

H₂Oil Analyzer System

70-82-03-41
12/01

Measurements:

- Percent Water in Oil
- Process Temperature
- Continuous Phase

Specification and Model Selection Guide



Figure 1 — Breakthrough technology allows the Honeywell H₂Oil Analyzer System to provide accurate and repeatable measurements of water in oil through the entire composition range of 0 to 100 percent water.

Key Features

- In-line, accurate, real-time measurement of % water in oil
- One model for continuous, accurate measurement from 0 to 100%
- Compensated for temperature and salinity effects
- Superior sensor design tolerant to sand, grit and entrained gas
- 100 mS update rate
- 2, 3, 4, 6 and 8-inch spools with up to 155 meters between analyzer and measurement spool
- Local Operator LCD interface
- Insensitive to normal paraffin build-up
- Multiple Analog and Digital I/O configurations
- Analog and/or digital Modbus (RS-232 or RS485) output

H₂Oil Analyzer System – Application Overview

Honeywell's **H₂Oil Analyzer System** is ideal for the Oil and Gas Industry. In all types of petroleum production, knowing and controlling the water oil content improves the efficiency of oil recovery, maximizes oil quality by improving the dehydration process, and minimizes transport of water.

The **H₂Oil Analyzer System** is an in-line device that accurately measures water in continuous water phase or continuous oil phase conditions through the entire composition range of 0 to 100% water.

The **H₂Oil Analyzer** is designed specifically for use in the petroleum recovery industry and can be used to measure the amount of water in oil for the following applications, (as shown in Figure 2):

- Well Test Separator Output
- Flow Station Production Output
- De-watering Confirmation
- Tank Farm Management
- Pipeline Monitoring
- Custody Transfer and Sales Oil

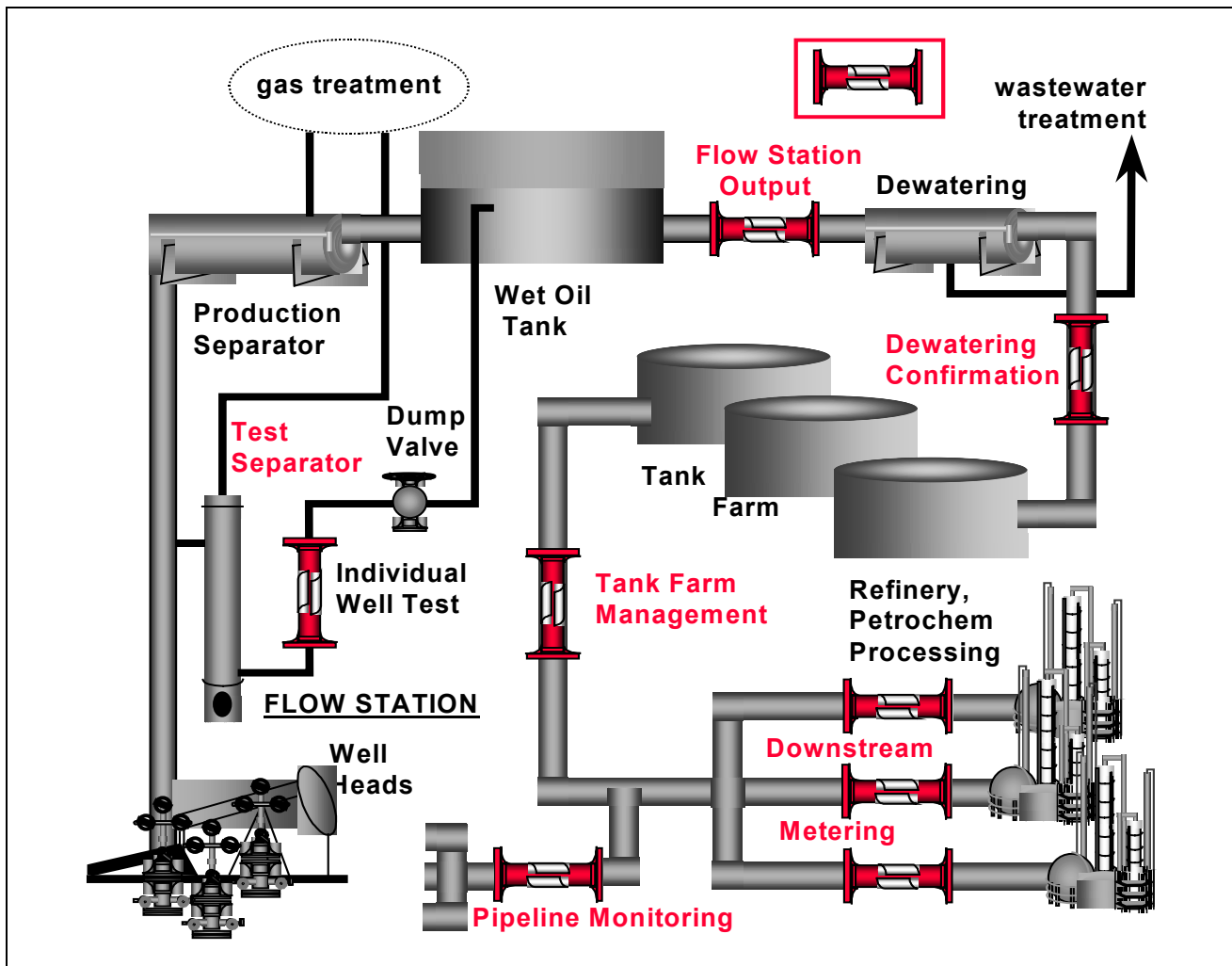


Figure 2 —Typical H₂Oil Analyzer System Applications

Well Testing

An oil reservoir typically consists of many oil wells - sometimes as many as 35. A flow station consists of a manifold of valves (automated or manual), test separators and production separators and sometimes storage facilities, as shown in Figure 3. The main purpose of the Well Test Separator is to allow production personnel to better understand the output from each specific well within an oil reservoir. Common practice is to test one or two wells per day. This consists of closing the dump valve, opening the input valve from the chosen well, and filling the 2 phase well test separator.

Once most of the gas is separated from the oil and water, the dump valve is opened, the oil/water emulsion flows through the H₂Oil Analyzer and dump valve to a storage facility or central separator. Well testing is known as a batch process since different wells are being tested and therefore the analyzer is seeing production from different wells. It is important to know the amount of water and/or oil from each well to optimize the production of oil from the reservoir. Other measurement instrumentation is used to provide the required variables to the SCADA system. These products include level transmitters for the separator, flow meters for the gas and oil/water streams as well as pressure and temperature transmitters.

