



Loop Powered U-Series Non-Contact Ultrasonic Transmitter

Form 1185

The U11 loop powered ultrasonic transmitter provides level measurement solutions for a wide variety of industries and applications. Its unique features allow more flexibility and reliability than other loop powered level transmitters in difficult applications. The key features of the U11 transmitter are:

- Low frequency sound for superior penetration through dust and foam.
- Sophisticated modular power management system allows the U11 to produce the most powerful sensing signal on the market.
- Adaptive gain control continuously adjusts the sensitivity of the sensor according to process conditions.

The U11 is suitable for use in liquids, slurries and solids. It operates by generating an intense pulse of sound and measuring the time for an echo to return from the process material. Knowing the elapsed time and the speed of sound allows the U11 to calculate the distance to the target. This distance is then output in the form of a 4-20mA analog signal. HART® communications are optional for output and unit interface.

Product Application

The U11 can be used in most applications that meet the specifications on page 2. Sensor selection is critical for proper operation. Some application guidelines are given below and sensor specifications are listed on page 2.

- Can be used on liquids, slurries or solids based on sensor capabilities.
- No hard vacuum service - sound does not transmit in vacuum.
- For heavy dust applications use half of the "solids" range of the sensor.
- Vapor content in the vessel must be constant - changing vapors will cause unavoidable errors.
- For applications with heavy condensate or foam use 20kHz or lower frequency sensor.



The U11 has been successfully applied in many industries and applications. Some sample areas of application are:

Industries

- Power generation
- Food processing
- Water/waste-water treatment

Applications

- Sump pit monitoring
- Flour/sugar storage silos
- Coal bin/storage
- Dry chemical storage
- Lime slurry

Loop Powered Ultrasonic Transmitter

How to Order

Model Selection

The U11 is selected as two separate model numbers - one for the electronics package and one for the transducer. The sensor frequency must be specified in both the electronics and the transducer model numbers.

Product Specifications - Electronics	
Input Voltage	23 to 30 VDC
Input Supply Current	4.0mA to 20.0 mA
Input Source	2-wire, loop power
Electronic Accuracy	±0.25% of maximum range
Analog Output	4-20mA (maximum 750Ω) proportional at 24 VDC
Display	2x8 digit alpha/numeric LCD display
Memory	Non-volatile (no backup battery required)
Operating Temperature	-40 to 140°F (-40 to 60°C)
Enclosure Material	Cast Aluminum
Pressure Rating	15 psig (1.0 Bar)

Electronics Model Number			
Accessories			4
		Paper supplemental tag	PP
		Wired on supplemental SS tag	RR
		Riveted on supplemental SS tag	TT
		Fungicidal varnish on housing	VV
Sensor			3
Output Type		2	
4-20mA analog loop	H	10kHz	10
4-20mA loop with HART	K	15kHz	15
		20kHz	20
		30kHz	30
Housing		1	
NEMA 4X/explosion proof with window	C		
NEMA 4X/explosion proof without window	D		
<p>U 1 1 C L9 H 00 30 PP</p>			

