

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

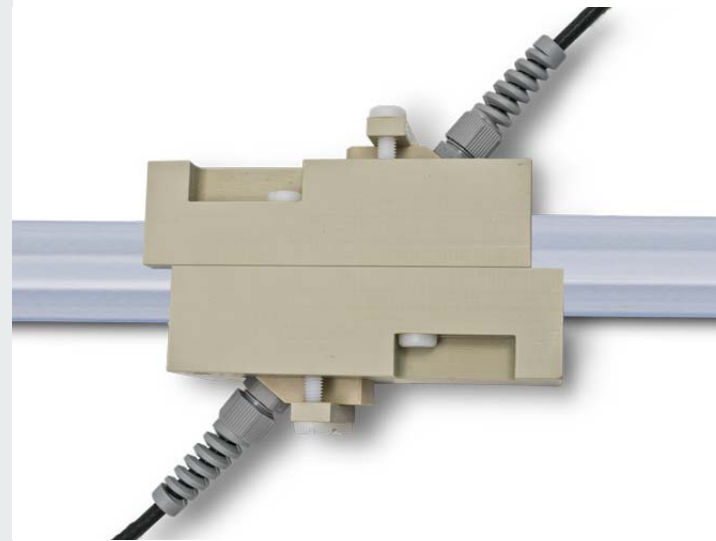
Applications

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

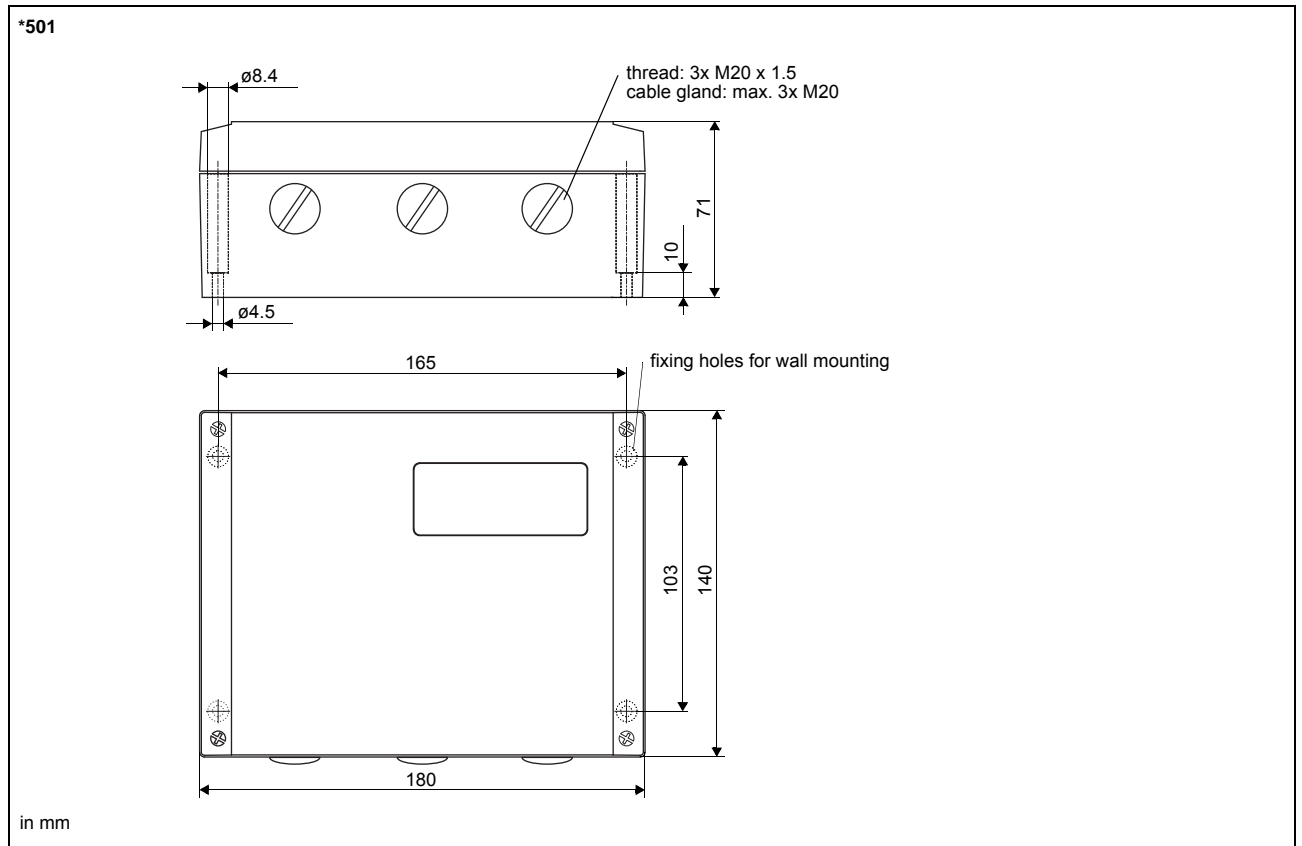
Transmitter

Technical data

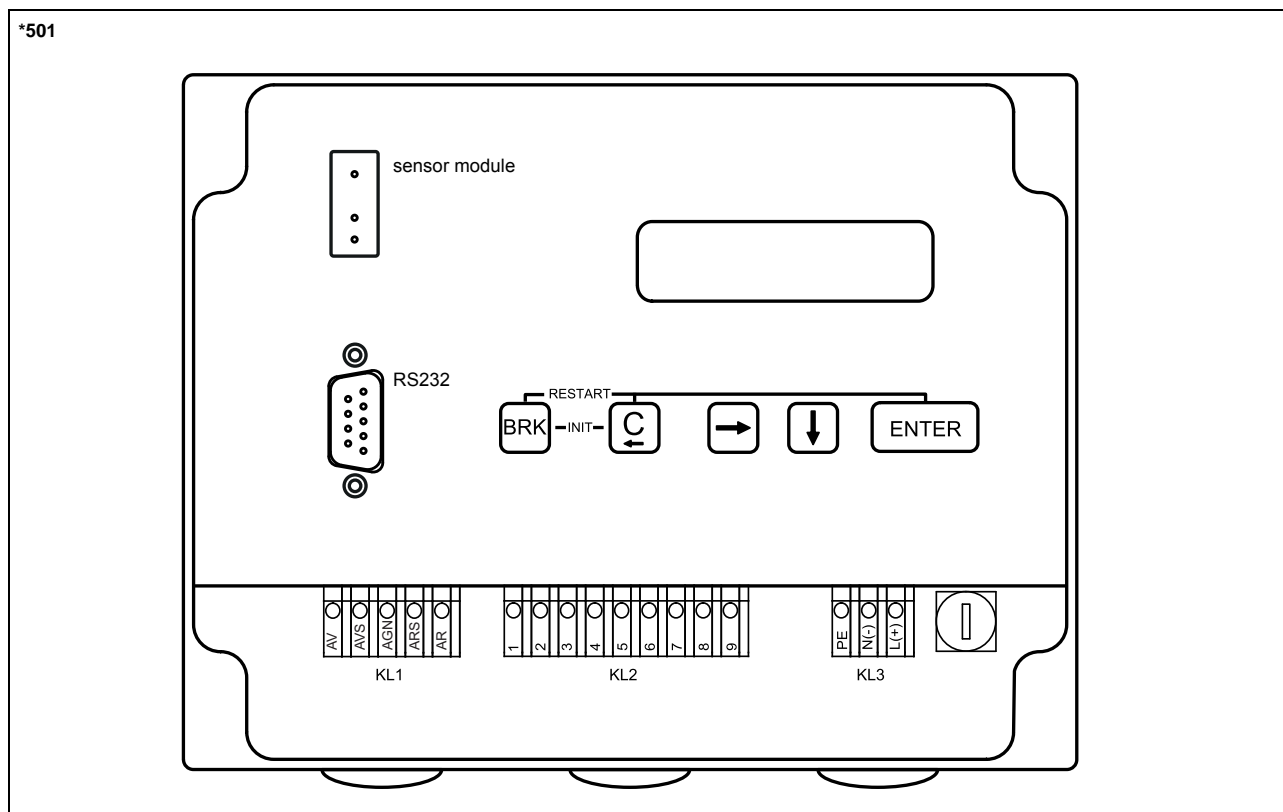
FLUXUS F501SC	
	
design	field device with 1 measuring channel
application	semiconductor applications
measurement	
measurement principle	transit time difference correlation principle
flow velocity	m/s 0.01...25
repeatability	0.25 % of reading ± 0.01 m/s
fluid	water and acoustically similar liquids with < 6 % gaseous or solid content by volume
measurement uncertainty (volumetric flow rate) ¹	± 1.5 % of reading ± 0.01 m/s
transmitter	
power supply	<ul style="list-style-type: none"> • 100...230 V/50...60 Hz or • 20...32 V DC or • 11...16 V DC
power consumption	W < 10
number of measuring channels	1
damping	s 0...100 (adjustable)
measuring cycle	Hz 10
response time	s 1
housing material	aluminum, powder coated
degree of protection	IP66
dimensions	mm see dimensional drawing
weight	kg 1.5
fixation	wall mounting
ambient temperature	°C -10...+60
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	
service interfaces	<ul style="list-style-type: none"> • RS232 • USB (with adapter)
process interfaces	max. 1 option: <ul style="list-style-type: none"> • RS485 (sender) • Modbus RTU, sender (switchable) • BACnet MS/TP, sender (switchable) • M-Bus
accessories	
serial data kit	
<ul style="list-style-type: none"> • cable • adapter 	RS232 RS232 - USB
software	<ul style="list-style-type: none"> • FluxDiagReader: download of measured values and parameters, graphical presentation • FluxDiag (optional): download of measurement data, graphical presentation, report generation
data logger	
loggable values	all physical quantities and totalized values
capacity	> 100 000 measured values
outputs	
The outputs are galvanically isolated from the transmitter.	
• current output	
number	1
range	mA 0/4...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...1000
• pulse width	ms 80...1000