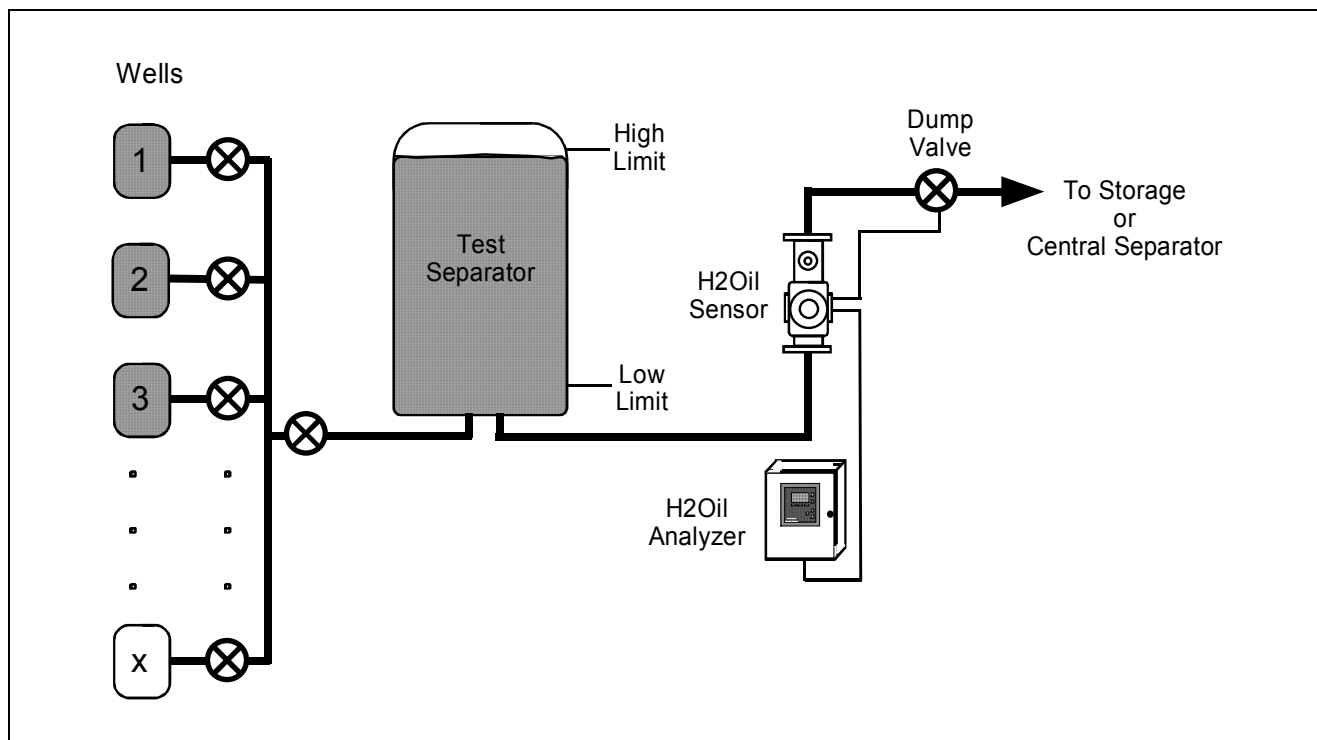


Figure 3 — Flow Station Facilities that include a H₂Oil Analyzer System Used in a Well Test Application.

Flow Station Output – Production

Another application for the H₂Oil Analyzer is the water/oil monitoring of the flow station (satellite) output to the central oil/water separator. Combined with flow meters, production personnel want to know their contribution (totalized oil flow) to the central separator. See Figure 4. This is important because some flow stations (satellites) may not have the same owner. Some oil production companies prefer the water content analyzer to also perform the flow calculations. In essence, this is a flow computer.

The water content analyzer must also be able to accept inputs from the flow meters in the form of a pulsed input or analog input. Other companies prefer the flow calculations to be performed in their SCADA system (PlantScape etc.). The water content analyzer would then only be responsible for supplying the water/oil ratio to the SCADA system where total flow of oil can be calculated.

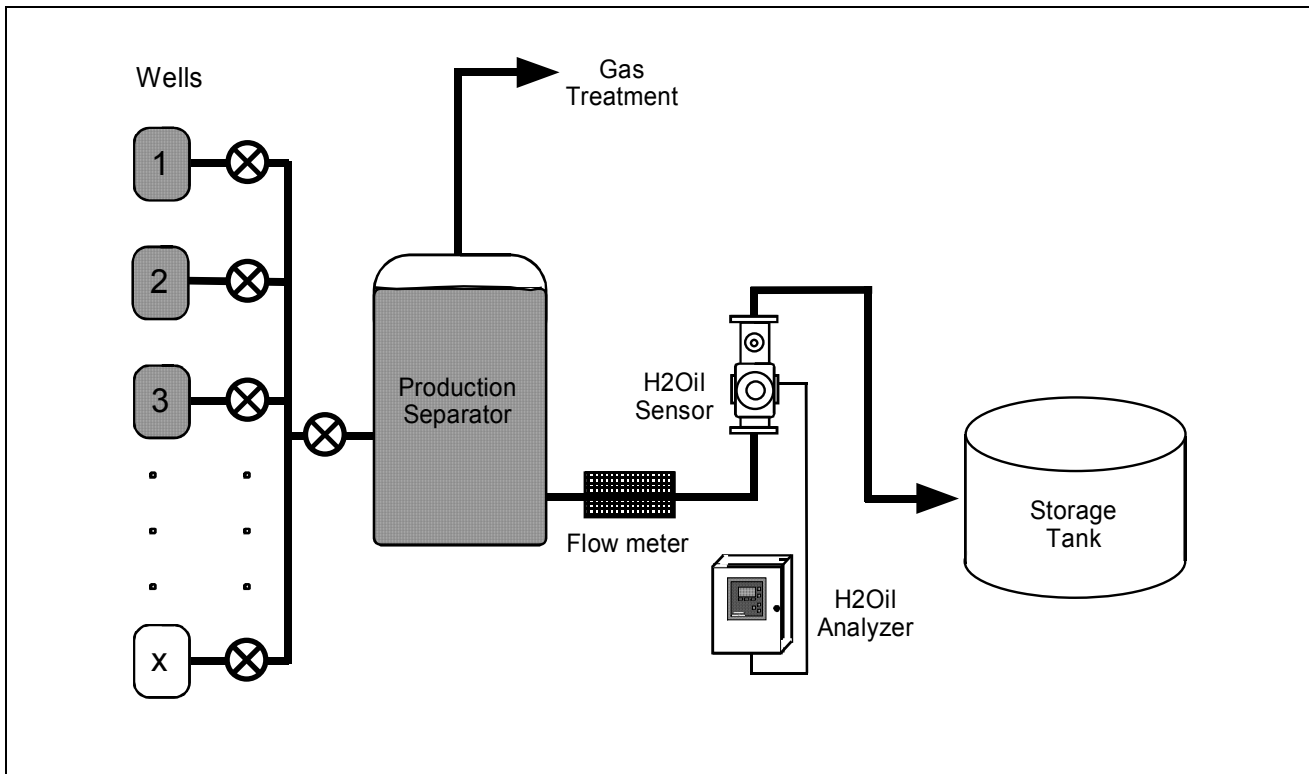


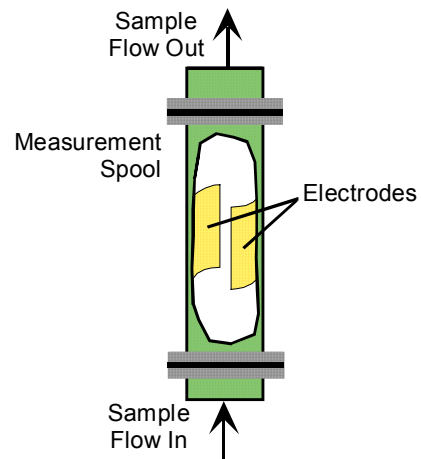
Figure 4 — Production Separator Facilities that include a H₂Oil Analyzer System Used in a Flow Station Output Application.

