

# SERIES 454FTB-WGF TECHNICAL SPECIFICATIONS

The Kurz WGF single-point insertion flow meter for wet gas environments includes the qualities and features found in all Kurz constant temperature thermal flow meters that make them outperform all other currently available thermal mass flow meters, including:

- The first thermal mass flow meter offering accurate and reliable wet gas flow measurements (patent pending)
- The highest repeatability, accuracy, and reliability available
- The fastest response to temperature and velocity changes in the industry
- Constant temperature anemometer — sensor signal increases with increasing flow
- Interchangeable sensor and electronics (single circuit board) — no matched sets
- Built-in dry gas flow calculation on all flow units for saturated processes
- Continuous self-monitoring electronics that verify the integrity of sensor wiring and measurements
- Sensor does not overheat at zero flow using a unique constant temperature control method and power limiting design
- Zero velocity as a valid data point
- Insensitive to left or right horizontal installations
- Completely field configurable using the flow meter user interface or via a computer connection
- User-programmable correction factors to compensate for velocity profiles
- Velocity-temperature mapping for wide ranging velocity and temperature
- Sensor Blockage Correction Factor (SBCF)
- Patented digital sensor control circuit (US 7,418,878)



The Kurz WGF provides the solution for many applications and environments, including:

- Biogas
- Wastewater facilities
- Landfill sites
- Fogging in stacks
- Fan inlets
- EPA greenhouse gas emissions

Kurz Instruments is dedicated to manufacturing and marketing the best thermal mass flow meters available and to support our customers in their efforts to improve their businesses.

## Series 454FTB-WGF Technical Specifications

### Specifications

- **Velocity range**  
 0 to 4,000 SFPM (18.6 NMPS) (Air)  
 0 to 2,000 SFPM (9.3 NMPS) (Biogas)
- **Dry velocity accuracy**  
 $\pm$  (3% of reading +30 SPFM)
- **0.25% reading repeatability**
- **Velocity time constant**  
 1.5 second for velocity changes at  
 4,000 SFPM (constant temp)
- **Process temperature time constant**  
 10 seconds for temp changes at  
 1,000 SFPM (constant velocity)
- **Velocity angle sensitivity**  
 $<0.25\%$  per degree angle up to  $\pm 15^\circ$
- **Velocity-dependent correction factors for flow rate**
- **Electronics operating temperature**  
 -13°F to 149°F (-25°C to 65°C)  
 (integral display)  
 -40°F to 149°F (-40°C to 65°C)  
 (remote display)

### Process Conditions

- **Process pressure rating**  
 Up to 150 PSIG (10 BARg)
- **Process temperature rating**  
 -40°F to 248°F (-40°C to 120°C)

### Approvals

- **EPA mandatory GHG certification**  
 CFR 98.34(c)(1)
- **Alarm output conformity**  
 NAMUR NE43
- **European Union CE compliance**  
 EMC, LVD, PED, WEEE, and ROHS
- **CSA, ATEX & IECEx approvals pending for Nonincendive, Flameproof, and Explosion-proof**  
 EN IEC 60079-0, EN IEC 60079-1  
 EN IEC 60079-15, EN IEC 61241-1,  
 Class 1, Div 1 and 2  
 (Select models are CSA pre-approved)

### Transmitter Features

- **Aluminum (Type 4, IP66) dual chamber polyester powder-coated enclosure**
- **Two optically-isolated loop-powered 4-20 mA outputs**  
 12-bit resolution and accuracy  
 Maximum loop resistance is  
 300 $\Omega$  at 18 VDC, 550 $\Omega$  at 24 VDC,  
 1400 $\Omega$  at 36 VDC
- **One 4-20mA non-isolated analog input**
- **Input power**  
 AC (85-265V 47/63 Hz, 24 watts max)  
 or DC (24V  $\pm 10\%$ )
- **Integral or remote user interface**
- **Easy-to-use interface**  
 Backlit display / keypad  
 2-lines of 16-characters each
- **User-configurable flow display (scrolling or static)**
- **User-configurable English or metric units for mass flow rate, mass velocity, and process temperature**  
 (°C, °F, KGH, KGM, NCMH, NLPM,  
 NMPS, PPH, PPM, SCFH, SCFM,  
 SCMh, SFPM, SLPM, SMPS)
- **Flow valve PID controller and configurable control application**  
 Permits controlling set point  
 velocity or flow rate through  
 available control valve, damper, or  
 4-20 mA interface
- **Built-in zero-mid-span drift check**
- **Built-in flow totalizers and elapsed time**
- **User-configurable digital filtering from 0 to 600 seconds**
- **Configuration/data access**  
 USB or RS-485 Modbus
- **Meter memory**  
 200 recent events, top 20 min/max,  
 and 56 hours (10 second samples)  
 of trends
- **3-year warranty**

