

### 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

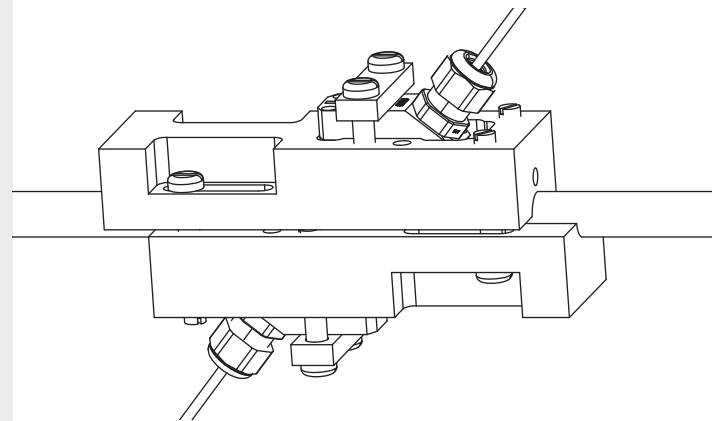
#### Applications

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

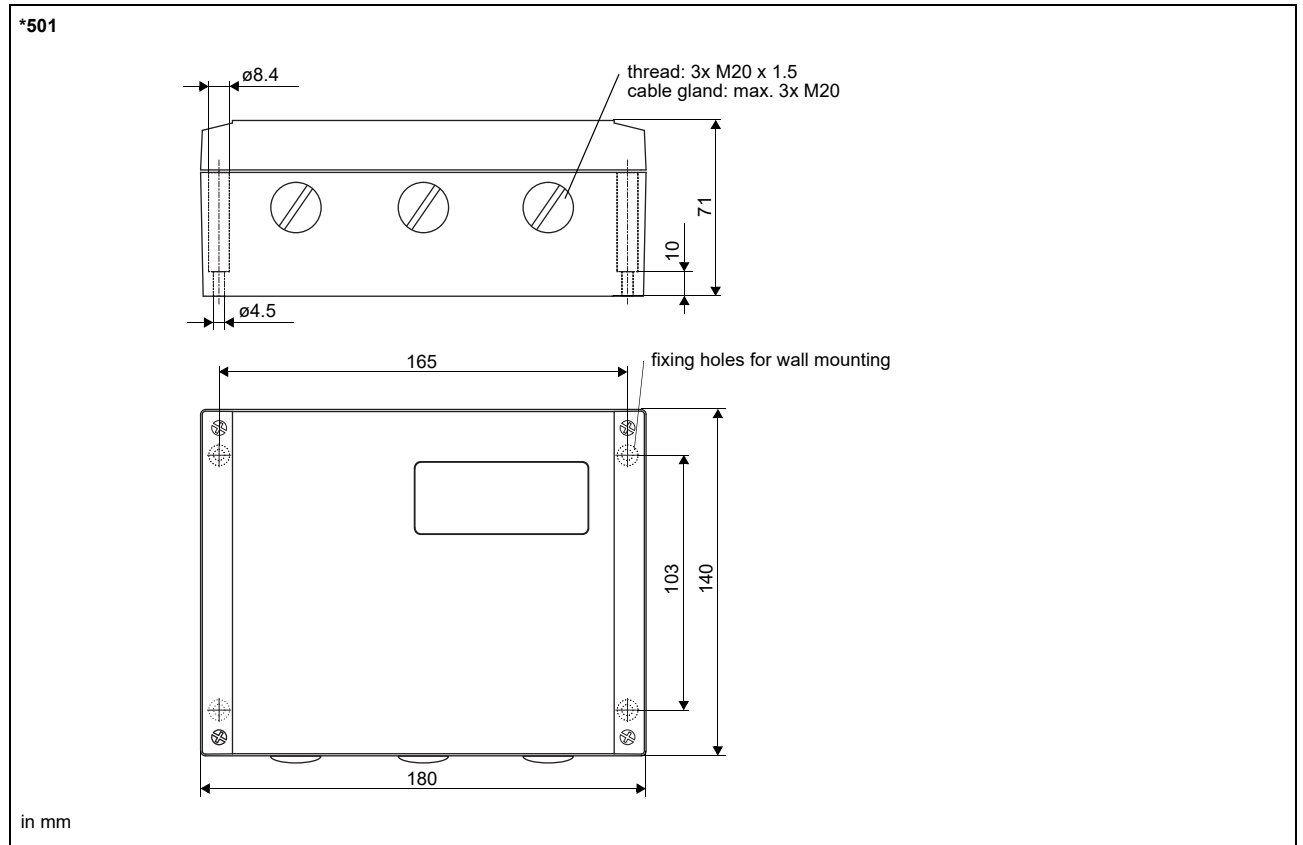
# Transmitter

## Technical data

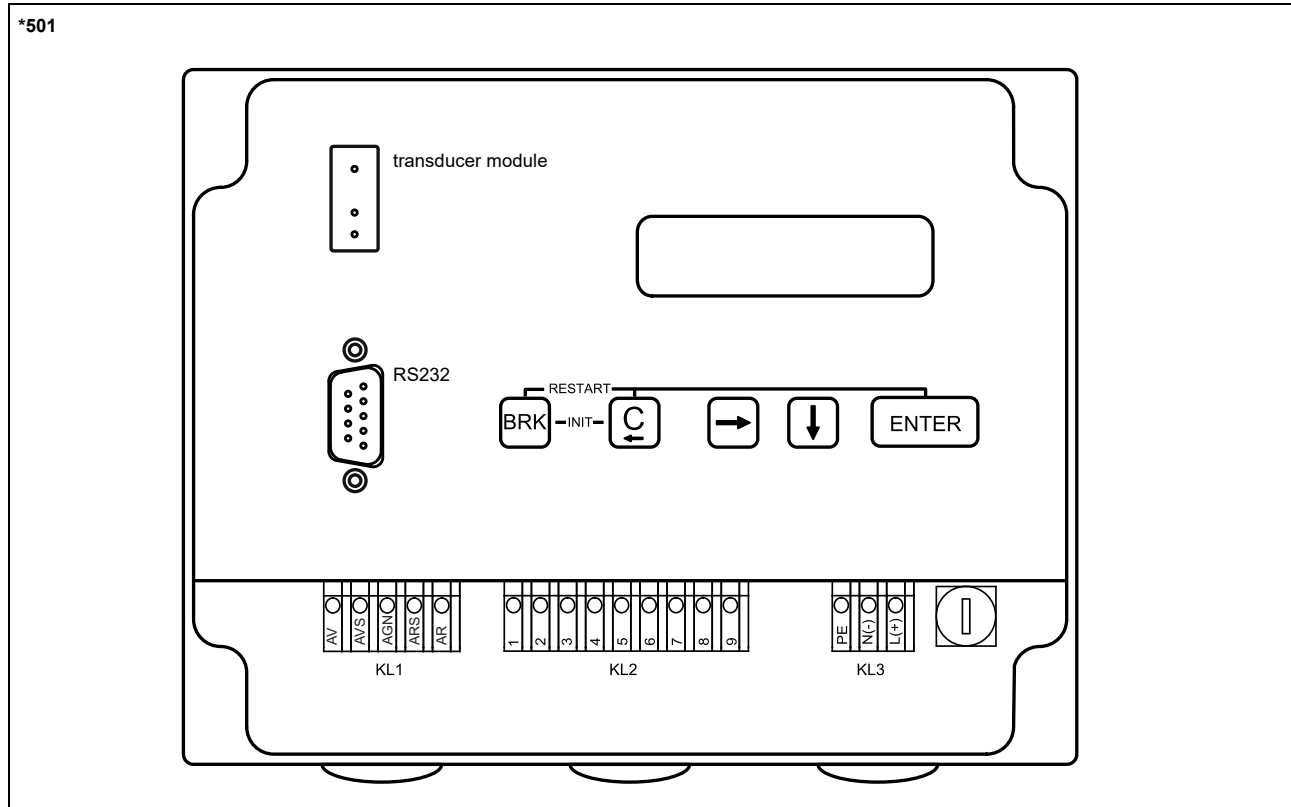
FLUXUS F501SC	
	
design	field device with 1 measuring channel
application	semiconductor applications
<b>measurement</b>	
measurement principle	transit time difference correlation principle
flow velocity	m/s 0.01...25
repeatability	0.25 % MV ±0.01 m/s
fluid	water and acoustically similar liquids with < 6 % gaseous or solid content by volume
measurement uncertainty (volumetric flow rate) <sup>1</sup>	±1.5 % MV ±0.01 m/s
<b>transmitter</b>	
power supply	<ul style="list-style-type: none"> <li>• 100...230 V/50...60 Hz or</li> <li>• 20...32 V DC or</li> <li>• 11...16 V DC</li> </ul>
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
<b>measuring functions</b>	
physical quantities	volumetric flow rate, mass flow rate, flow velocity
totaliser	volume, mass
<b>communication interfaces</b>	
service interfaces	<ul style="list-style-type: none"> <li>• RS232</li> <li>• USB (with adapter)</li> </ul>
process interfaces	max. 1 option: <ul style="list-style-type: none"> <li>• RS485 (sender)</li> <li>• Modbus RTU, sender (switchable)</li> <li>• BACnet MS/TP, sender (switchable)</li> <li>• M-Bus</li> </ul>
<b>accessories</b>	
<b>data transmission kit</b>	
• cable	RS232
• adapter	RS232 - USB
software	<ul style="list-style-type: none"> <li>• FluxDiagReader: reading of measured values and parameters, graphical presentation</li> <li>• FluxDiag (optional): reading of measurement data, graphical presentation, report generation</li> </ul>
<b>data logger</b>	
loggable values	all physical quantities and totalised physical quantities
capacity	> 100 000 measured values
<b>outputs</b>	
The outputs are galvanically isolated from the transmitter.	
<b>• current output</b>	
number	1
range	mA 0/4...20
accuracy	0.1 % MV ±15 µA
active output	$R_{ext} < 500 \Omega$
<b>• binary output</b>	
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 totalising
• pulse value	units 0.01...1000
• pulse width	ms 80...1000