Method of Operation

Simultaneous Admittance Determination

The H₂Oil Analyzer System's simultaneous admittance sensor consists of two electrodes conformed to, but electrically insulated (with Teflon[®]) from, the inner walls of a spool piece through which the sample flows. See figure at right. If the sample is a purely aqueous phase (containing no oil dispersion), then the principal contribution to admittance is the electrolytic conductivity which depends on the sample temperature and salinity. If the sample is a pure oil phase, the principal measurement is the capacitance of the sensor which is directly proportional to the dielectric constant of the oil.

Samples of interest are dispersions of oil in water or water in oil. Since the dielectric constant of water is much larger than that of oil, the following conditions apply. If the sample started as pure oil and the water content increased, the capacitance would rise dramatically as water (high dielectric constant) replaces oil (low dielectric constant). As the water continues to make up progressively more of the dispersion, a small but growing contribution will be made to the "real" component of the complex admittance related to the ability of the water to conduct electricity across the dispersed water droplets.



At some value of water content, typically between 20 and 80% water, an inversion from oil-continuous to water-continuous phases will occur providing a continuous conductive path between the electrodes. This switch from oil-continuous to water-continuous phases is signaled by a dramatic increase in conductivity. Further increases in water content are determined largely from the progressive increase in conductivity as the insulating oil occupies less and less of the path between the electrodes.

H₂Oil Analyzer System Specifications

Sensor Assembly – Operating Conditions

Parameter		Reference Condition	Rated Condition	Operative Limits	Transportation and Storage
Ambient Temperature	°C	25 ± 1	- 40* to 60	- 40* to 60	- 40* to 60
	°F	77 ± 2	- 40 to 140	- 40 to 140	- 40 to 140
Process Fluid Temperature	°C	25 ± 1	0 to 120	0 to 120	0 to 120
	°F	77 ± 2	32 to 248	32 to 248	32 to 248
Humidity	%RH	10 to 55	5 to 100	0 to 100	0 to 100
Barometric Pressure	KPa	101± 3	96.5 to 108	86 to 108	66 to 108
Altitude	M	-----	- 200 to 2,000	- 500 to 2,000	- 500 to 3,500
	ft.		- 656 to 6,562	- 1,640 to 6,562	- 1,640 to 11,483
Process Pressure		See Table 1.			-----

*Selectable option for - 50 to 60°C (- 58 to 140°F)

Analyzer Assembly – Operating Conditions

Parameter		Reference Condition	Rated Condition	Operative Limits	Transportation and Storage
Ambient Temperature	°C	25 ± 1	- 40 to 60	- 40 to 60	- 40 to 60
	°F	77 ± 2	- 40 to 140	- 40 to 140	- 40 to 140
Humidity	%RH	10 to 55	5 to 100	0 to 100	0 to 100
Barometric Pressure	kPa	101± 3	96.5 to 108	86 to 108	66 to 108
Altitude	m	-----	- 200 to 2,000	- 500 to 2,000	- 500 to 3,500
	ft.		- 656 to 6,562	- 1,640 to 6,562	- 1,640 to 11,483

Calibration Chamber – Operating Conditions

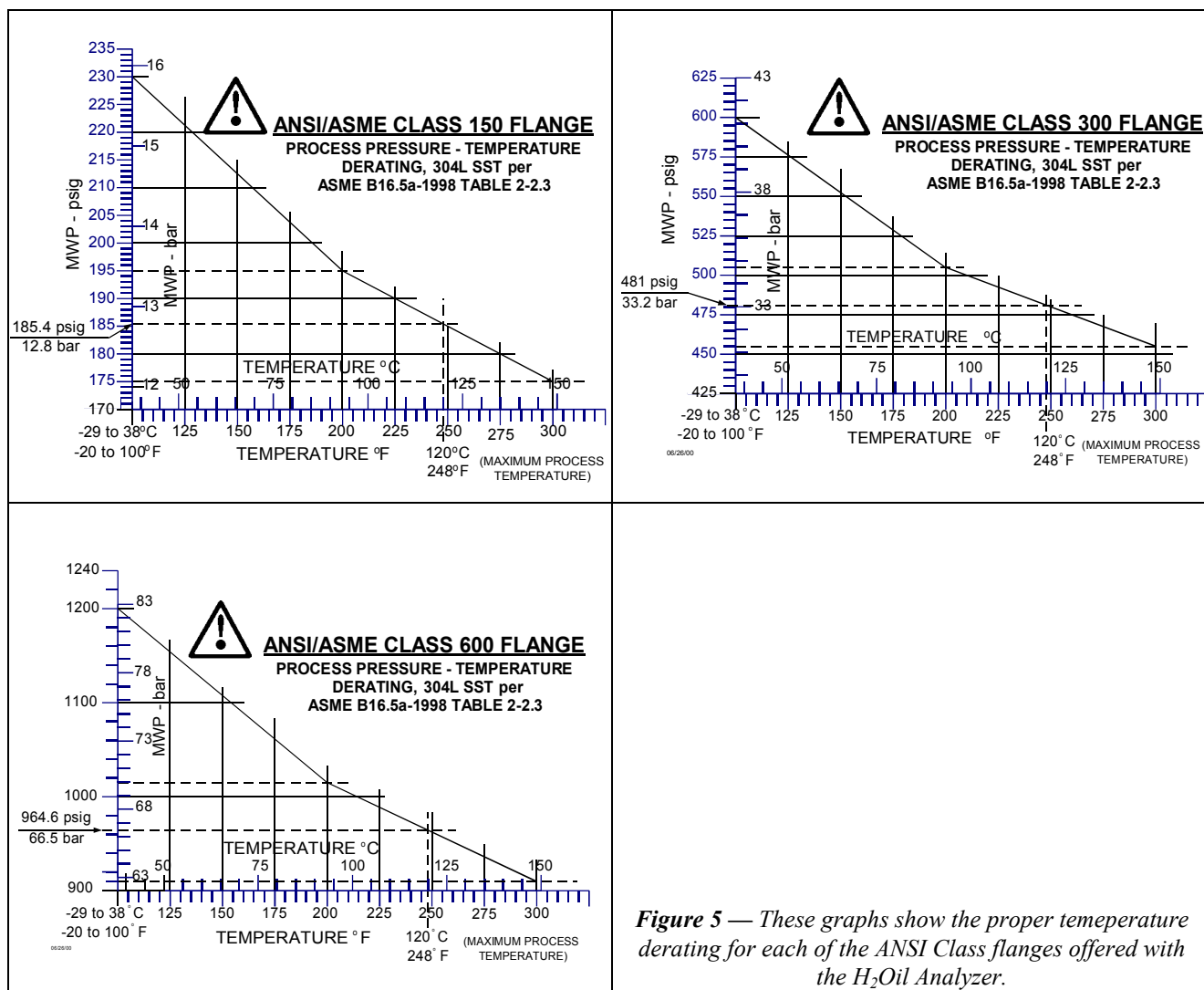
Parameter		Reference Condition	Rated Condition	Operative Limits	Transportation and Storage
Ambient Temperature	°C	25 ± 1	5 to 40	5 to 40	- 40 to 60
	°F	77 ± 2	41 to 104	41 to 104	- 40 to 140
Humidity	%RH	10 to 55	5 to 100	0 to 100	0 to 100
Barometric Pressure	KPa	101± 3	96.5 to 108	86 to 108	66 to 108
Altitude	M	-----	- 200 to 2,000	- 500 to 2,000	- 500 to 3,500
	ft.		- 656 to 6,562	- 1,640 to 6,562	- 1,640 to 11,483