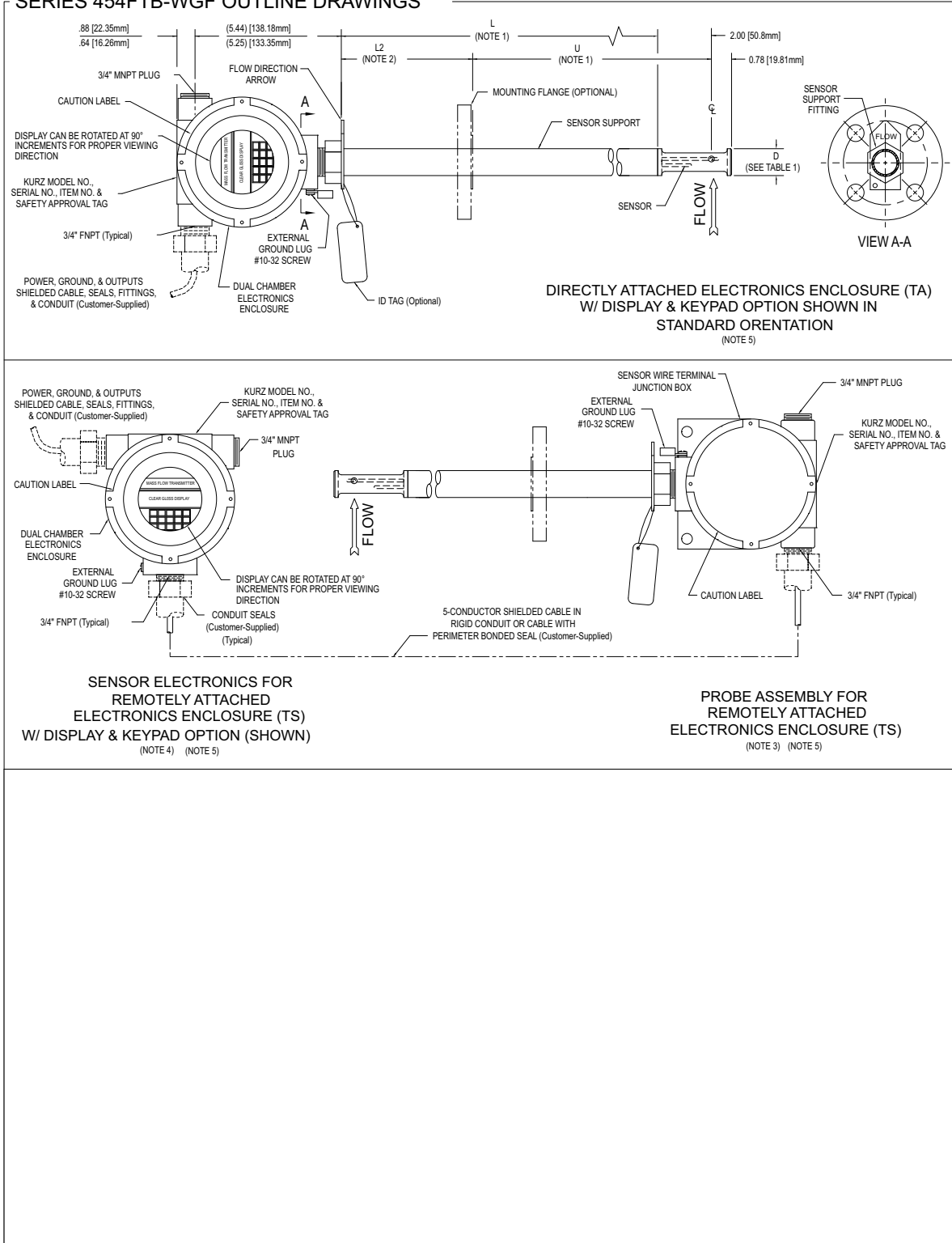
### Support & Element Components

- **Sensor material**  
 C-276 alloy all-welded sensor  
 construction (standard)
- **Sensor support**  
 316L stainless steel (standard)  
 C-276 alloy (optional)
- **Sensor support diameter**  
 3/4" and 1" (19 mm and 25mm)
- **Sensor support length**  
 6" to 60" (152 mm to 1524 mm)
- **3-year warranty**

