

Ultrasonic flow measurement for the semiconductor industry

Permanently installed, completely metal-free ultrasonic clamp-on system for the flow measurement of liquids

Features

- Non-invasive flow measurement with high measuring accuracy for stationary use
- The transducer mounting fixture and the transducers are completely metal-free
- For plastic pipes and flexible tubes with diameters of 3/8", 1/2", 3/4", 1", 1 1/4", 1 1/3", 1 1/2" (others on request)
- High measuring accuracy, even at low flow velocities
- Installation and commissioning can be carried out during operation
- No risk of contamination or leaks as the transducers are clamped-on to the outside of the pipe wall
- User-friendly menu navigation - the firmware is specifically adapted to the needs of the semiconductor industry

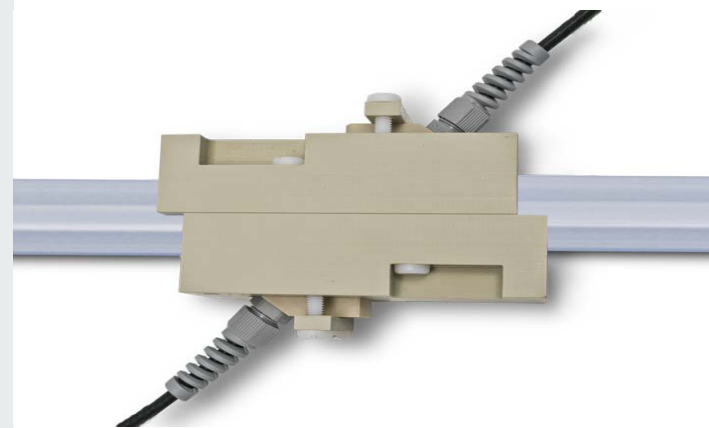
Applications

Flow measurement in the semiconductor industries for:

- Highly corrosive substances, e.g., acids or caustics
- Cleaning agents
- Solvents
- Ultrapure fluids