H₂Oil Analyzer System Specifications, cont'd

Table 1 Process Pressure Ratings Per Table 2-2.3 of ANSI/ASME B16.5a-1998

Measurement Spool Sizes	B16.5 Rating (Class)	Maximum Allowable Working Pressure at 38 °C (100 °F) *	Maximum Allowable Working Pressure at 120 °C (248 °F) *
2-inch (DN 50)	#150 (PN 16)	230 psig (16 bar)	185.4 psig (12.8 bar)
3-inch (DN 75)		(16 bar = 232 psig)	
4-inch (DN 100)	#300 (PN 40)	600 psig (41.4 bar)	481 psig (33.2 bar)
6-inch (DN 150)		(40 bar = 580 psig)	
8-inch (DN 200)	#600 (PN 80)	1,200 psig (83 bar)	964.6 psig (66.5 bar)
		(80 bar = 1,160 psig)	

Refer to derating curves in Figure 5 for intermediate pressures and temperatures.



H₂Oil Analyzer System Specifications, cont'd

Performance Under Rated Conditions

Parameter	Description
Measurement Range	0 to 100% water in oil or 0 to 100% oil in water
Accuracy	+/-1.5% of reading, +/-0.1% absolute
Repeatability	+/- 0.75% of reading
Output	Analog: 4-20 mA Digital: (Modbus) RS-232 or RS-485 (2 or 4 wire) Customer selectable I/O cards: (AI, AO, DI, DO)
Update Rate	100 milliseconds

Physical Specifications



Parameter		Description			
Sensor	(Measurement Spool)	2-inch, 3-inch, 4-inch, 6-inch and 8-inch in-line pipe.			
Material of Wetted Parts		Measurement Spool	304L SS pipe with Teflon® partially-lined interior walls. 316L SS, optional		
		Flanges	304L SS. 316L SS, optional		
		Electrodes	316L SS		
		Flange Connections		ANSI Class #150, #300 or #600 RF available.	
Analyzer Mounting Bracket		SS Wall/panel mount hardware, 2-inch pipe mount optional.			
Conduit Connections		¾ and ½ inch conduit entries.			
Wiring		Accepts up to 16 AWG (1.5 mm diameter).			
Analyzer Local Display, (HMI)		High contrast, backlit display for legibility in direct sunlight. Menu driven. Display can be configured to indicate the following parameters: <ul style="list-style-type: none">– % Water– Process Temperature (°C or °F)– Indication of the continuous fluid (Water or Oil)– Diagnostics Data– Setup parameters (Configuration)			
Weights					
Analyzer Enclosure and Electronics		Approximately 20.2 lbs. (9.18 kg)			
Sensor Assembly – Measurement Spool and Sensor Electronics Enclosure		Approximate weights listed below.			
Model / Measurement Spool Size		ANSI / ASME			
		Class 150	Class 300	Class 600	
		WCS002 / 2" (50mm)	62 lbs. (28 kg)	70 lbs. (31 kg)	77 lbs. (35 kg)
		WCS003 / 3" (75mm)	85 lbs. (39 kg)	95 lbs. (44 kg)	105 lbs. (48 kg)
		WCS004 / 4" (100mm)	90 lbs. (41 kg)	110 lbs. (50 kg)	135 lbs. (61 kg)
		WCS006 / 6" (150mm)	132 lbs. (60 kg)	170 lbs. (77 kg)	258 lbs. (117 kg)
		WCS008 / 8" (200mm)	212 lbs. (96 kg)	268 lbs. (122 kg)	350 lbs. (159 kg)

H₂Oil Analyzer System Specifications, cont'd
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Table 2 Power Supply (Mains) Specifications






Analyzer and Sensor Assemblies	Input Voltage Option	Reference Condition	Rated Condition	Operative Limits
	24Vdc / 24Vac, 50/60 Hz	24.0Vdc \pm 3%	24.0Vdc +50/-8%	24Vdc +50/-8%
		24.0Vac \pm 5%	24Vac +25/-15%	24Vac +25/-15%
	100-240Vac 50/60 Hz / 100-240Vdc	120Vac \pm 5% or 240Vac \pm 5%	100-240Vac +10/-15%	100-240Vac +10/-15%
		120Vdc \pm 5% or 240Vdc \pm 5%	100-240Vdc +10/-15%	100-240Vdc +10/-15%
Calibration Chamber	100-240Vac 50/60 Hz	120Vac \pm 5% or 240Vac \pm 5%	100-240Vac +10/-15%	100-240Vac +10/-15%
Power	Analyzer and Sensor Calibration Chamber	1.1 Amps @ 24 Vdc, nominal. \leq 100 VA maximum. \leq 300 VA		
Power Supply Voltage Effect		0.005% span per volt		

Hazardous Area Certifications *
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Certification	Component	Description
 (USA)	Sensor Module	Explosionproof for Class I, Div. 1, Groups C & D; Class I, Zone 1, AEx d; T6, Ta \leq 60°C Electrodes intrinsically safe for Class I, Div. 1, Groups C & D; Class I, Zone 1, AEx ia; Class I, Div. 2, Groups C & D; Class I, Zone 2, IIB; T5, Ta \leq 60°C; Enclosure Type 4X / IP66
	Analyzer Assembly	Class I, Div. 2, Groups C & D; Class I, Zone 2, IIB; T3; $-40 \leq$ Ta \leq 60°C; Enclosure Type 4X, IP66
	Calibration Chamber	General purpose for ordinary non-hazardous locations (ISA S82.01)
 (Canada)	Sensor Module	Explosionproof for Class I, Div. 1, Groups C & D; Class I, Zone 1, Ex d; T6, Ta \leq 60°C Electrodes intrinsically safe for Class I, Div. 1, Groups C & D; Class I, Zone 0, Ex ia; Class I, Div. 2, Groups C & D; Class I, Zone 2, Ex n IIB; T5, Ta \leq 60°C; Enclosure Type 4X / IP66
	Analyzer Assembly	Class I, Div. 2, Groups C & D; Class I, Zone 2, Ex n IIB; T3; $-40 \leq$ Ta \leq 60°C; Enclosure Type 4X, IP66
	Calibration Chamber	General purpose for ordinary non-hazardous locations (1010-1).