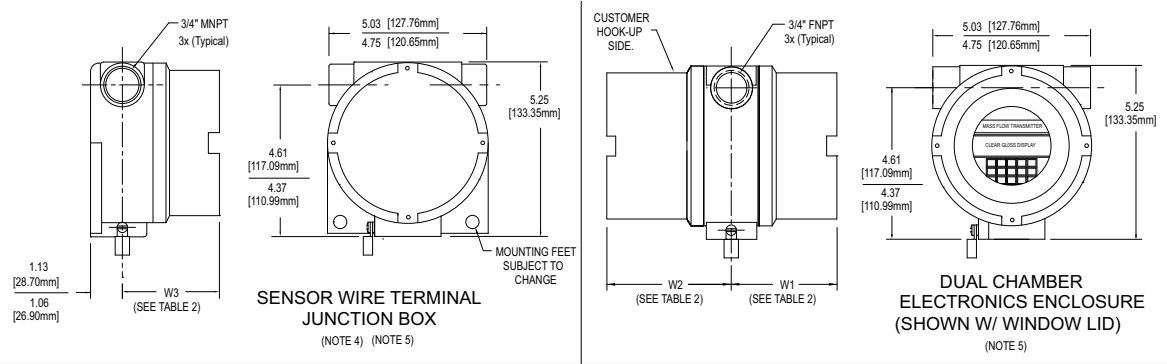
### Options

- **Adjustable LCD/keypad orientation**
- **HART communication**  
 Process control industry standard  
 allows remote configuration,  
 diagnostic monitoring, and online  
 testing with handheld configurators
- **Two optically isolated solid-state relays / alarms**  
 Configurable as alarm outputs,  
 pulsed totalizer output, or air purge  
 cleaning
- **Two digital inputs dedicated to purge and zero-mid-span drift check**
- **Pulsed output as a remote flow totalizer**
- **Hardware accessories**  
 Available hardware includes flanges,  
 ball valves, restraints, retractors,  
 cable glands, conduit seals, cable,  
 compression fittings, packing  
 glands, and branch fittings

**SERIES 454FTB-WGF OUTLINE DRAWINGS**



SERIES 454FTB-WGF OUTLINE DRAWINGS (cont'd)



NOTES:

- 1) FOR FLANGED OPTION:  $L = (U + L2 - 2.00 [50.8mm])$ ,  $U (MIN.) = 4.00 [101.6mm]$ .
- 2) L2 (MIN.) TO BE 5.00 [127mm].
- 3) THIS PROBE CONFIGURATION ALSO USED FOR DIRECTLY ATTACHED, DC POWERED, WITH NO DISPLAY.
- 4) SENSOR WIRE TERMINAL JUNCTION BOX USED FOR SENSOR ELECTRONICS FOR DC POWERED, WITH NO DISPLAY.
- 5) ENCLOSURE STYLES AND DIMENSIONS ARE SUBJECT TO CHANGE.
- 6) THIS CONFIGURATIONS ALLOWS FOR PROBE ASSY TO BE MOUNTED IN ZONE 1 AREA AND FOR REMOTE ELECTRONICS TO BE MOUNTED IN ZONE 2 AREA.

MODEL NO.	D
-12	0.75 [19.5mm]
-16	1.00 [25.4mm]

INPUT POWER	DISPLAY / KEYPAD	W1 (MAX.) (MIN.)	W2 (MAX.) (MIN.)	W3 (MAX.) (MIN.)
AC	YES	3.63 [92.20mm]	5.01 [127.25mm]	N/A
		3.41 [86.61mm]	4.69 [119.13mm]	
AC	NO	3.16 [80.26mm]	5.01 [127.25mm]	N/A
		2.81 [71.37mm]	4.69 [119.13mm]	
24VDC	YES	3.63 [92.20mm]	5.01 [127.25mm]	N/A
		3.41 [86.61mm]	4.69 [119.13mm]	
24VDC	NO (NOTE 4)	N/A	N/A	5.01 [127.25mm]
				4.88 [123.95mm]
SENSOR WIRE TERMINAL J-BOX (FOR REMOTE OPT.)		N/A	N/A	3.16 [80.26mm]
				2.81 [71.37mm]