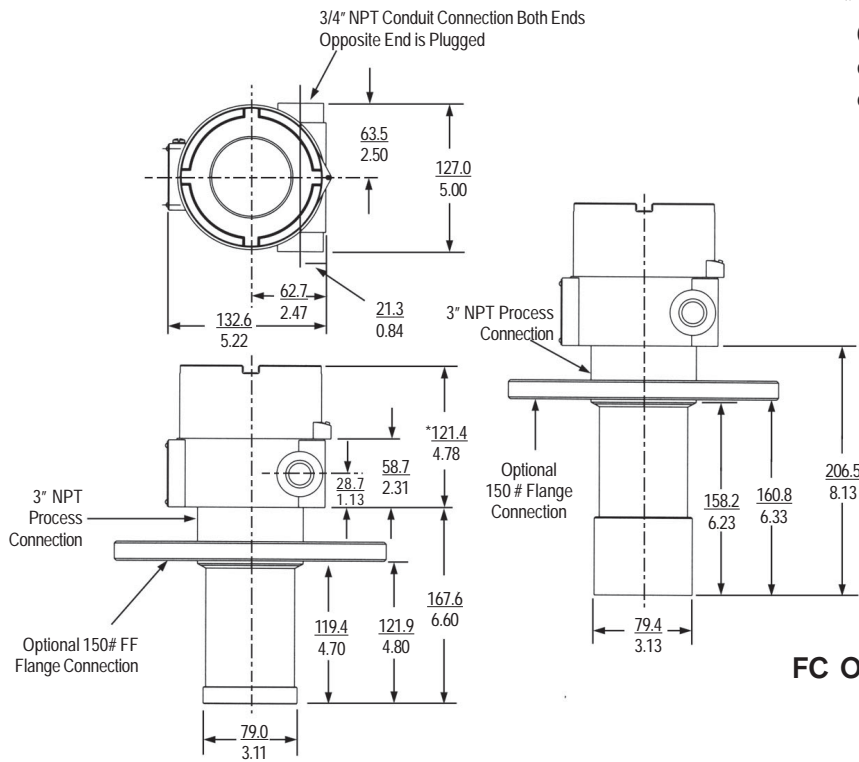
Product Specifications - Transducer				
Frequency	10kHz	15kHz	20kHz	30kHz
Blanking	3.3 ft. (1.0m)	20" (0.45m)	16" (0.4m)	12" (0.3m)
Liquid Range	165 ft. (50m)	100 ft. (30m)	50 ft. (15m)	33 ft. (10m)
Solid Range	65 ft. (20m)	33 ft. (10m)	N/A	N/A
Standard Mounting	10" flg	3" NPT	3" NPT	3" NPT

Transducer Model Number			
Accessories			3
		Focusing cone	FC
Process Connection		2	
3" NPT	3 A		
4" 150# flange	4 C		
6" 150# flange	6 C		
8" 150# flange	FC		
10" 150# flange (standard on 10 kHz)	GC		
Sensor Frequency		1	
10kHz	E		
15kHz	H		
20kHz	F		
30kHz	G		
<p>B E P3 A 000000 FC</p>			

Loop Powered Ultrasonic Transmitter

How to Order

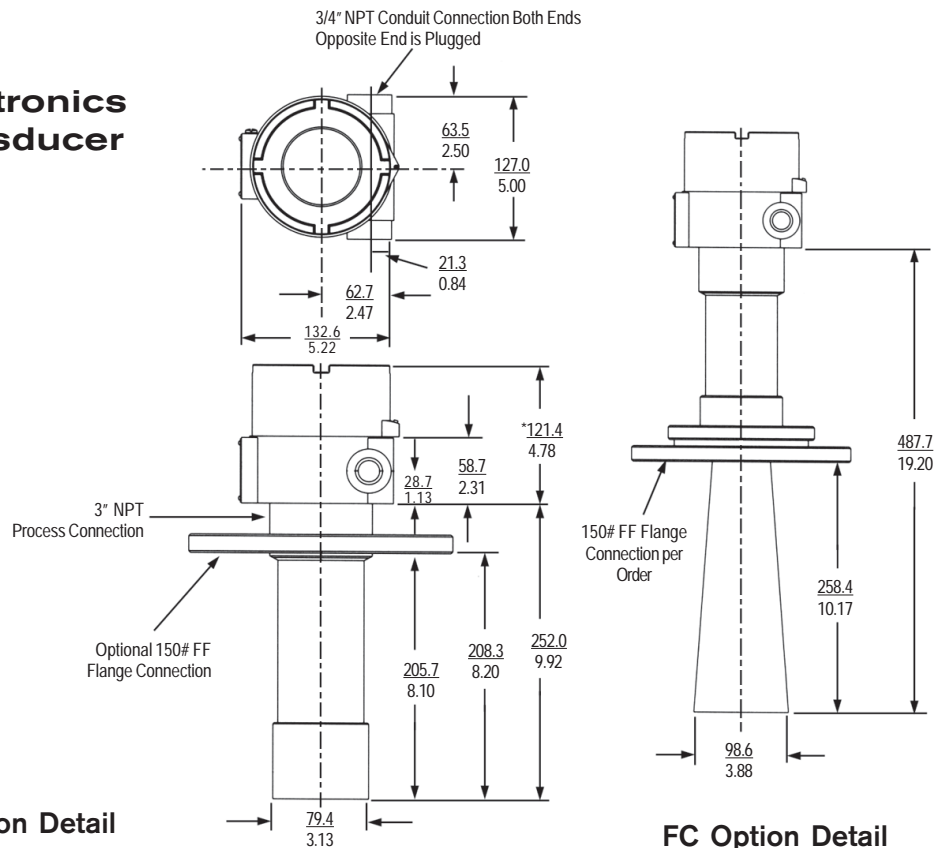
Integral Electronics 30 kHz Transducer



* Sight glass cover shown. Subtract 0.52 inches (13.7 mm) from this dimension for housings with blind covers.

