Ultrasonic flow meter
For gas flow measurement
Model FLC-UFL

Further approvals
see 12

Applications

- Custody transfer applications
- Industrial gases
- Oil and gas and Petrochemical industry
- Power generation
- Process industry

Special features

- Patented broadband continuous-wave technology
- Simultaneous transmission on two or more paths
- No pressure drop and no wear parts
- Intrinsically safe design
- Approved for custody transfer (MID 2014/32/EU, OIML R137-1 and -2)

Ultrasonic flow meter, model FLC-UFL

Description

By calculating velocity ratios between two or more ultrasonic paths, the simply constructed model FLC-UFL ultrasonic flow meter provides reliable gas flow measurement. Additional measurands, such as speed of sound, signal-to-noise ratio or signal strength, are available for condition monitoring.
For applications requiring integrated volume conversion, pressure and temperature sensors can be connected.

The flow meters are certified in accordance with ATEX/IECEx and cQPSus intrinsically safe for zone 0. The instrument allows for easy and quick installation and commissioning since no special provisions for wiring and case are required.

The patented broadband continuous-wave technology ensures low-noise and reliable measurements, even in the most demanding applications. The epoxy-coated aluminium-alloy electronics enclosure has an ingress protection of IP66 and NEMA 4X for outdoor use.

For offshore applications, a version in stainless steel is available. The transducers are completely encapsulated with titanium grade 2 and designed for harsh conditions and corrosive media.

The model FLC-UFL provides comprehensive flow and diagnostic information on the local display and remotely via a PC software interface, enabling real-time data logging and condition monitoring.
The display shows an overview of the instrument's set parameters, such as units, pipe size and ultrasonic path configuration. Traceability information such as firmware version, checksums and serial numbers are also displayed.

The model FLC-UFL is supplied, as standard, with a pulse/frequency output and a USB port for commissioning and service. Via option boards, an isolated RS-485 and two additional isolated pulse/frequency outputs as well as a 4 ... 20 mA output can be provided.

Specifications

Basic Information				
	Model FLC-UFL 1/2	**Model FLC-UFL 3/3F**	**Model FLC-UFL 4/4F**	**Model FLC-UFL 4F Duo**
Measurement principle	Transit time, broadband continuous-wave			
Pipe diameters	■ 2 ... 96"; (150, 300 lb) ■ 2 ... 30"; (600, 900 lb)	3 ... 30"; (150, 300, 600, 900 lb) → Other sizes on request.		8 ... 30"; (300, 600, 900 lb)
Flange standards	■ ASME B16.5 and B16.47 ■ EN 1092-1			
Pressure ranges	Up to 153 bar [2,250 psi]	Up to 102 bar [1,480 psi]	Up to 153 bar [2,250 psi]	
	→ Depending on the transducer type	→ Other pressure ranges on request.		
Accuracy	Model FLC-UFL 1: ■ 2 % (> 3 m/s) ■ 3 % (0.1 .... 3 m/s) Model FLC-UFL 2 [1]: ■ 1.5 % (> 3 m/s) ■ 2 % (0.1 ... 3 m/s)	Factory calibration: ■ 1 % (Q_t – Q_{max}) ■ 2 % (Q_{min} – Q_t) Flow calibration: ■ 0.5 % (Q_t – Q_{max}) ■ 1 % (Q_{min} – Q_t)	Factory calibration: ■ 0.5 % (Q_t – Q_{max}) ■ 1 % (Q_{min} – Q_t) Flow calibration: ■ 0.2 % (Q_t – Q_{max}) ■ 0.5 % (Q_{min} – Q_t)	
Medium temperature	■ -30 ... +80 °C [-22 ... +176 °F] (standard) ■ -40 ... +120 °C [-40 ... +248 °F] (option)	-30 ... +80 °C [-22 ... +176 °F]		
Ambient temperature	-40 ... +60 °C [-40 ... +140 °F]			
Flow range	0.1 ... 65 m/s			
Repeatability	0.2 %	0.1 %	0,05 %	
Turndown ratio	650:1	100:1		
	→ Depending on pipe diameter			
Material				
Meter body	■ Carbon steel, ASTM A350-LF2 Cl.1 ■ Stainless steel, ASTM A182-F316/316L			
Electronic enclosure material	■ Low-copper aluminium alloy, epoxy-painted ■ Stainless steel			
Transducer	■ All-metal, Ti grade 2 ■ Replacement version available			
Port				
Temperature Pt100 sensor, 4-wire	■ ¼ NPT, female thread ■ ½ NPT, female thread	-		
	→ Other temperature connections on request.			
Pressure absolut pressure sensor	■ ¼ NPT, female thread ■ ½ NPT, female thread	¼ NPT, female thread		
IP ingress protection	IP66, NEMA 4X			
Cable entry	■ M20 x 1.5, female thread, (four inputs) ■ ½ NPT, female thread			
Supply voltage				
Mainboard	DC 12 ... 28.8 V, max. 670 mW			
Option board	DC 10.8 ... 28.8 V, max. 225 mW			
User interface	128 x 128 dot matrix LC display, 4 buttons			
Interface port	■ 1 USB output (not intrinsically safe) ■ 1 frequency output (HF or LF)			
Communication protocols	Modbus® (RS-485 and USB)			