Certifications continued on next page \Rightarrow

Hazardous Area Certifications, cont'd
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Certification	Component	Description
 Conformity (Europe)		This product is in conformity with the protection requirements of the following European Council Directives: 73/23/EEC , the Low Voltage Directive, 89/336/EEC , the EMC Directive, as amended by Directives 92/31/EEC and 93/68/EEC . Conformity of this product with any other "CE Mark" Directive(s) shall not be assumed.
	Calibration Chamber	Class I, Cord Connected, Electrical Laboratory Equipment with protective earthing. General purpose for ordinary non-hazardous locations (EN 61010-1).
 KEMA (EU)	Sensor Module	CENELEC EEx d ia IIB T6, – 50 ≤ Ta ≤ 60°C, IP66 Flameproof for Group IIB, Zone 1, with intrinsically safe electrode connections for Zone 0. Class I, Fixed, Permanently Connected, Industrial Control Equipment with protective earthing (grounding).
	Analyzer Assembly	CENELEC EEx nA IIB T3, – 40 ≤ Ta ≤ 60°C, IP66 Zone 2 apparatus for Group IIB. Class I, Fixed, Permanently Connected, Industrial Control Equipment with protective earthing.
Installation Category (Overvoltage Category):		Category II: Energy-consuming equipment supplied from the fixed installation. Local level appliances, and Industrial Control Equipment.
Pollution Degree:		Pollution Degree 2: Normally non-conductive pollution with occasional conductivity caused by condensation. (ref. IEC 664-1)
EMC Classification:		Group 1, Class A, Industrial Equipment in accordance with Product Family Standard EN 61326.
 Standards Australia 	Sensor Module	Ex d ia IIB T6, – 50 ≤ Ta ≤ 60°C, IP66 Flameproof for Group IIB, Zone 1, with intrinsically safe electrode connections for Zone 0. Class I, Fixed, Permanently Connected, Industrial Control Equipment with protective earthing (grounding).
	Analyzer Assembly	Ex n IIB T3, – 40 ≤ Ta ≤ 60°C, IP66 Zone 2 apparatus for Group IIB. Class I, Fixed, Permanently Connected, Industrial Control Equipment with protective earthing.
	Calibrator	Class I, Cord Connected, Electrical Laboratory Equipment with protective earthing. General purpose for ordinary non-hazardous locations (AS/NZS3100).
 (Brazil)	Sensor Module	Ex d ia IIB T6, – 50 ≤ Ta ≤ 60°C, IP66 Flameproof for Group IIB, Zone 1, with intrinsically safe electrode connections for Zone 0. Class I, Fixed, Permanently Connected, Industrial Control Equipment with protective earthing (grounding).
	Analyzer Assembly	Ex n IIB T3, – 40 ≤ Ta ≤ 60°C, IP66 Zone 2 apparatus for Group IIB. Class I, Fixed, Permanently Connected, Industrial Control Equipment with protective earthing.
	Calibrator	Class I, Cord Connected, Electrical Laboratory Equipment with protective earthing. General purpose for ordinary non-hazardous locations (EN 61010-1).
ASME B16.5, B31.3 and CSA B51	Sensor Module	Complies with ASME requirements for Pipe Flanges and Flanged Fittings, Process Piping, and the Canadian Boiler, Pressure Vessel, and Pressure Piping Code.
NACE MR0175	Sensor Module	Complies with Sulfide Stress Cracking Resistant Metallic Materials for Oilfield Equipment, Standard Material Requirements. (Hardness ≤22 HRC)
API RP 14F	Sensor Module	Complies with API Recommended Practice for Design and Installation of Electrical Systems for Fixed and Floating Offshore Petroleum Facilities for Unclassified and Class I, Division 1 and Division 2 Locations.

* Consult your Honeywell representative to verify specific certifications.

Outline Dimensions and Mounting Options

Honeywell

**H₂OIL ANALYZER
PIPE SENSOR
OUTLINE DIMENSIONS**

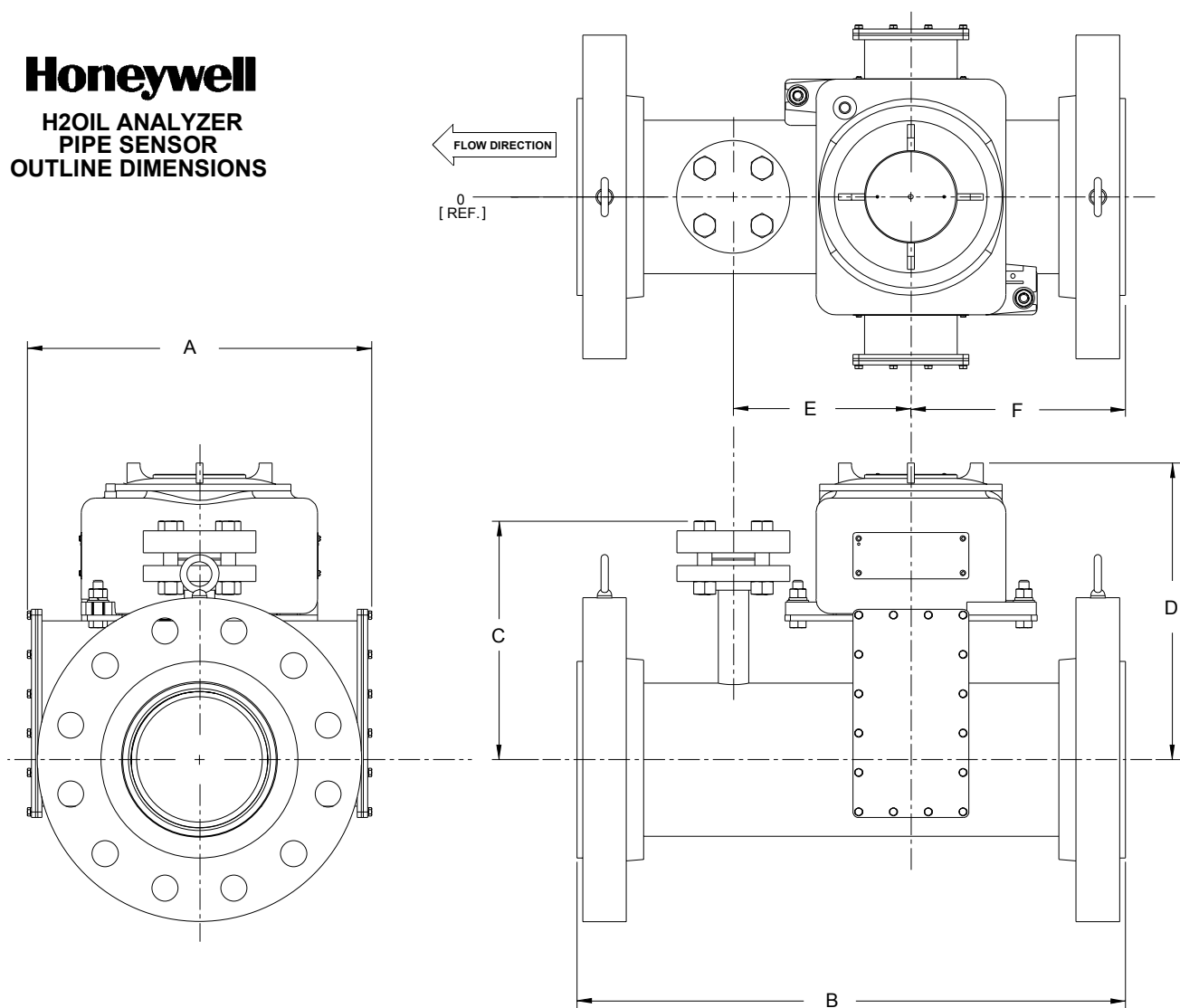


Figure 6 — Pipe Sensor Overall Outline Dimensions.