FLUXUS F501SC



Transducers CDQ2LK1 in block fastener

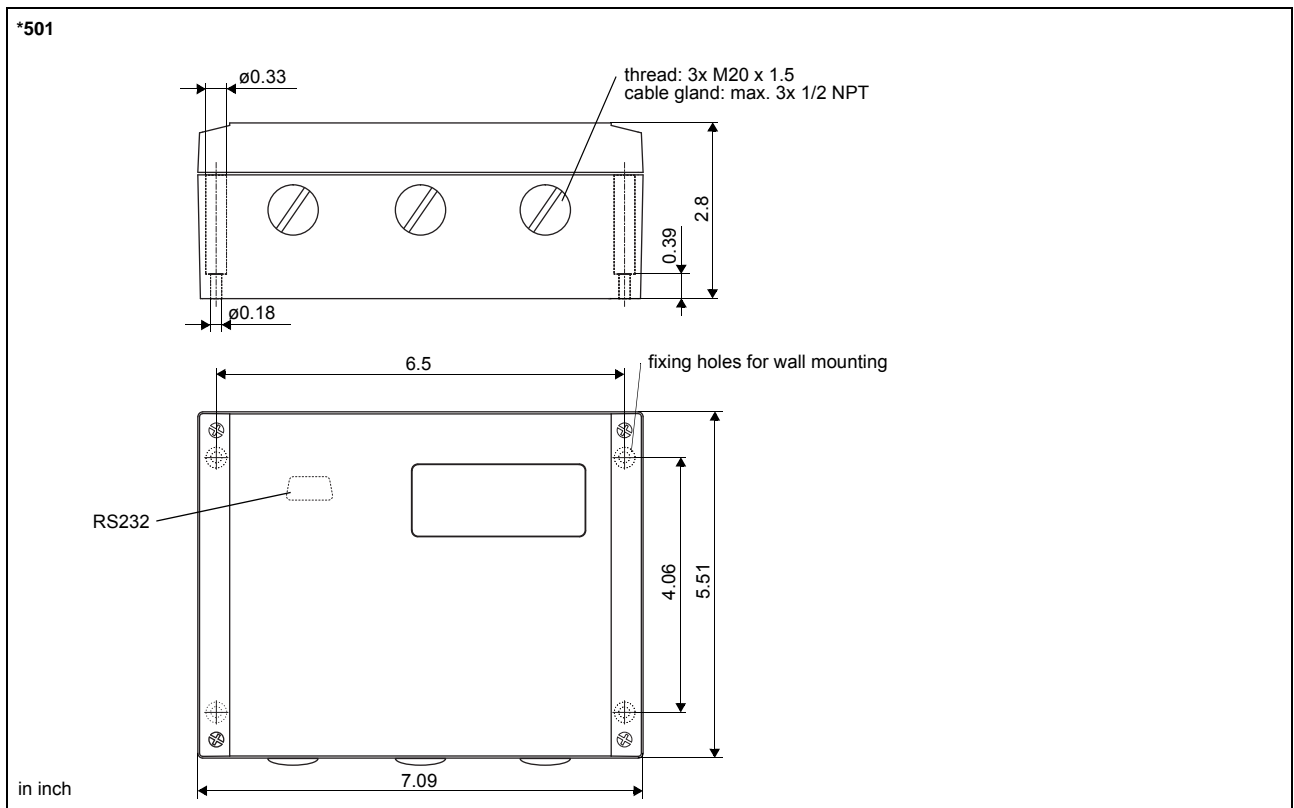
Transmitter

Technical data

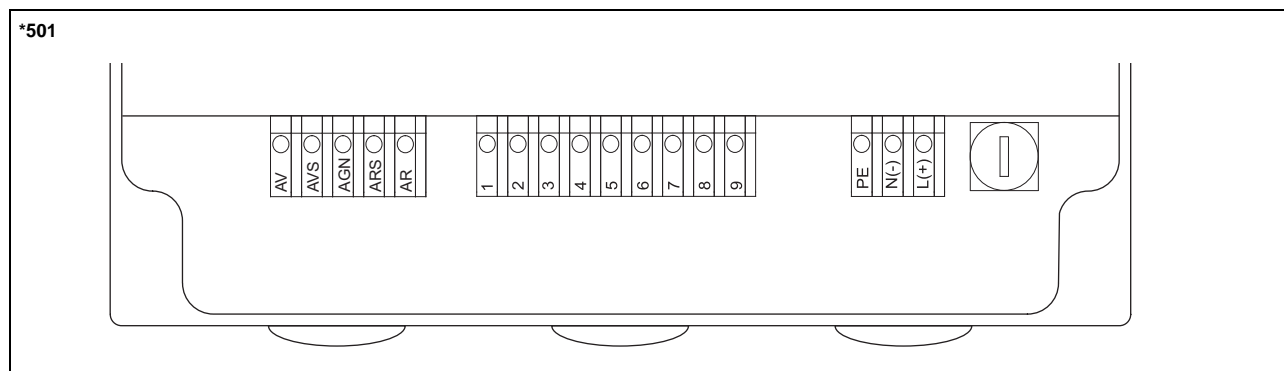
		FLUXUS F501SC
		
design		field device with 1 measuring channel
application		semiconductor applications
measurement		
measurement principle		transit time difference correlation principle
flow velocity	ft/s	0.03 to 82
repeatability		0.25 % of reading ± 0.03 ft/s
fluid		water and acoustically similar liquids with < 6 % gaseous or solid content by volume
accuracy ¹		
• volumetric flow rate		± 2 % of reading ± 0.03 ft/s
transmitter		
power supply		<ul style="list-style-type: none"> • 100 to 230 V/50 to 60 Hz or • 20 to 32 V DC or • 11 to 16 V DC
power consumption	W	< 10
number of measuring channels		1
damping	s	0 to 100 (adjustable)
measuring cycle	Hz	10
response time	s	1
housing material		aluminum, powder coated
degree of protection		NEMA 4
dimensions	in	see dimensional drawing
weight	lb	3.3
fixation		wall mounting
ambient temperature	°F	14 to +140
display		2 x 16 characters, dot matrix, backlight
menu language		English, German, French, Dutch, Spanish
measuring functions		
physical quantities		volumetric flow rate, mass flow rate, flow velocity
totalizer		volume, mass
communication interfaces		
process interfaces		max. 1 option: <ul style="list-style-type: none"> • RS485 (sender) • Modbus RTU, sender (switchable) • BACnet MS/TP, sender (switchable)
data logger		
loggable values		all physical quantities and totalized values
capacity		> 100 000 measured values
remark		with communication interface only in sender mode
outputs		
		The outputs are galvanically isolated from the transmitter.
• current output		
number		1
range	mA	0/4 to 20
accuracy		0.1 % of reading ± 15 μ A
active output		$R_{ext} < 500 \Omega$
• binary output		
number		2
optorelay		28 V/100 mA
binary output as alarm output		
• functions		limit, change of flow direction or error
binary output as pulse output		
• functions		mainly for totalizing
• pulse value	units	0.01 to 1000
• pulse width	ms	80 to 1000