Interface connections (optional)				
	Model FLC-UFL 1/2	Model FLC-UFL 3/3F	Model FLC-UFL 4/4F	Model FLC-UFL 4F Duo
Option board	■ 1 x RS-485, 2-wire, externally powered ■ 2 x digital, configurable via software (HF, LF, status)			
Dual RS-485 option board	■ 2 x RS-485, 2-wire, externally powered ■ 2 x digital, configurable via software (HF, LF, status) ■ 1 x Pt100, 4-wire temperature sensor interface ■ 1 x bridge, 4-wire pressure sensor interface			
PT option board	■ 1 x Pt100, 4-wire temperature sensor interface ■ 1 x bridge, 4-wire pressure sensor interface			
4 ... 20 mA option board [1]	■ 1 x 4 ... 20 mA loop-powered output			

1) Not with dual RS-485.

Model FLC-UFL 1/2

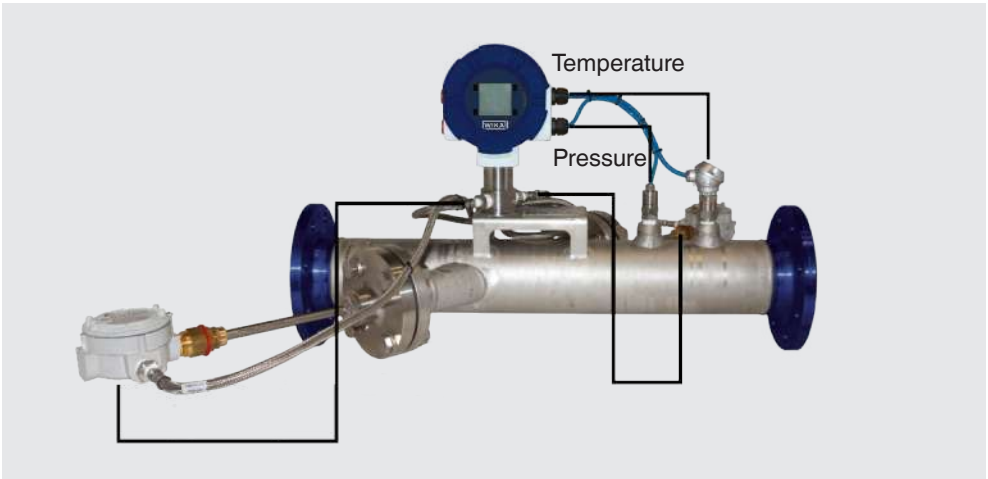
Gas flow measurement
The models FLC-UFL 1/2 are suitable for various and also changing gas compositions, such as in flare gas and venting applications or biogas measurements. With high turndown ratios and customer-specific designs, the model can be supplied in single or dual configuration with direct path alignment, horizontal or vertical alignment and diameter or top mounting (90°) for large pipes. Tools for the removal and replacement of sensors under pressure are available.

Simplified design
With only one printed circuit board containing all the circuits, the models FLC-UFL 1/2 are very simple in construction and safe. Both optional expansion boards are fitted directly onto the main board.

Measurand

- Velocity
- Actual volume flow
- Molecular weight calculation
- Standard or normal volume flow
- Mass flow calculation

The model FLC-UFL 1 and 2 features versatile input and output options, including optional pressure and temperature sensors for PTZ calculation (pressure, temperature and Z factor).



Model FLC-UFL 3/3F

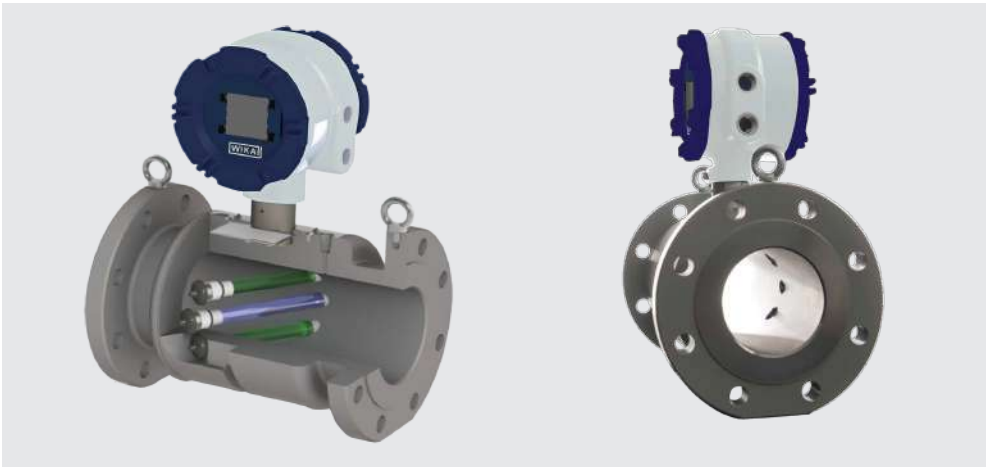
The models FLC-UFL 3 and 3F offer a reliable and precise measurement of gas flow, even in extreme applications. Versions for non-fiscal measurements (model FLC-UFL 3) and for fiscal measurements (model FLC-UFL 3F) are available.