Model /	Dimension - mm (in)					
Measurement Spool Size	"A"	"B"	"C"	"D"	"E"	"F"
WCS002 / 2" (50mm)	301.2 (11.86)	546.1 (21.50)	126.4 (4.98)	274.6 (10.81)	194.5 (7.657)	209.3 (8.24)
WCS003 / 3" (75mm)	301.2 (11.86)	546.1 (21.50)	177.2 (6.98)	274.6 (10.81)	194.5 (7.657)	209.3 (8.24)
WCS004 / 4" (100mm)	299 (11.77)	546.1 (21.50)	194.9 (7.67)	325.4 (12.81)	194.5 (7.657)	209.3 (8.24)
WCS006 / 6" (150mm)	376.9 (14.84)	600.8 (23.65)	261.9 (10.31)	325.4 (12.81)	194.5 (7.657)	235 (9.25)
WCS008 / 8" (200mm)	376.9 (14.84)	632.5 (24.90)	262.5 (10.33)	325.4 (12.81)	194.5 (7.657)	247.6 (9.75)

NOTE: All dimensions are nominal and may vary slightly.

Outline Dimensions and Mounting Options

Standard Wall Mounting

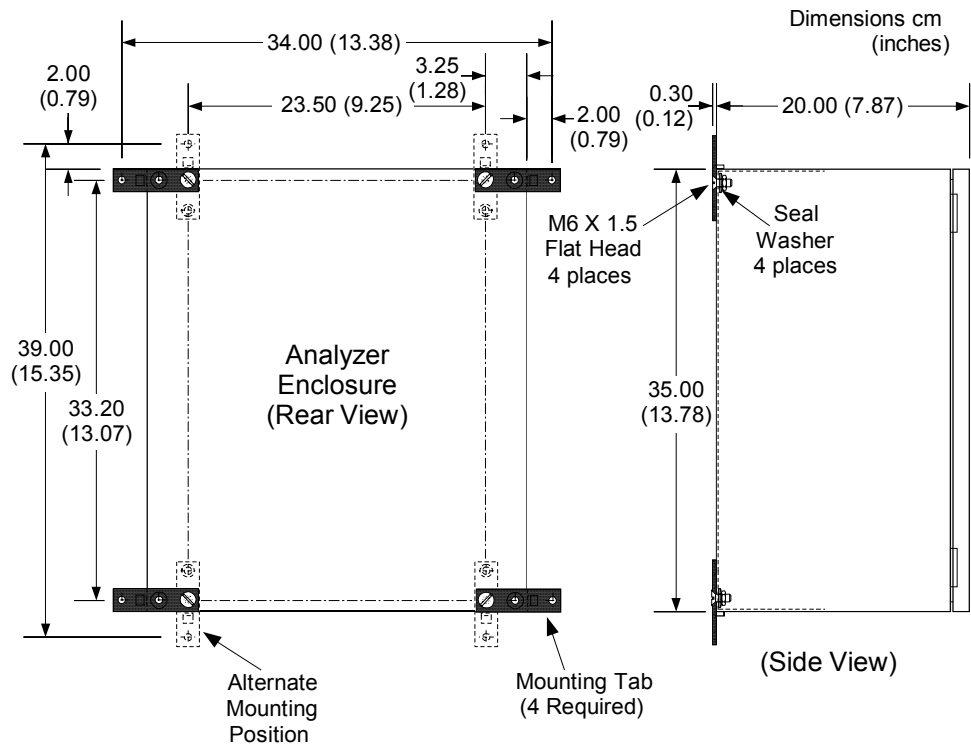


Figure 7 —Analyzer Enclosure Wall Mounting Dimensions, Approximate for reference only

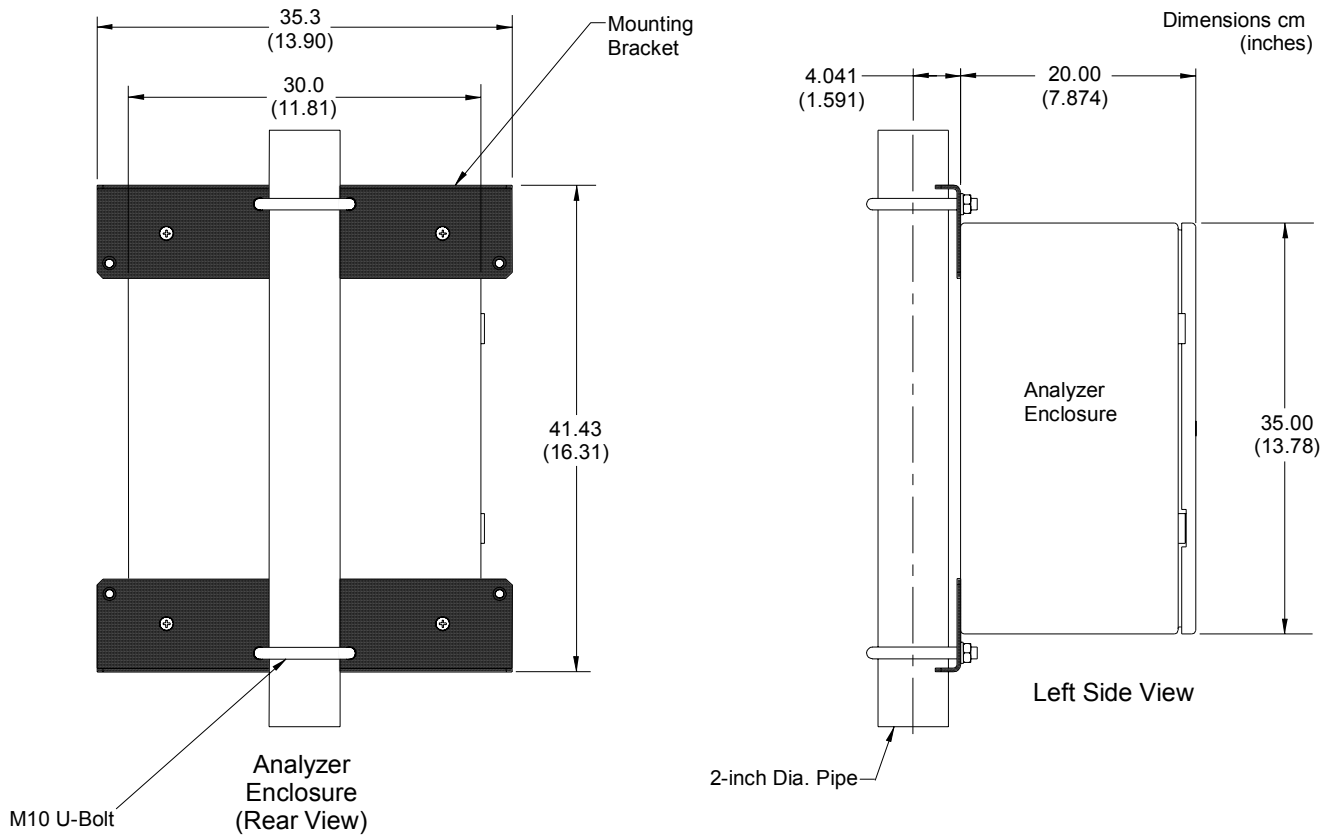
Outline Dimensions and Mounting Options**Vertical Pipe Mounting**

Figure 8a —Analyzer Enclosure Pipe Mounting Dimensions, Approximate for reference only