FC Option Detail

Integral Electronics 20 kHz Transducer



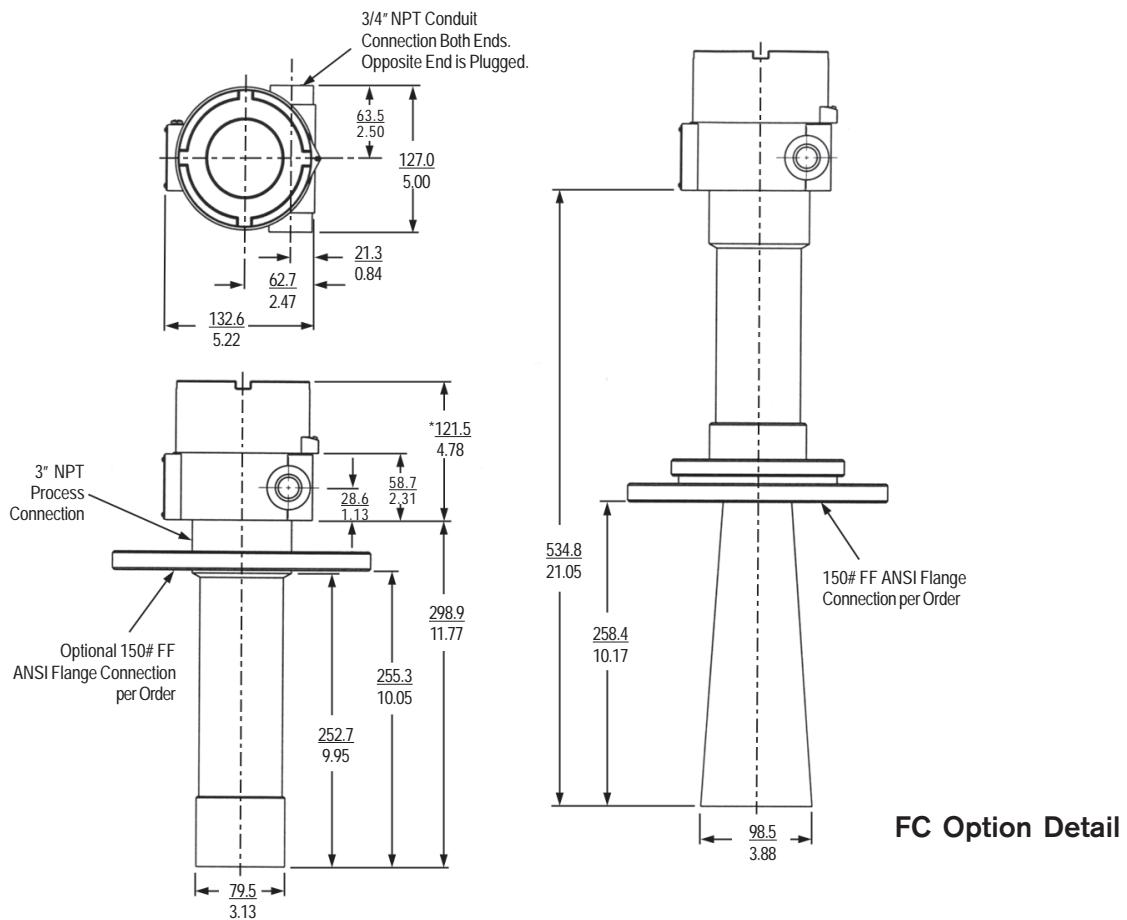
FC Option Detail

FC Option Detail

Loop Powered Ultrasonic Transmitter

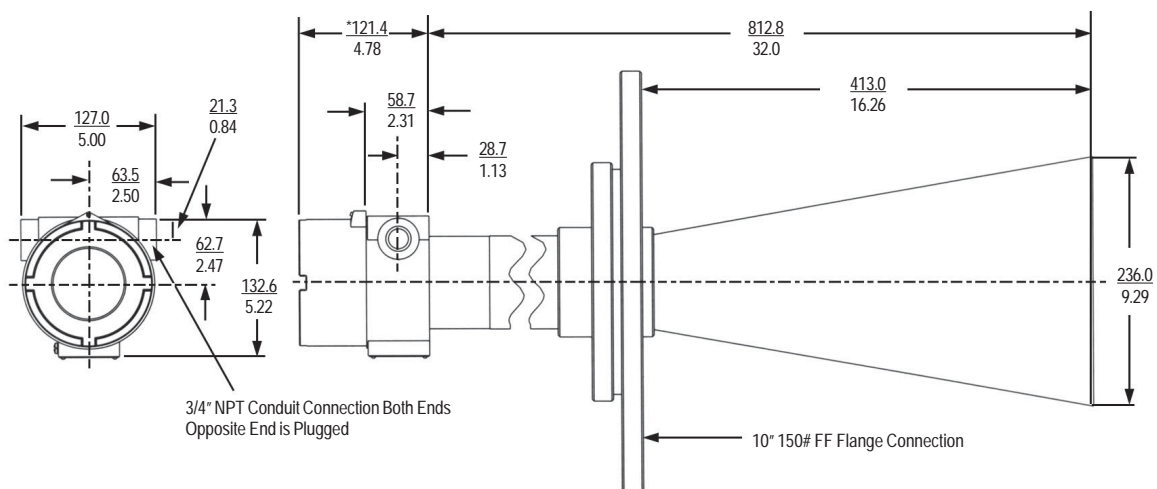
How to Order

Integral Electronics 15 kHz Transducer



Drawing # 0390646

Integral Electronics 10 kHz Transducer



U Series Non-Contact Ultrasonic Transmitter

Worksheet

Applications Worksheet for Non-Contact Ultrasonic Transmitters

Company _____ Phone _____
 Address _____ FAX _____
 _____ E-mail _____
 _____ Rep Company _____
 Contact Name _____ Rep Contact _____

General	1	Tag Number		Vessel	36	Vessel Materials	
	2	Application	Level / Open Flow		37	Vessel Diameter	_____ ft / m
	3	Function			38	Vessel Height	_____ ft / m
	4	Area Classification	Hazardous/Non-hazardous		39	Vessel Top	Open / Sloped Domed / Flat
	5	Agency Approval			40	Vessel Bottom	Conical / Flat
Sensor	6	SOR Transducer Model		41	Filling Method	Pneumatic / Gravity Other _____	
	7	Process Connection Type	NPT / 150# ANSI Flange	42	Noise in or Around Vessel	Yes / No (describe below)	
	8	Process Connection Size		Application Notes	43	Obstructions Inside Vessel	Yes / No (sketch below)
	9	Focusing Options	Standard / High-Gain				
	10	Process Wetted Mateials	Polypropylene / Teflon®				
	11	Measured Range	_____ ft / m				
	12	Mounting Distance from Sidewall	_____ ft / m				
	13	Mounting Distance from Filling Port	_____ ft / m				