Features

- Patented broadband continuous-wave technology
- Tools for the removal and replacement of sensors under pressure are available
- AGA-9-compliant (model FLC-UFL 3F)
- Mass flow calculation
- Integrated pressure and temperature sensors as a solution for PTZ calculation (Pressure, Temperature, and Z-factor), volume conversion, molecular weight calculations for flare gas or biogas with methane concentration
- Extensive inputs and outputs, including optional pressure and temperature sensors, digital and analogue 4 ... 20 mA outputs and RS-485-Modbus® communication
- Available in sizes 3 ... 30" and in pressure ratings class 150, 300, 600 and 900

→ Other sizes on request.

Model FLC-UFL 3/3F with three ultrasonic paths:

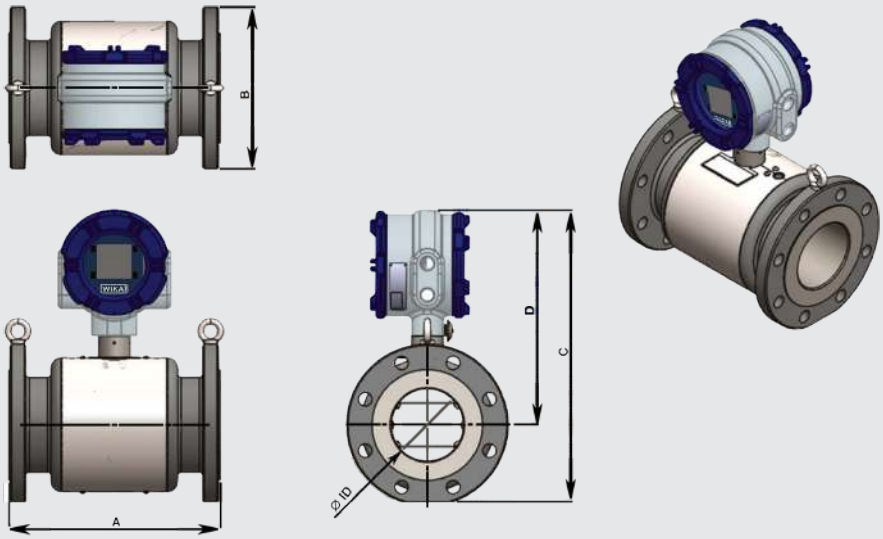


Model FLC-UFL 3/3F - flow ranges [1]						
Nominal size ANSI ["] / DIN [DN]	Schedule/ wall thickness	Inner diameter in mm [inch]	Flow in m^3/h [cf/h]			Turndown ratio
			Q_{max}	Q_t	Q_{min}	
2" / DN 50	40	52.5 [2.067]	320 [11,010]	32 [1,101]	2,8 [96]	115
	80	49.3 [1.939]	280 [9,690]	28 [969]	2.5 [85]	112
3" / DN 80	40	77.9 [3.068]	610 [21,223]	61 [2,122]	4.9 [170]	125
	80	73.7 [2.9]	540 [18,970]	54 [1,897]	4,3 [160]	126
4" / DN 100	40	102.3 [4.026]	1,000 [34,980]	100 [3,498]	8 [290]	125
	80	97.2 [3.826]	900 [31,600]	90 [3,160]	7,2 [260]	125
6" / DN 150	40	154.1 [6.065]	2,020 [71,090]	202 [7,109]	16 [550]	127
	80	146.3 [5.761]	1,820 [64,150]	182 [6,415]	14 [500]	130
8" / DN 200	40	202.7 [7.981]	3,490 [123,100]	349 [12,310]	27 [950]	130
	80	193.7 [7.625]	3,190 [112,370]	319 [11,237]	25 [870]	128
10" / DN 250	40	254.5 [10.02]	5,500 [194,100]	550 [19,410]	43 [1,490]	128
	80	242.9 [9.562]	5,100 [176,700]	510 [17,670]	39 [1,360]	131
12" / DN 300	STD	304.7 [11.938]	7,900 [278,200]	790 [27,820]	61 [2,140]	130
	80	289 [11.376]	7,100 [250,200]	710 [25,020]	55 [1,920]	130
14" / DN 350	STD	336.5 [13.126]	9,700 [339,200]	970 [33,920]	74 [2,610]	132
	80	317.5 [12.5]	8,600 [302,000]	860 [30,200]	66 [2,320]	131