Outline Dimensions and Mounting Options

Horizontal Pipe Mounting

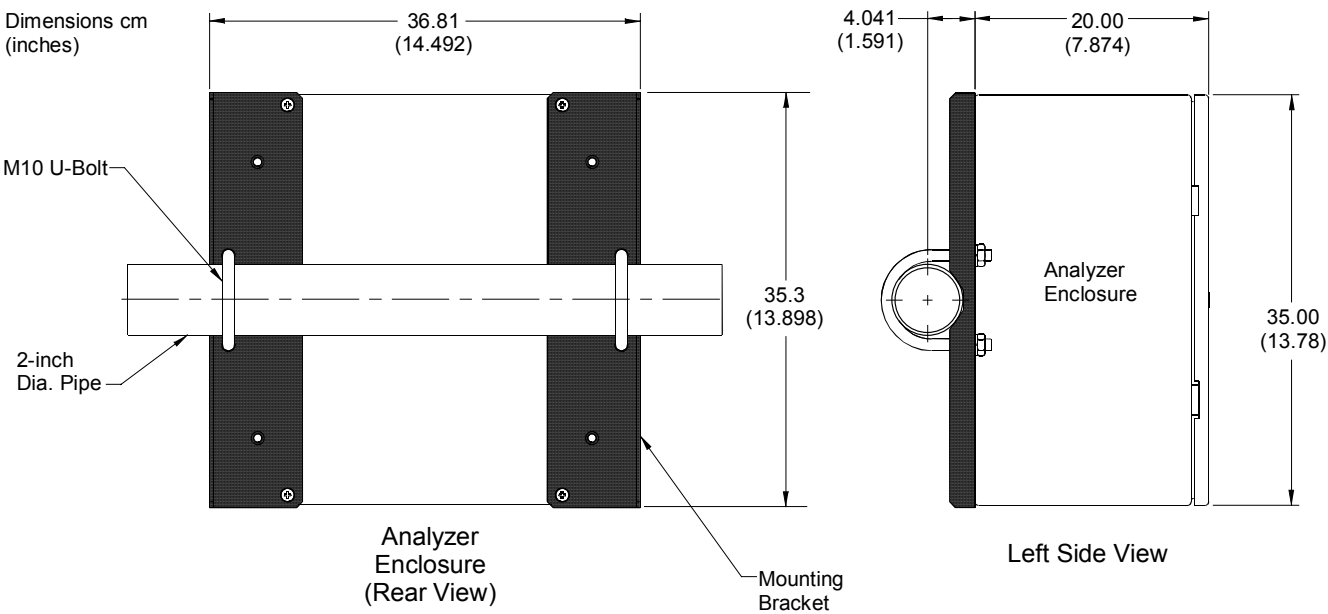


Figure 8b — Analyzer Enclosure Pipe Mounting Dimensions, Approximate for reference only

Model Selection Guide

Sensor Assembly

Model Selection Guide
34-WC-16-01 Issue 1

Instructions

- Select the desired Key Number. The arrow to the right marks the selections available.
- Make selections from Tables I using the column below the proper arrow. Select as many Table II options as desired.
- A complete Model Number must have the designated number of digits in each table.

Key Numbers **I** **II (optional)**
 [] - [] - []

KEY NUMBER	Selection	Availability				
Sensor Spool Size						
2" (50mm) Sensor Assembly with Teflon lining	WCS002	↓				
3" (75mm) Sensor Assembly with Teflon lining	WCS003		↓			
4" (100mm) Sensor Assembly with Teflon lining	WCS004			↓		
6" (150mm) Sensor Assembly with Teflon lining	WCS006				↓	
8" (200mm) Sensor Assembly with Teflon lining	WCS008					↓

TABLE I

A - Spool and Electrodes Material									
304L SS Spool with 316 SS Electrodes				0 _ _ _ _	•	•	•	•	•
316L SS Spool with 316 SS Electrodes				1 _ _ _ _	•	•	•	•	•
B - Flange Type		Material							
ANSI RF Class 150 B16.5	304L SS			_ 0 _ _ _	c	c	c	c	c
ANSI RF Class 300 B16.5	304L SS			_ 1 _ _ _	c	c	c	c	c
ANSI RF Class 600 B16.5	304L SS			_ 2 _ _ _	c	c	c	c	c
ANSI RF Class 150 B16.5	316L SS			_ 3 _ _ _	d	d	d	d	d
ANSI RF Class 300 B16.5	316L SS			_ 4 _ _ _	d	d	d	d	d
ANSI RF Class 600 B16.5	316L SS			_ 5 _ _ _	d	d	d	d	d
C - Electronics Enclosure Protection Rating									
Type 4X / IP66, Aluminum Housing				_ _ A _ _	c	c	c	c	c
Type 4X / IP66, Al'Alloy Housing with Epoxy Painting				_ _ B _ _					
Type 4X / IP66, Type 316L SS Housing				_ _ C _ _	d	d	d	d	d
D - Sampling Port and Material									
Manual Sampling Tube and Valve (304L SS)				_ _ _ 0 _	c	c	c	c	c
Manual Sampling Tube and Valve (316L SS)				_ _ _ 1 _	d	d	d	d	d
Hot Tap Sampling Tube and Valve				_ _ _ 2 _					
E - Accuracy									
Batch - Standard - +/-1.5% of reading +/-0.1%				_ _ _ _ A _	•	•	•	•	•
Continuous - Standard - +/-1.5% of reading +/-0.1%				_ _ _ _ B _	•	•	•	•	•
Custody Transfer - +/-1.5% of reading +/-0.05%				_ _ _ _ C _					

Model Selection Guide

Sensor Assembly, cont'd

		Availability				
WCS00 _		↓	↓	↓	↓	↓
Selection		2	3	4	6	8
F - Safety Certifications						
No Certification or certification label	_____0	•	•	•	•	•
FM: Class I, Div 1, Grps. C & D; T6; Class I, Zone 1, AEx d; T6, Ta ≤ 60°C; Electrodes IS, Class I, Div. 1, Grps C & D; Class I, Zone 1, AEx ia; Class I, Class I, Div. 2, Grps C & D; Class I, Zone 2, Ex nA IIB; T5; Ta ≤ 60°C; Type 4X / IP66	_____1	•	•	•	•	•
CSA: Class I, Div 1, Grps. C & D; T6; Class I, Zone 1, Ex d; T6, Ta ≤ 60°C; Electrodes IS, Class I, Div. 1, Grps C & D; Class I, Zone 1, Ex ia. Class I, Div. 2, Grps C & D; Class I, Zone 2, Ex n IIB; T5; Ta ≤ 60°C; Type 4X / IP66	_____2	•	•	•	•	•
CENELEC (EU): EEx d ia IIB T6; – 50 ≤ Ta ≤ 60°C, Enclosure IP66 (Zones 1&2)	_____3	a	a	a	a	a
SA: Ex d ia IIB T6; – 50 ≤ Ta ≤ 60°C, (Zones 1&2) Ex n IIB T5; IP 66 (Zone 2)	_____4	a	a	a	a	a
INMETRO: Ex d ia IIB T6; IP 66 (Zones 1&2) Ex n IIB T5; IP 66 (Zone 2)	_____5	a	a	a	a	a

		Availability				
WCS00 _		↓	↓	↓	↓	↓
TABLE II - Options		2	3	4	6	8
None	00	•	•	•	•	•
Rated to -50 degrees C.	CT	•	•	•	•	•
Pressure Test Certificate	PT	•	•	•	•	•

RESTRICTIONS

Restriction Letter	Available Only With	
	Table	Selection
a	I	Certification Pending
b	I	Select only one option from this group
c	I	WCSXXX-0XXXXX
d	I	WCSXXX-1XXXXX

Model Selection Guide

Analyzer

Model Selection Guide
34-WC-16-02 Issue 1

Instructions

- Select the desired Key Number. The arrow to the right marks the selections available.
- Make selections from Tables I through III. Select options from Table IV.
- A complete Model Number must have the designated number of digits in each table.