## Series 454FTB-WGF Insertion Flow Meter Order Configuration

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<b>Parent Number</b>	<b>F1</b>	<b>F2</b>	<b>F3</b>	<b>F4</b>	<b>F5</b>	<b>F6</b>	<b>F7</b>	<b>F8</b>	<b>F9</b>	<b>F10</b>	<b>F11</b>	<b>F12</b>	<b>F13</b>	

Parent Number	Model
756410	454FTB-WGF

F1	Option	Probe Support Diameter
	B	0.75" (19 mm) (6" – 36" probe length)
	C	1" (25 mm) (6" – 60" probe length)

F2	Option	Probe Support & Flange Material
	2	316L stainless steel
	3	C-276 alloy

F3	Option	Probe Support Length
	B	6" (152 mm)
	C	9" (229 mm)
	D	12" (305 mm)
	F	18" (457 mm)
	H	24" (610 mm)
	J	30" (762 mm)
	K	36" (914 mm)
	M	48" (1219 mm)
	P	60" (1524 mm)

F4	Compression Fittings or Flanges	
	Choose one only - None, Compression Fitting, or Flange	
Option	Compression Fittings	
1A	None	
2B	0.75" MNPT (0.75" probe only), stainless steel front and back ferrules	
2D	0.75" MNPT (0.75" probe only), PTFE-compound front and back ferrules	
2G	1" MNPT (0.75" or 1" probe), stainless steel front and back ferrules	
2J	1" MNPT (0.75" or 1" probe), PTFE-compound front and back ferrules	

Option 1 Class 150 lbs.	Option 2 Class 300 lbs.	ANSI 16.5 Flange	
1A	1A	None	0.75" and 1" probe diameter only
3D	4E	0.75" (19 mm)	
3F	4G	1" (25 mm)	
3J	4K	1.5" (38 mm)	1" probe diameter only
3L	4M	2" (51 mm)	
3N	4P	2.5" (64 mm)	
3S	4T	3" (76 mm)	
3U	4V	4" (102 mm)	

F5	Option	Flange U Dimension
	— — —	Enter 000 for no flange connection. Enter U-dimension to nearest 10th of an inch without a decimal point. For example, 7.7" is 077 and 23.6" is 236. <b>Note:</b> Convert metric units to English units.

F6	Option	Electronics Configuration <small>(Approvals Pending, select models CSA Certified Explosion Proof)</small>
	A	Integral - Standard Display viewing Aluminum Type 4, IP66 enclosure  Explosion-Proof / Flame-Proof, CSA, ATEX, and IECEx Ex d IIB + H2 Gb, T6, T4, T110°C or T130°C (electronics encl.) Ex d IIB + H2 Gb, T4 or T3 (sensing element)
	E	Integral - Display rotated 180° for viewing Aluminum Type 4, IP66 enclosure  Explosion-Proof / Flame-Proof, CSA, ATEX, and IECEx Ex d IIB + H2 Gb, T6, T4, T110°C or T130°C (electronics encl.) Ex d IIB + H2 Gb, T4 or T3 (sensing element)
	J	Remote - Transmitter and sensing element separate Aluminum Type 4, IP66 enclosures  Explosion-Proof / Flame-Proof, CSA, ATEX, and IECEx Ex d IIB + H2 Gb, T6, T4, T110°C or T130°C (electronics encl.) Ex d IIB + H2 Gb, T4 or T3 (sensing element)

F7	Option	Keypad/Display
	1	Keypad / Display
	2	Blind

F8	Option	Power
	A	AC (85-265V 47/63 Hz, 24 watts max)
	D	DC (24V ±10%)

F9	Option	Analog and Digital Inputs/Outputs	
	2	Standard	Two 4-20 mA isolated outputs
	3	Full	Two 4-20 mA isolated outputs, two relays, two digital inputs, one non-isolated 4-20 mA input
	5	HART	HART communication protocol, one 4-20 mA isolated output, two relays, two digital inputs, one non-isolated 4-20 mA input

F10	Option	Gas Type
	A	Air (laboratory calibration only)
	D	Biogas (methane and carbon dioxide mix)
	Y	Customer specified

F11	Option	Percent of Methane
	— —	Enter two digits for percent of methane. Enter two zeros (00) for Air only. Enter YY for all other gases.

F12	Option	Velocity Calibration Range
	B	300 SFPM (1.4 NMPS)
	C	600 SFPM (2.8 NMPS)
	E	1,000 SFPM (4.7 NMPS)
	G	2,000 SFPM (9.3 NMPS)
	K	4,000 SFPM (18.6 NMPS) (Air only)

F13	Option	Calibration Type
	1	Correlation
	2	Laboratory