Model FLC-UFL 3/3F - flow ranges [1]						
Nominal size ANSI ["] / DIN [DN]	Schedule/ wall thickness	Inner diameter in mm [inch]	Flow in m^3/h [cf/h]			Turndown ratio
			Q_{max}	Q_t	Q_{min}	
16" / DN 400	STD	387.3 [15.250]	12,800 [449,500]	1,280 [44,950]	98 [3,450]	131
	80	363.5 [14.314]	11,300 [395,900]	1,130 [39,590]	86 [3,040]	132
18" / DN 450	STD	437.9 [17.25]	16,300 [574,600]	1,630 [57,460]	125 [4,410]	131
	80	409.3 [14.124]	14,300 [502,000]	1,430 [50,200]	109 [3,850]	132
20" / DN 500	XS	482.6 [19.250]	19,800 [697,700]	1,980 [69,770]	152 [5,350]	131
	80	455.6 [17.974]	17,700 [621,900]	1,770 [62,190]	136 [4,770]	131
24" / DN 600	XS	584.6 [23.250]	28,100 [989,700]	2,810 [98,970]	223 [7,850]	127
	80	547.7 [21.562]	24,600 [868,800]	2,460 [86,880]	196 [6,890]	126
30" / DN 750	30	730.2 [28.750]	42,300 [1,490,900]	4,230 [149,090]	347 [12,250]	122
	wt = 35 mm [1.3"]	692 [27.244]	38,000 [1,338,900]	3,800 [133,890]	312 [11,000]	122

1) The actual flow range may vary depending on the application.

Dimensions, model FLC-UFL 3/3F



Model FLC-UFL 3/3F - dimensions and weight [1]					
Nominal size (ID)	**Pressure rating**	**Length A in mm [inch]**	**Width B in mm [inch]**	**Height C in mm [inch]**	**Weight in kg [lb]**
2" / DN 50	150	260 [10.2]	155 [6.1]	362 [14.25]	28 [62]
	300/600	280 [11.02]	165 [6.5]	365 [14.37]	32 [71]
3" / DN 80	150	300 [11.8]	190 [7.5]	390 [15.35]	41 [90]
	300/600	350 [13.78]	210 [8.3]	400 [15.75]	53 [117]
4" / DN 100	150	300 [11.8]	230 [9.1]	425 [16.73]	55 [121]
	300	350 [13.78]	255 [10]	440 [17.32]	65 [143]
	600	400 [15.75]	275 [10.8]	450 [17.72]	82 [181]
6" / DN 150	150	400 [15.75]	280 [11]	470 [18.50]	80 [176]
	300	400 [15.75]	320 [12.6]	490 [19.29]	100 [221]
	600	400 [15.75]	355 [14]	510 [20.08]	125 [276]
8" / DN 200	150	400 [15.75]	345 [13.6]	535 [21.06]	125 [276]
	300	500 [19.7]	385 [15.16]	551 [21.69]	165 [364]
	600	500 [19.7]	420 [16.5]	570 [22.4]	205 [452]
10" / DN 250	300	550 [21.7]	445 [17.5]	615 [24.21]	225 [496]
	600	550 [21.7]	510 [20.1]	645 [25.39]	320 [706]
12" / DN 300	300	600 [23.6]	525 [20.7]	675 [26.6]	310 [684]
	600	600 [23.6]	560 [22]	700 [27.56]	410 [904]
14" / DN 350	300	650 [25.59]	585 [23]	750 [29.53]	540 [1,191]
	600	650 [25.59]	605 [23.8]	760 [29.92]	585 [1,290]
16" / DN 400	300	700 [27.6]	650 [25.6]	805 [31.69]	670 [1,477]
	600	700 [27.6]	690 [27.2]	830 [32.68]	785 [1,731]
18" / DN 450	600	800 [31.50]	745 [29.3]	905 [35.6]	950 [2,095]
20" / DN 500	600	900 [35.43]	815 [32.1]	940 [37.01]	1,240 [2,734]
24" / DN 600	600	1,100 [43.3]	940 [37]	1,010 [39.76]	1,800 [3,969]
30" / DN 750	600	1,300 [51.2]	1,130 [44.5]	1,220 [48]	2,750 [6,084]

1) The weight and dimensions are standard configurations and may vary for customised versions.

Model FLC-UFL 4/4F

Description

With the model FLC-UFL 4/4F, the measurement of flow through the four ultrasonic paths ensures high accuracy, even with varying flow profiles caused by changes in flow velocity, gas composition, gas pressure or upstream pipe configuration.
The fast response time is ensured through the simultaneous transmission on four paths.
The flow profile definition algorithm contains a diagnostics loop. Should one path fail, the path substitution algorithm uses past flow data to reliably continue flow measurements until the path stabilises or corrective action is taken.