<sup>1</sup> for reference conditions and  $v > 0.25$  m/s, with transducer module

## Dimensions



### Terminal assignment

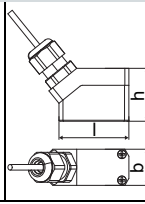


power supply <sup>1</sup>				
terminal	connection (AC)		connection (DC)	
PE	earth		earth	
N(-)	neutral		-	
L(+)	phase		+	
transducers				
terminal	connection		transducer	
AV	signal		↑	
AVS	internal shield			
ARS	internal shield		⤴	
AR	signal			
cable gland	external shield		↑ ⤴	
outputs <sup>1</sup>				
terminal	connection	terminal	connection	communication interface • RS485 • Modbus RTU • BACnet MS/TP • M-Bus
1(-), 2(+)	binary output B1	8(+)	signal +	
3(-), 4(+)	binary output B2	7(-)	signal -	
5(-), 6(+)	current output I1	9	shield	

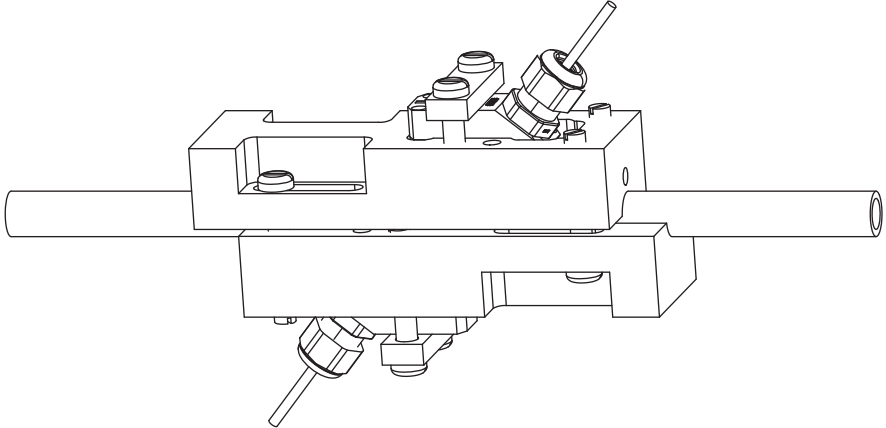
<sup>1</sup> cable (by customer): e.g. flexible wires, with insulated wire ferrules, wire cross-section: 0.25...2.5 mm<sup>2</sup>

## Transducers

### Technical data

technical type	CDQ2LK1	
transducer frequency	MHz	4
<b>inner pipe diameter d</b>		
min. extended	mm	8
min. recommended	mm	12
max. recommended	mm	51
<b>pipe wall thickness</b>		
min.	mm	0.6
material	PEEK	
degree of protection	IP67	
<b>transducer cable</b>		
type	1699	
length	m	10
<b>dimensions</b>		
length l	mm	40
width b	mm	18
height h	mm	26.5
dimensional drawing		
<b>pipe surface temperature</b>		
min.	°C	-20
max.	°C	+100
<b>ambient temperature</b>		
min.	°C	-20
max.	°C	+100

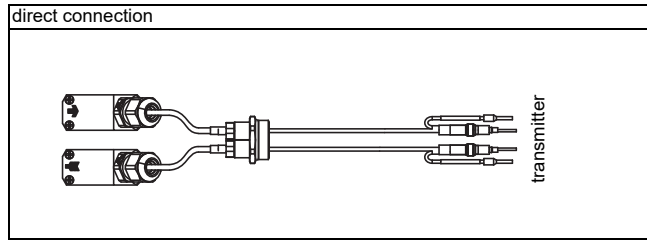
### Transducer mounting fixture

<p><b>block fastener</b></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"> <li>• l: 120 mm</li> <li>• 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</li> <li>• h: outer pipe diameter + 2x transducer height + 22 mm</li> </ul>
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### Coupling materials for transducers

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

## Connection systems



x - transducer cable length

## Cable

transducer cable		
type		1699
weight	kg/ m	0.019
ambient temperature	°C	-55...+200
cable jacket		
material		PTFE
outer diameter	mm	2.9
thickness	mm	0.3
colour		brown
shield		x

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