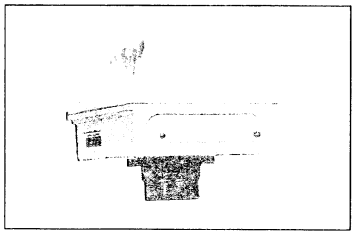
Barton®



TankScan™ W-Series
WU2x Ultrasonic Level Monitor

Installation Manual

Version 00G01h

PRELIMINARY

ID#11684

8/2000

The **TankScan Wireless Level System** has four main components: Monitor, Controller, Fill Indicator, and PC Host Software. The **WU2 Monitor** consists of an electronics housing and an ultrasonic sensor for measuring tank fluid level. The **Controller** includes a Radio/Modem enclosure, an antenna, and an AC power adapter. The **Fill Indicator** assembly includes a local display (to view level during fill), an audible alarm, and the option of relay alarm outputs. The **Software** features, operation, and installation are covered in the software user manual.

System Installation Steps

A. Install controller (distance & line-of-sight location predetermined).
B. Install monitor(s) on the tank(s)
C. Install fill indicator(s) at an accessible location near the fill point.
D. Install software on host PC
E. Power up and configure the controller
F. Power up the monitor(s) and fill unit(s).

Monitor Installation

Safety Precautions

Proper Installation and Handling

Because this is an electrically operated device, only properly trained staff should install and/or repair this product. Use a proper sealant with all installations. Note: Always install the 2-inch Viton gasket with the WU2x. *The G threaded version will not seal unless the gasket is installed properly.* Never overtighten the monitor within the fitting. Always check for leaks prior to system startup.

Material Compatibility

The WU2x is made of two materials. The enclosure is Polypropylene (PP) and the transducer is made of Polyvinylidene Fluoride (PVDF). Make sure the WU2x is chemically compatible with the application liquid(s). While the WU2x housing is liquid resistant, when properly installed, it is not designed to be immersed. It should be mounted in such a way that it does not normally come into contact with fluid.

Flammable, Explosive, and Hazardous Applications

The WU2x should not be used for flammable or explosive applications.

Make a Fail-Safe System

Design a fail-safe system that accommodates the possibility of monitor or power failure. In critical applications, Barton recommends the use of redundant backup systems and alarms in addition to the primary system.

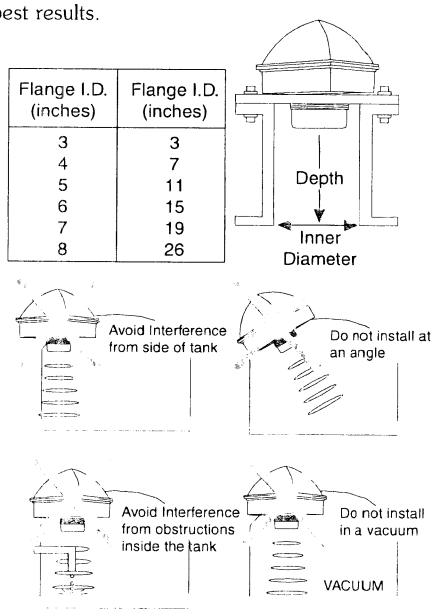
Monitor Installation (continued)

Procedure

1. Unpack Monitor assembly.
2. Install Monitor
   A. Preliminary Items

      Proper mounting is critical to operation. If the WU2x is installed such that it is recessed in a fitting or flange, follow the criteria listed below. For an I.D. less than 3-inches, do not recess the WU2x more than 1-inch for best results.

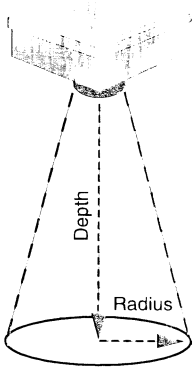
Flange I.D. (inches)	Flange I.D. (inches)
3	3
4	7
5	11
6	15
7	19
8	26



WARNING

Always install the 2-inch Viton gasket with the WU2x. The G threaded version will not seal unless the gasket is installed properly. When installing the WU2x, never tighten the enclosure. Always use the wrench flat located above the threads.