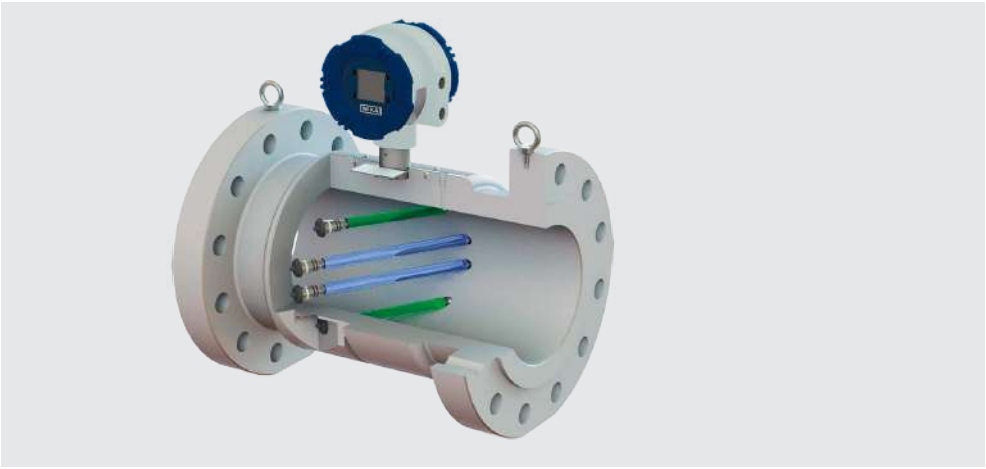
Features

- Approved for high-accuracy custody transfer with four ultrasonic paths
- Tested to fulfil the international standards for custody transfer measurements, e.g. AGA-9 and OIML R137
- Patented broadband continuous-wave technology
- Very low power consumption in operation
- Extensive diagnostics information, delivered from specialised software
- Robust, high-efficiency, all-metal sensors
- Extensive inputs and outputs, including optional pressure and temperature measurements, for PTZ calculation (Pressure, Temperature, and Z-factor)
- Tools for the removal and replacement of sensors under pressure are available, suitable for pressures up to 153 bar [2,250 psi]

International approvals

- AGA-9-compliant
- OIML R137-1 and -2-certified (class 0.5)
- Measuring Instruments Directive (MID)

Model FLC-UFL 4/4F with four ultrasonic paths:



Model FLC-UFL 4/4F - flow ranges [1]						
Nominal size ANSI ["] / DIN [DN]	Schedule/wall thickness	Inner diameter in mm [inch]	Flow in m^3/h [cf/h]			Turndown ratio
			Q_{max}	Q_t	Q_{min}	
3" / DN 80	40	77.9 [3.068]	610 [21.223]	61 [2,122]	4.9 [170]	125
	80	73.7 [2.9]	540 [18,970]	54 [1,897]	4.3 [160]	126
4" / DN 100	40	102.3 [4.026]	1,000 [34,980]	100 [3,498]	8 [290]	125
	80	97.2 [3.826]	900 [31,600]	90 [3,160]	7,2 [260]	125
6" / DN 150	40	154.1 [6.065]	2,020 [71,090]	202 [7,109]	16 [550]	127
	80	146.3 [5.761]	1,820 [64,150]	182 [6,415]	14 [500]	130
8" / DN 200	40	202.7 [7.981]	3,490 [123,100]	349 [12,310]	27 [950]	130
	80	193.7 [7.625]	3,190 [112,370]	319 [11,237]	25 [870]	128

Model FLC-UFL 4/4F - flow ranges [1]						
Nominal size ANSI ["] / DIN [DN]	Schedule/wall thickness	Inner diameter in mm [inch]	Flow in m^3/h [cf/h]			Turndown ratio
			Q_{max}	Q_t	Q_{min}	
10" / DN 250	40	254.5 [10.02]	5,500 [194,100]	550 [19,410]	43 [1,490]	128
	80	242.9 [9.562]	5,100 [176,700]	510 [17,670]	39 [1,360]	131
12" / DN 300	STD	304.7 [11.938]	7,900 [278,200]	790 [27,820]	61 [2,140]	130
	80	289 [11.376]	7,100 [250,200]	710 [25,020]	55 [1,920]	130
14" / DN 350	STD	336.5 [13.126]	9,700 [339,200]	970 [33,920]	74 [2,610]	132
	80	317.5 [12.5]	8,600 [302,000]	860 [30,200]	66 [2,320]	131
16" / DN 400	STD	387.3 [15.250]	12,800 [449,500]	1,280 [44,950]	98 [3,450]	131
	80	363.5 [14.314]	11,300 [395,900]	1,130 [39,590]	86 [3,040]	132
18" / DN 450	STD	437.9 [17.250]	16,300 [574,600]	1,630 [57,460]	125 [4,410]	131
	80	409.3 [14.124]	14,300 [502,000]	1,430 [50,200]	109 [3,850]	132
20" / DN 500	XS	482.6 [19.250]	19,800 [697,700]	1,980 [69,770]	152 [5,350]	131
	80	455.6 [17.974]	17,700 [621,900]	1,770 [62,190]	136 [4,770]	131
24" / DN 600	XS	584.6 [23.250]	28,100 [989,700]	2,810 [98,970]	223 [7,850]	127
	80	547.7 [21.562]	24,600 [868,800]	2,460 [86,880]	196 [6,890]	126
30" / DN 750	30	730.2 [28.750]	42,300 [1,490,900]	4,230 [149,090]	347 [12,250]	122
	wt = 35 mm [1.3"]	692 [27.244]	38,000 [1,338,900]	3,800 [133,890]	312 [11,000]	122

1) The actual flow range may vary depending on the application.