¹ for reference conditions and $v > 0.82$ ft/s

Dimensions



Terminal assignment

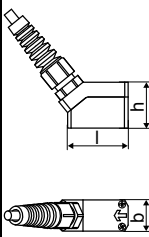


power supply ¹				
terminal	connection (AC)		connection (DC)	
PE	earth		earth	
N(-)	neutral		-	
L(+)	phase		+	
transducers				
terminal	connection		transducer	
AV	signal		↑	
AVS	internal shield			
ARS	internal shield		⚡	
AR	signal			
cable gland	external shield		↑ ⚡	
outputs ¹				
terminal	connection	terminal	connection	communication interface
1(-), 2(+)	binary output B1	8(+)	signal +	<ul style="list-style-type: none"> • RS485 • Modbus RTU • BACnet MS/TP
3(-), 4(+)	binary output B2	7(-)	signal -	
5(-), 6(+)	current output I1	9	shield	

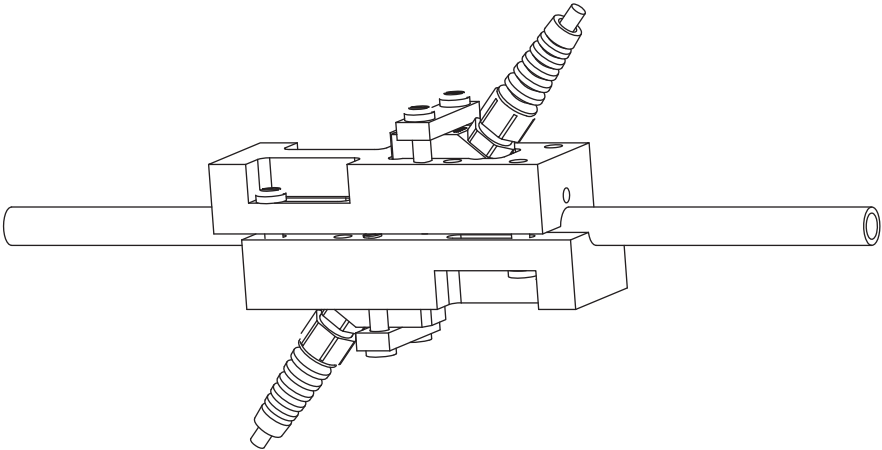
¹ cable (by customer): e.g., flexible leads, with insulated wire end ferrules, lead cross sectional area: AWG14 to 24

Transducers

Technical data

technical type		CDQ2LK1
transducer frequency		MHz 4
inner pipe diameter d		
min. extended	in	0.31
min. recommended	in	0.47
max. recommended	in	2
pipe wall thickness		
min.	in	0.02
material		PEEK
degree of protection		NEMA 6
transducer cable		
type		2549
length		ft 32
dimensions		
length l	in	1.57
width b	in	0.71
height h	in	1.04
dimensional drawing		
ambient temperature		
min.	°F	-4
max.	°F	+212

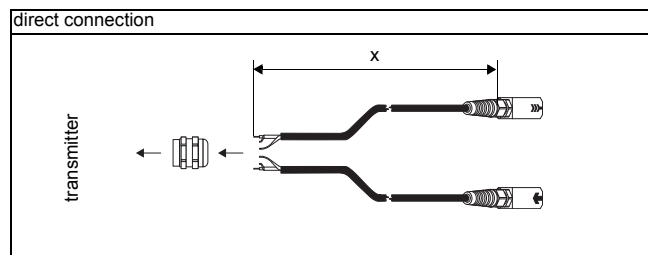
Transducer mounting fixture

<p>block fastener</p> 	<p>material: PP</p> <p>outer pipe diameter: 3/8", 1/2", 3/4", 1", 1 1/4", 1 1/3", 1 1/2" (others on request)</p> <p>dimensions l x b x h:</p> <ul style="list-style-type: none"> • l: 4.72 in • b: 3/8", 3/4", 1": 1.81 in 1/2": 1.61 in 1 1/4": 2.09 in 1 1/3", 1 1/2": 2.4 in • h: outer pipe diameter + 2x transducer height + 0.87 in
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Coupling materials for transducers

type	ambient temperature °F	material
coupling pad type VT	14 to +392	fluoroelastomer

Connection systems



x = transducer cable length

Cable

transducer cable		
type		2549
weight	lb/ft	0.04
ambient temperature	°F	-148...+392
cable jacket		
material		PTFE
outer diameter	in	0.21
thickness	in	0.02
color		black
shield		x

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