MEAS. RANGE			BEAM DIMENSION			
			DEPTH		RADIUS	
			ft	m	in	cm
LONG	MEDIUM	SHORT	1	0.3	1.6	4.0
			2	0.6	2.4	6.2
			3	0.9	3.3	8.3
			4	1.2	4.1	10.4
			5	1.5	4.9	12.7
			6	1.8	5.8	14.7
			7	2.1	6.6	16.8
			8	2.4	7.5	18.9
			9	2.7	8.3	21.1
			10	3	9.1	23.2
			11	3.3	9.9	25.4
			12	3.6	10.8	27.5
			13	3.9	11.7	29.6
			14	4.2	12.5	31.7
			15	4.5	13.3	33.9
			16	4.8	14.2	36.0
			17	5.1	15	38.1
			18	5.4	15.9	40.3
			19	5.7	16.7	42.4
			20	6	17.5	44.5
			21	6.3	18.4	46.7
			22	6.6	19.2	48.8
			23	6.9	20.1	50.9
			24	7.2	20.9	53.1
			25	7.5	21.7	55.2
			26	7.9	22.6	57.3
			27	8.2	23.4	59.5
			28	8.5	24.3	61.6
			29	8.8	25.1	63.7
			30	9.1	25.9	65.9
			31	9.4	26.8	67.9
			32	9.8	27.6	70.1
			33	10.1	28.4	72.2
			34	10.4	29.3	74.4
			35	10.7	30.1	76.5
			36	11	30.9	78.6
			37	11.3	31.8	80.8
			38	11.6	32.6	82.9
			39	11.9	33.5	85
			40	12.2	34.3	87.2

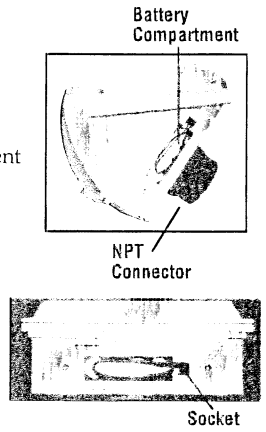


B. Attach Monitor

Screw the bottom of the monitor into a 2 inch female NPT connection — **hand tighten only**.

3. After installing and configuring the TankScan Controller, install Monitor's Battery Pack (included).

   Remove the Monitor's compartment cover by unscrewing the (2) screws (w/small bladed screwdriver). Insert battery pack into compartment and plug keyed connector into the socket (on right). Finally, position the wires to prevent damage, then reattach the cover.

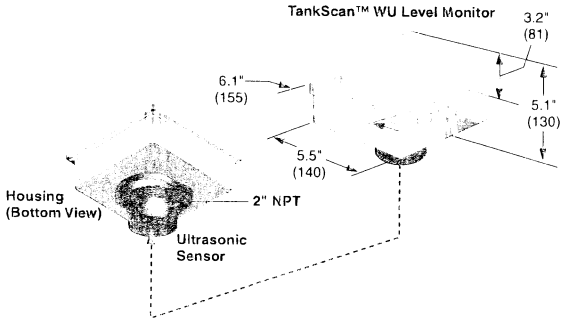


Specifications

WU20 Ultrasonic Level Monitor

Measurement Method	50 kHz Ultrasonic
Measured Value	Level
Measurement Range	0.5 to 18 feet (0.15 to 5.4 m)
Accuracy	±0.25% of span in air (6 inch/15 cm deadband at sensor)
Output	Transmits ID, level data, battery voltage, radio signal strength, and internal status on demand from controller
Radio Communications	Transmits and receives up to 500' (150 m), line-of-sight, in 902-928 MHz band (North America) or 869.7-870 MHz band (Europe)
Operating Temperature	-40°F/°C to +140°F (+60°C)
Power Requirements	Battery Pack [4-AA Alkaline]
Construction	Weatherproof, non-corrosive, NEMA-4/IP65, PBT (Polybutylene Terephthalate) enclosure; PVDF transducer assembly
Pressure Rating	15 PSI (1 bar) maximum
Ultrasonic Beam Width	8° conical
Approvals	Intrinsically Safe. North America: Class I, Div. 1, Groups C & D (See approval statements on pages 6 and 7).
Mounting	2 inch NPT male (standard)

Dimensions



Dimensions in inches.
Metric conversions (in mm) are approximate.