Model FLC-UFL 4/4F - dimensions and weight [1]					
Nominal size	Pressure rating	Length A in mm [inch]	Height B in mm [inch]	Height C in mm [inch]	Weight in kg [lb]
3" / DN 80	150	300 [11.8]	190 [7.5]	390 [15.35]	41 [90]
	300/600	350 [13.8]	210 [8.3]	400 [15.75]	53 [117]
4" / DN 100	150	300 [11.8]	230 [9.1]	425 [16.73]	55 [121]
	300	350 [13.8]	255 [10]	440 [17.32]	65 [143]
	600	400 [15.7]	275 [10.8]	450 [17.72]	82 [181]
6" / DN 150	150	400 [15.7]	280 [11]	470 [18.50]	80 [176]
	300	400 [15.7]	320 [12.6]	490 [19.29]	100 [221]
	600	400 [15.7]	355 [14]	510 [20.1]	125 [276]
8" / DN 200	150	400 [15.7]	345 [13.6]	535 [21.06]	125 [276]
	300	500 [19.7]	385 [15.16]	551 [21.69]	165 [364]
	600	500 [19.7]	420 [16.5]	570 [22.4]	205 [452]
10" / DN 250	300	550 [21.7]	445 [17.5]	615 [24.21]	225 [496]
	600	550 [21.7]	510 [20.1]	645 [25.39]	320 [706]
12" / DN 300	300	600 [23.6]	525 [20.67]	675 [26.6]	310 [684]
	600	600 [23.6]	560 [22]	700 [27.6]	410 [904]
14" / DN 350	300	650 [25.6]	585 [23]	750 [29.53]	540 [1,191]
	600	650 [25.6]	605 [23.8]	760 [29.92]	585 [1,290]
16" / DN 400	300	700 [27.6]	650 [25.6]	805 [31.69]	670 [1,477]
	600	700 [27.6]	690 [27.17]	830 [32.68]	785 [1,731]
18" / DN 450	600	800 [31.50]	745 [29.3]	905 [35.6]	980 [2,161]
20" / DN 500	600	900 [35.43]	815 [32.1]	940 [37]	1,240 [2,734]
24" / DN 600	600	1,100 [43.3]	940 [37]	1,010 [39.8]	1,800 [3,969]
30" / DN 750	600	1,300 [51.2]	1,130 [44.5]	1,220 [48]	2,750 [6,084]

1) The weight and dimensions are standard configurations and may vary for customised versions.

Model FLC-UFL 4F Duo

Description

- The model FLC-UFL 4F Duo consists of two completely independent systems in one instrument:
- A model FLC-UFL 4F with four ultrasonic paths for the main measurement
- A model FLC-UFL 3 or FLC-UFL 4F for the secondary measurement and extended diagnostics functions, enabling condition-based maintenance.

Furthermore, systems with model FLC-UF 4F Duo deliver a lot of information for condition monitoring of the entire measuring system.

Features

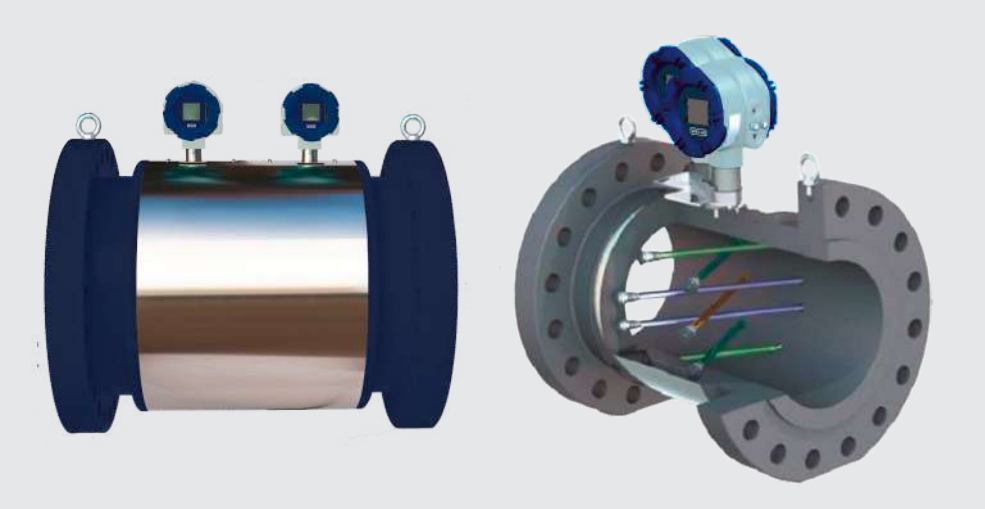
- Flow meter for custody transfer measurements with extended condition-based maintenance functions
- Two independent, accurate fiscal flow measurements in a meter body
- Extensive inputs and outputs, including optional pressure and temperature sensors, for PTZ calculation (Pressure, Temperature, and Z-factor)
- Extensive diagnostics information, delivered from specialised software
- Cost-effective solution for redundant measurements which are required for monitoring and verification
- Available from a size of 8" and in pressure ratings up to class 900
- Tested to fulfil the international standards for custody transfer measurements
- Ultrasonic paths at different pipe positions
- Compact space-saving design
- Very low power consumption in operation
- Robust, high-efficiency, all-metal sensors
- Tools for the removal and replacement of sensors under pressure are available, suitable for pressures up to 153 bar [2,250 psi]
- Patented broadband continuous-wave technology