Key Number I II III IV
 [] - [] - []² - [] - []

KEY NUMBER	Selection	Availability
Analyzer with HMI	WCA100	↓
NEMA 4X Analyzer with Display		

TABLE I

A - Enclosure Material		
304 Stainless Steel	0 _	•
316L Stainless Steel	1 _	•
B - Power Supply		
Power Supply (24 Vdc/ac)	_ A	•
Power Supply (100-240 Vac/dc)	_ B	•

TABLE II - Input/Output Cards

Slot 3 - Choose from Table V	X _ _ _ _ _	•
Slot 4 - Choose from Table V	_ X _ _ _ _	•
Slot 5 - Choose from Table V	_ _ X _ _ _	•
Slot 6 - Choose from Table V	_ _ _ X _ _	•
Slot 7 - Choose from Table V	_ _ _ _ X _	•
Slot 8 - Analog Output Board (4 channels)	_ _ _ _ 2 _	•
Slot 11 - Choose from Table V	_ _ _ _ _ X _	c
Slot 12 - Choose from Table V	_ _ _ _ _ _ X _	c
Slot 13 - Choose from Table V	_ _ _ _ _ _ _ X _	c
Slot 14 - Choose from Table V	_ _ _ _ _ _ _ _ X	c

TABLE III - Safety Certifications

No Certification or certification label	0	•	b
FM: Class I, Div 2, Grps. C & D; Class I, Zone 2, IIB T3; $-30 \leq T_a \leq 60^\circ\text{C}$; Type 4X/IP66	1	•	
CSA: Class I, Div 2, Grps. C & D; T3; Ex n IIB T3; $-30 \leq T_a \leq 60^\circ\text{C}$; Type 4X / IP66	2	•	
CENELEC (EU): EEx n IIB T3; $-40 \leq T_a \leq 60^\circ\text{C}$; IP66 (Zone 2)	3	a	
SA: Ex n IIB T3; $-30 \leq T_a \leq 60^\circ\text{C}$; IP66 (Zone 2)	4	a	
INMETRO: Ex n IIB T3; $-30 \leq T_a \leq 60^\circ\text{C}$; IP66 (Zone 2)	5	a	

Model Selection Guide

Analyzer Assembly, cont'd**TABLE IV - Options**

	Selection	Availability
None	00	•
2" Pipe Mount Bracket (316 SS)	PM	•
RS-485 2 or 4 Wire Communications Card	RS	•

RESTRICTIONS

Restriction Letter	Available Only With	
	Table	Selection
a	III	Certifications Pending
b	III	Select only one from this option
c	II	Slot cannot house Analog Input and Output boards
d	V	Limit of 5 AI boards Maximum in slots 3 - 7
e	V	Limit of 4 AO boards Maximum in slots 3 - 8
f	V	Relay Output Card may not be used when Analyzer is installed in a Class I, Division 2 (Class I, Zone 2) Hazardous location.

TABLE V - Input/Output Cards Adder

Selection	Description of Input/Output Card	
X = 0	No Module Present	•
X = 1	Analog Input Board (4 channels)	d
X = 2	Analog Output Board (4 channels)	
X = 3	Digital Inputs, Contact Closure (6)	•
X = 4	Digital Inputs, 24VDC (6)	•
X = 5	Digital Inputs, 120/240 VAC (6)	•
X = 6	Digital Outputs, Relay (6)	f
X = 7	Digital Outputs, 24 VDC (6)	
X = 8	Digital Outputs, 120/240 VAC (6)	•
X = A	Digital Outputs, 120/240 VAC, (2 @ 2A and 4 @ 0.5A)	•
X = B	Pulse/Frequency Input Card	•

Model Selection Guide

Calibration Chamber

Model Selection Guide
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Instructions

- Select the desired Key Number. The arrow to the right marks the selections available.
- Make selections from Tables I.
- A complete Model Number must have the designated number of digits in each table.

Key Number I
 -

KEY NUMBER	Selection	Availability
Calibration Chamber with Toolkit Software		
Water Content Calibration Chamber	WCC500	↓

TABLE I

A - Power Supply Cord		
110 - 120 VAC Domestic Cord	A _ _	•
220 - 240 VAC with CEE-7 plug	B _ _	•
B - Software Format		
CD-ROM	_ 0 _	•
3.5" Disks	_ 1 _	•
C - Safety Certifications		•
No Certification	_ _ 0	•
FM: General Purpose	_ _ 1	•
CSA: General Purpose	_ _ 2	•
CENELEC (EU): General Purpose	_ _ 3	a
SA: General Purpose	_ _ 4	a
INMETRO: General Purpose	_ _ 5	a

RESTRICTIONS

Restriction Letter	Available Only With	
	Table	Selection
a	I	Certification Pending

H₂Oil Calibration Chamber and Software

The H₂Oil Calibration Chamber and Software are needed to perform the span calibration of the H₂Oil Analyzer System. The calibration chamber (shown in Figure 9) is used to characterize the effects of salinity and temperature vs. the conductivity of the free water sample obtained. The calibration unit is shipped with Windows compatible software. The calibration software coupled with a lap top personal computer (sold separately) is the Human Machine Interface to the calibration unit. It is also used to download calibration data to the H₂Oil Analyzer.



Figure 9 — Calibration Chamber and H₂Oil Analyzer Calibration Software

Ordering Information

Contact your nearest Honeywell sales office, or

In the U.S.:

Honeywell
Industrial Automation & Control
16404 North Black Canyon Hwy.
Phoenix, AZ 85053
1-800-288-7491

In Europe and Africa:

Honeywell S. A.
Avenue du Bourget 1
1140 Brussels, Belgium
[32-2] 728-2111

In Asia:

Honeywell Asia Pacific Inc.
Honeywell Building,
17 Changi Business Park Central 1
Singapore 486073
Republic of Singapore

In Canada:

The Honeywell Centre
155 Gordon Baker Rd.
North York, Ontario M2H 3N7
1-800-461-0013

In Eastern Europe:

Honeywell Praha,
s.r.o. Budejovicka 1
140 21 Prague 4,
Czech Republic

In the Pacific:

Honeywell Pty Ltd.
5 Thomas Holt Drive
North Ryde NSW Australia 2113
(61 2) 9353 7000

In Latin America:

Honeywell Inc.
480 Sawgrass Corporate Parkway,
Suite 200
Sunrise, FL 33325
(954) 845-2600

In the Middle East:

Honeywell Middle East Ltd.
Khalifa Street,
Sheikh Faisal Building
Abu Dhabi, U. A. E.

In Japan:

Honeywell K.K.
14-6 Shibaura 1-chrome
Minato-ku, Tokyo,
Japan 105-0023

Or, visit Honeywell on the World Wide Web at: <http://www.honeywell.com>

Distributor :

Specifications are subject to change without notice.

Honeywell

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