Replacement Parts List

Part Description	Part Number
Monitor	
Battery Pack	0130-1044T

COMPLIANCE STATEMENTS

FCC COMPLIANCE STATEMENTS FOR WU20

FCC PART 15 NOTICE

This equipment has been tested and found to comply with the limits for Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: re-orient or relocate the receiving antenna, increase the separation between the equipment and receiver, connect the equipment into an outlet on a circuit different from that to which the receiver is connected, and/or consult the dealer or an experienced radio/TV technician for help.

The user is cautioned that changes and modifications made to this equipment without approval of the manufacturer could void the user's authority to operate this equipment.

WARRANTY AND REPAIR SERVICE IN THE USA:

Barton Instrument Systems
900 South Turnbull Canyon Road
City of Industry, CA 91745
1 800-291-3550, ext. 269 or (626) 961-2547

CANADIAN COMPLIANCE STATEMENTS FOR WU20

The Industry Canada (IC) label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. The department does not guarantee the equipment will operate to the user's satisfaction.

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier.

CAUTION

Do not attempt to make electrical ground connections yourself, contact the appropriate electrical inspection authority or an electrician.

EMISSION REQUIREMENT

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulation.

WARRANTY AND REPAIR SERVICE IN CANADA:

Barton Instrument Systems
3840 - 11A Street N.E.
Calgary, Alberta T2E 6M6
(403) 291-4814

CE COMPLIANCE STATEMENT FOR WU21 *Approvals Pending*

This product has been tested and confirmed to be in compliance with all EU EMC and LVD Directives (in effect at the time of testing) for light industry use. There may be a temporary degradation of performance at extreme levels of electro-magnetic interference. This instrument complies with the Low Voltage Directive 73/23/EEC. For further details, contact Barton Instrument Systems.

CE 168X

Order Code

TankScan W-Series WU2_Ultrasonic LEVEL MONITOR CONFIGURATION	ORDER CODE									
	WU2	#	-	X	#	X	##	X	#	X	#
RADIO											
North America (902-928 MHz)		0									
Europe (869.7-870 MHz)		1									
MEASUREMENT RANGE											
Short (86 kHz) to 6 feet (approx. X m)				A							
Medium (50 kHz) to 18 feet (approx. 5 m)				B							
Long (26 kHz) to 40 feet (approx. 5 m)				C							
MOUNTING											
Short Measurement Range											
3/4-inch NPT Male Thread					1						
3/4-inch G Male Thread with Viton Gasket					2						
Medium Measurement Range											
2-inch NPT Male Thread					3						
2-inch G Thread with Viton Gasket					4						
Long Measurement Range											
3-inch ANSI Flange					5						
DIN 80 Flange					6						
EXTENSION MATERIAL (50 kHz-Medium Ver only)											
PVC						A					
Polypropylene						B					
PVDF						C					
None						D					
EXTENSION LENGTH (50 kHz-Medium Ver only)											
Length in inches (18 inch maximum)							##				
None							00				
POWER OPTIONS											
Battery Pack (4 AA-Alkaline)								A			
ANTENNA											
Standard (internal)									0		
Remote									1		
FIRMWARE											
Standard										A	
APPROVAL RATING											
North America (CSA) Intrinsically Safe											0
U.L./Cenelec Intriniscally Safe											1
Non-hazardous (general purpose)											2

Barton Instrument Systems, LLC
900 S. Turnbull Canyon Rd.
City of Industry, CA 91745 USA
(626) 961-2547
On the Web at www.barton-instruments.com
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