¹ for reference conditions and $v > 0.25$ m/s, with sensor module

Dimensions



Terminal assignment

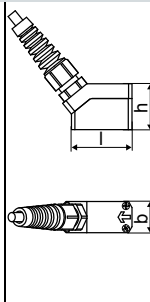


power supply ¹				
terminal	connection (AC)	connection (DC)		
PE	earth	earth		
N(-)	neutral	-		
L(+)	phase	+		
transducers				
terminal	connection	transducer		
AV	signal	↑		
AVS	internal shield	↕		
ARS	internal shield			
AR	signal	↑ ↕		
cable gland	external shield			
outputs ¹				
terminal	connection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

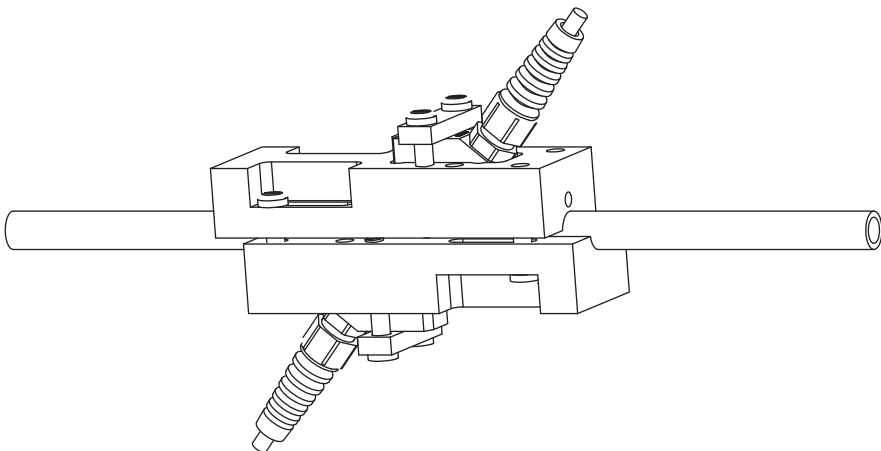
¹ cable (by customer): e.g. flexible leads, with insulated wire end ferrules, lead cross sectional area: 0.25...2.5 mm²

Transducers

Technical data

technical type		CDQ2LK1
transducer frequency	MHz	4
inner pipe diameter d		
min. extended	mm	8
min. recommended	mm	12
max. recommended	mm	51
pipe wall thickness		
min.	mm	0.6
material		PEEK
degree of protection		IP67
transducer cable		
type		2549
length	m	10
dimensions		
length l	mm	40
width b	mm	18
height h	mm	26.5
dimensional drawing		
pipe surface temperature		
min.	°C	-20
max.	°C	+100
ambient temperature		
min.	°C	-20
max.	°C	+100

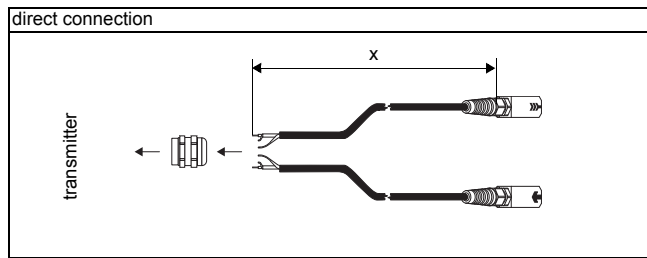
Transducer mounting fixture

<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: 120 mm • b: 3/8", 3/4", 1": 46 mm 1/2": 41 mm 1 1/4": 53 mm 1 1/3", 1 1/2": 61 mm • h: outer pipe diameter + 2x transducer height + 22 mm
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Coupling materials for transducers

type	ambient temperature °C
coupling foil type VT	-10...+200

Connection systems



x - transducer cable length

Cable

transducer cable	
type	2549
weight	kg/ m 0.065
ambient temperature	°C -100...+200
cable jacket	
material	PTFE
outer diameter	mm 5.3
thickness	mm 0.5
colour	black
shield	x