Electronics	14	SOR Electronics Model					
	15	Location	Integral				
	16	Remote Distance	_____ ft / m				
	17	Enclosure Class					
	18	Conduit Connection	3/4" NPT				
	19	Power Supply	23-30 VDC Loop				
Process Conditions	20	Transmitter	4-20mA / 20-4mA				
	23	Media Name		Application Sketch			
	24	Media Type	Liquid / Slurry / Solid				
	25	Density					
	26	Particle Size					
	27	Coating / Buildup	Yes / No				
	28	Foam	Yes / No				
	29	Agitation	Yes / No				
	30	Vapors (not air)	Yes / No				
	31	Pressure Maximum					
	32	Pressure Normal					
	33	Temperature Maximum					
34	Temperature Normal						
35	Ambient Temperature						

Instructions

1. Complete the company and contact information.
2. Fill out the form above as completely as possible.
3. In boxes where an option is given, cross out the undesirable choice(s).
4. In boxes that are blank, fill in the appropriate information. Please remember to use engineering units where required.
5. In boxes with only one choice, this is the standard feature for the product.
6. Provide any additional details in the Applications Notes section.
7. Provide a sketch of the application showing vessel shape, size, mounting location and any internal obstructions in the Application Sketch section.
8. Fax completed sheet to SOR: 913-888-0767



Process Instrumentation

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Registered Quality System to ISO 9001

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