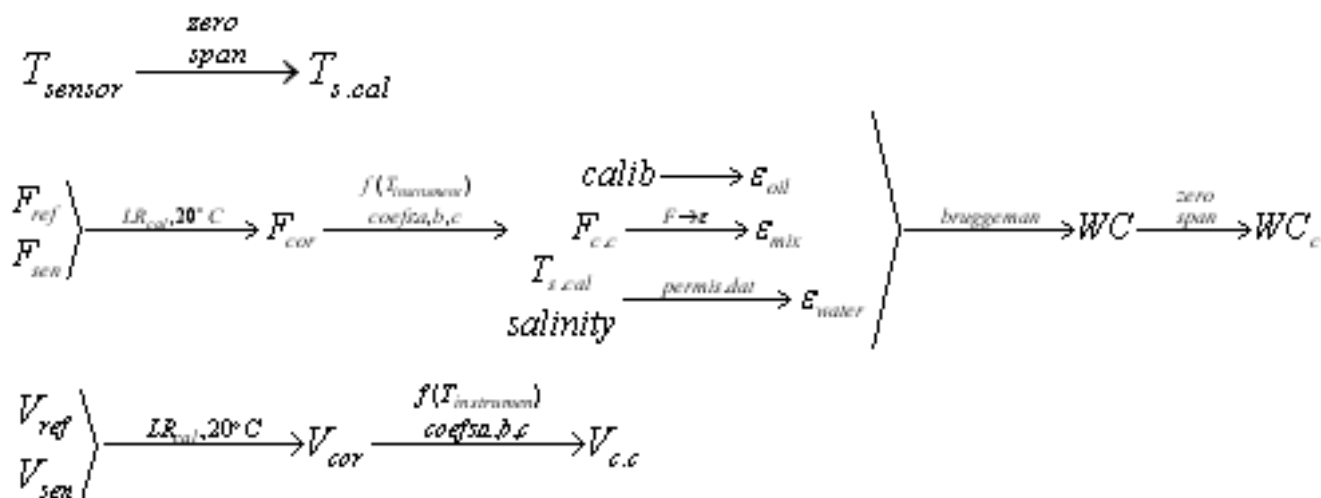
OWM300 Test Application - Alert Message - Function : CalcwCutZShift - Description: Invalid procedure call or argument - Source:

OWM 300 Operation and Calibration

操作和标定



- The following figure shows the general method of using various calibrations and calculations to get from the raw measured sensor and reference resonant frequency at high and low frequency: $F_{hf.sen}, F_{hf.ref}, F_{lf.sen}, F_{lf.ref}$
- Peak voltage: $V_{hf.sen}, V_{hf.ref}, V_{lf.sen}, V_{lf.ref}$
- Instrument temperature: $T_{instrument}$
- Sensor temperature: T_{sensor}
- Final calibrated water cut measurement: WC_c



Test Application Summary Screen Shot

测试应用总结画面



OWM300 Test Application

Command Info System Diagram Comm List DDS/RES Test Graph Table Efim

 **Agar Corporation**

ISO-9001 Certified Firm 



Corrected Water Cut	-31.97 %
Uncorrected Water Cut	-32.28 %
Instrument Temp	24.3 °C
Stream Temp	23.6 °C
Fluid Group	Crudes

Advanced...

OWM300 Test Application - Alert Message - Function : CalcWCutZShift - Description: Invalid procedure call or argument - Source:

Automatic Zero Shift Compensation

自动零点漂移补偿



8-Feb-07								
						water cut, %		
product		fluid				corrected	uncorrected	
refined		50w oil dry				0.06	0.12	
refined		50w oil 1%WVC				0.99	1.03	
refined		kerosene40-50woil60 dry				-0.14	-1.05	
refined		kerosene40-50woil60 1%WVC				0.96	-0.03	
crude		crude #4				-0.10	-1.15	
crude		crude #5				0.19	0.78	
crude		crude #6				-0.20	0.64	

OW 300 Puck Construction结构



- Currently less than 1W total power 总功率小于1W
- Resonant Circuit 谐振电路
- CPU 中央处理器
- Power Supply 供电



Thank You! 谢谢!