International approvals

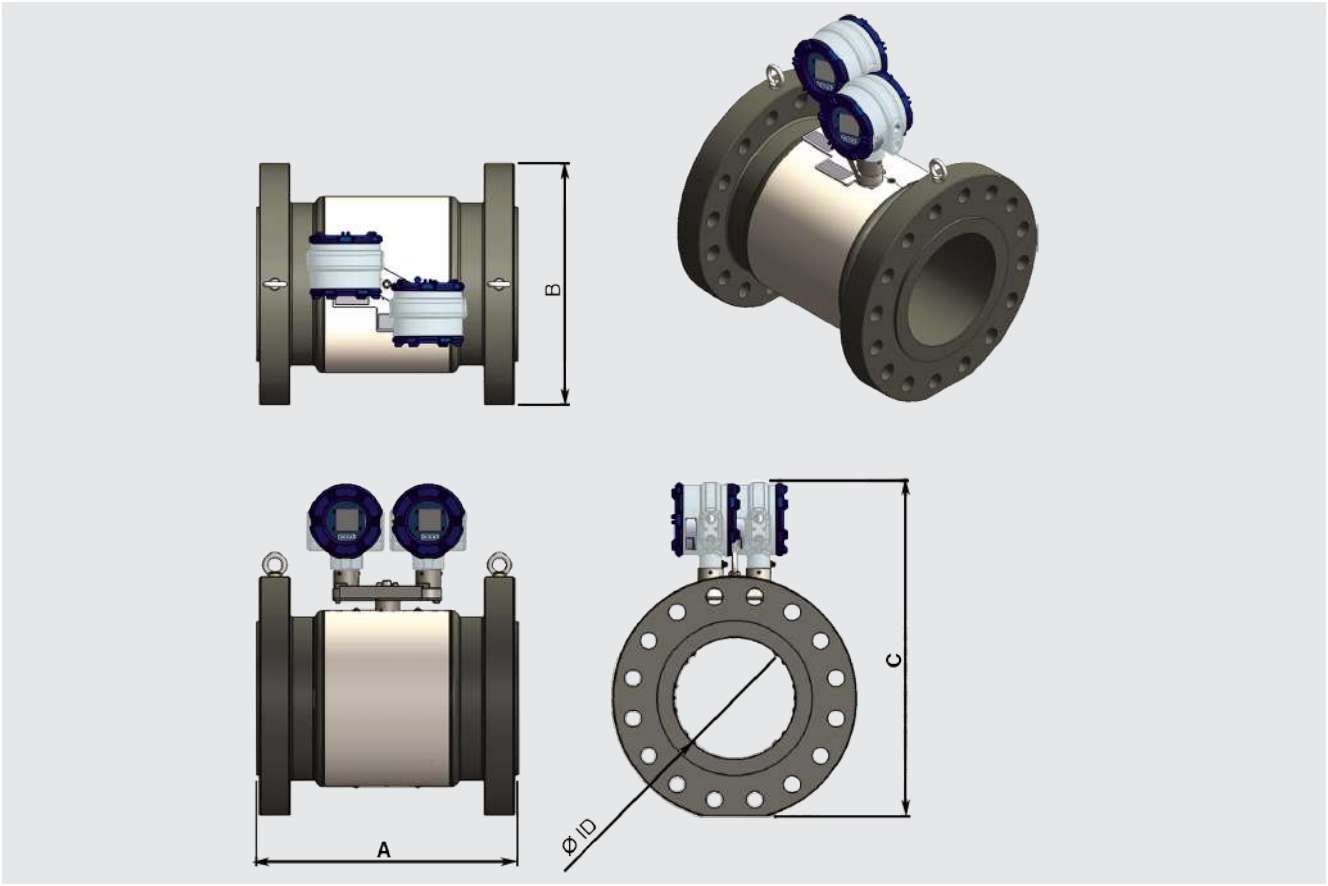
- Measuring Instruments Directive (MID)
- AGA-9-compliant
- OIML R137-1 and -2-certified (class 0.5)

Possible selections, model FLC-UFL 4F Duo		
Configuration	**Measuring instrument 1**	**Measuring instrument 2**
Option 1	Model FLC-UFL 4F	Model FLC-UFL 3
Option 2	Model FLC-UFL 4F	Model FLC-UFL 4F

Model FLC-UFL 4F Duo with two independent sets of ultrasonic paths at different pipe positions:



Dimensions, model FLC-UFL 4F Duo



Model FLC-UFL 4F Duo - flow ranges [1]						
Nominal size ANSI ["] / DIN [DN]	Schedule/ wall thickness	Inner diameter in mm [inch]	Flow in m^3/h [cf/h]			Turndown ratio
			Q_{max}	Q_t	Q_{min}	
8" / DN 200	40	202.7 [7.981]	3,490 [123,100]	349 [12,310]	27 [950]	130
	80	193.7 [7.625]	3,190 [112,370]	319 [11,237]	25 [870]	128
10" / DN 250	40	254.5 [10.02]	5,500 [194,100]	550 [19,410]	43 [1,490]	128
	80	242.9 [9.562]	5,100 [176,700]	510 [17,670]	39 [1,360]	131
12" / DN 300	STD	304.7 [11.938]	7,900 [278,200]	790 [27,820]	61 [2,140]	130
	80	289 [11.376]	7,100 [250,200]	710 [25,020]	55 [1,920]	130
14" / DN 350	STD	336.5 [13.126]	9,700 [339,200]	970 [33,920]	74 [2,610]	132
	80	317.5 [12.5]	8,600 [302,000]	860 [30,200]	66 [2,320]	131
16" / DN 400	STD	387.3 [15.25]	12,800 [449,500]	1,280 [44,950]	98 [3,450]	131
	80	363.5 [14.314]	11,300 [395,900]	1,130 [39,590]	86 [3,040]	132
18" / DN 450	STD	437.9 [17.25]	16,300 [574,600]	1,630 [57,460]	125 [4,410]	131
	80	409.3 [14.124]	14,300 [502,000]	1,430 [50,200]	109 [3,850]	132
20" / DN 500	XS	482.6 [19.25]	19,800 [697,700]	1,980 [69,770]	152 [5,350]	131
	80	455.6 [17.974]	17,700 [621,900]	1,770 [62,190]	136 [4,770]	131
24" / DN 600	XS	584.6 [23.250]	28,100 [989,700]	2,810 [98,970]	223 [7,850]	127
	80	547.7 [21.562]	24,600 [868,800]	2,460 [86,880]	196 [6,890]	126
30" / DN 750	30	730.2 [28.750]	42,300 [1,490,900]	4,230 [149,090]	347 [12,250]	122
	wt = 35 mm [1.3"]	692 [27.244]	38,000 [1,338,900]	3,800 [133,890]	312 [11,000]	122

1) The actual flow range may vary depending on the application.

Model FLC-UFL 4F Duo - dimensions and weight [1]					
Nominal size (ID)	**Pressure rating**	**Length A in mm [inch]**	**Width B in mm [inch]**	**Height C in mm [inch]**	**Weight in kg [lb]**
8" / DN 200	300	600 [23.6]	380 [15]	560 [22]	165 [364]
	600	600 [23.6]	420 [16.5]	600 [23.6]	205 [452]
10" / DN 250	300	600 [23.6]	445 [17.5]	640 [25.2]	225 [496]
	600	600 [23.6]	510 [20.1]	680 [26.8]	320 [706]
12" / DN 300	300	600 [23.6]	520 [20.5]	700 [27.6]	305 [673]
	600	600 [23.6]	560 [22]	720 [28.3]	419 [924]
14" / DN 350	300	600 [23.6]	585 [23]	635 [25]	535 [1,180]
	600	600 [23.6]	605 [23.8]	655 [25.8]	585 [1,290]
16" / DN 400	300	700 [27.6]	650 [25.6]	690 [27.2]	690 [1,521]
	600	700 [27.6]	690 [27.2]	710 [28]	760 [1,676]
18" / DN 450	600	800 [31.5]	745 [29.3]	905 [35.6]	980 [2,161]
20" / DN 500	600	900 [35.4]	815 [32.1]	940 [37]	1,240 [2,734]
24" / DN 600	600	1,100 [43.3]	940 [37]	1,010 [39.8]	1,800 [3,969]
30" / DN 750	600	1,300 [51.2]	1,130 [44.5]	1,220 [48]	2,750 [6,084]

1) The weight and dimensions are standard configurations and may vary for customised versions.

Approvals

Logo	Description	Region
CE	**EU declaration of conformity**	European Union
	EMC Directive	
	RoHS directive	
	Measuring Instruments Directive [1]	
Ex	**ATEX directive** Hazardous areas Ex ia Zone 0 gas II 1 G Ex ia IIC T4 Ga	
IECEx	**IECEx** Hazardous areas Ex ia Zone 0 gas Ex ia IIC T4 Ga	International
c PS us CERTIFIED	**QPS** Safety (e.g. electr. safety, overpressure, ...) Hazardous areas - Ex ia Class I, division 1, group A, B, C, D, T4 ... T1 zone 0 gas Ex ia IIC T4 Ga Class I zone 0 gas Ex ia IIC T4 Ga	USA and Canada
OIML	**OIML** [1] Metrology, measurement technology	International

1) Just for model FLC-UFL 4F

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