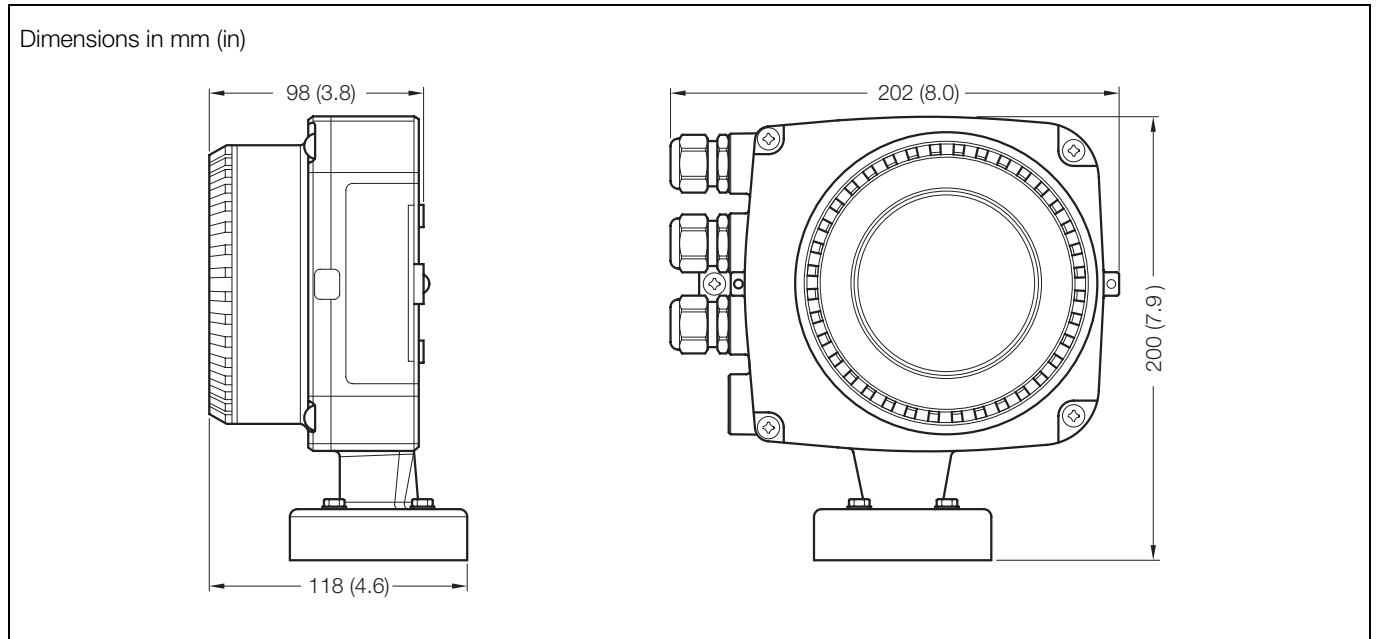
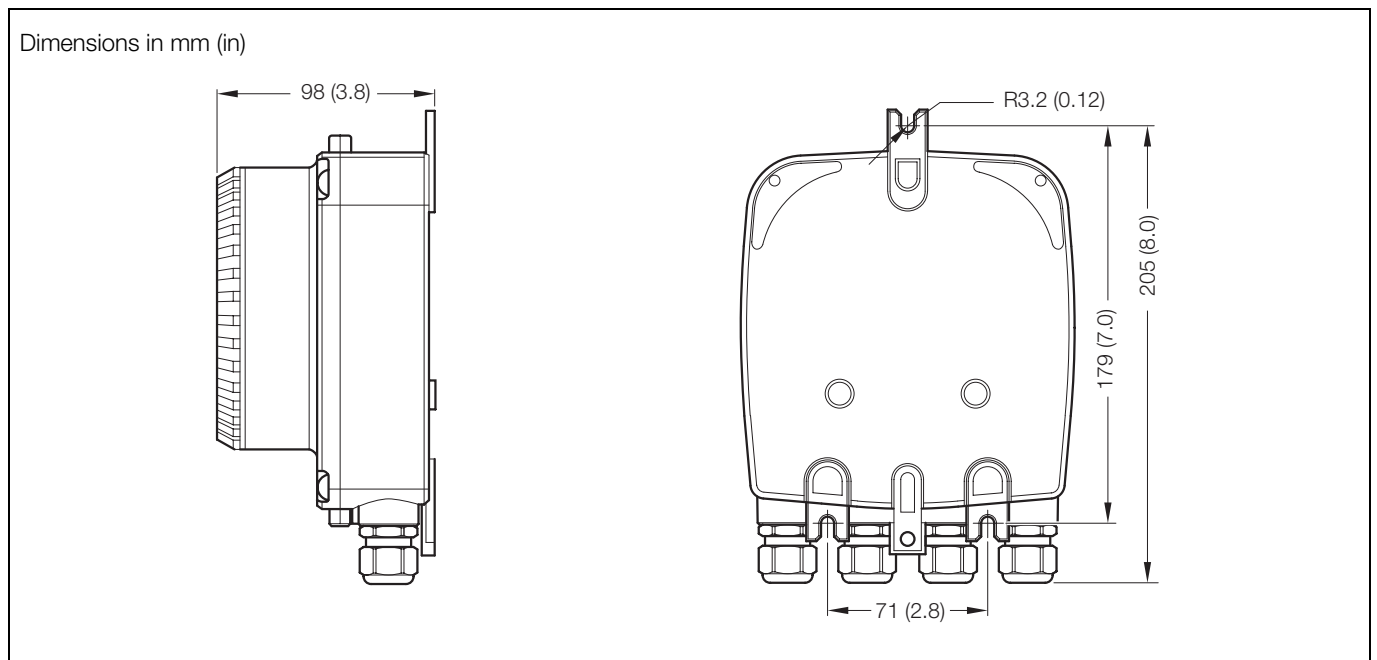


Transmitter Dimensions

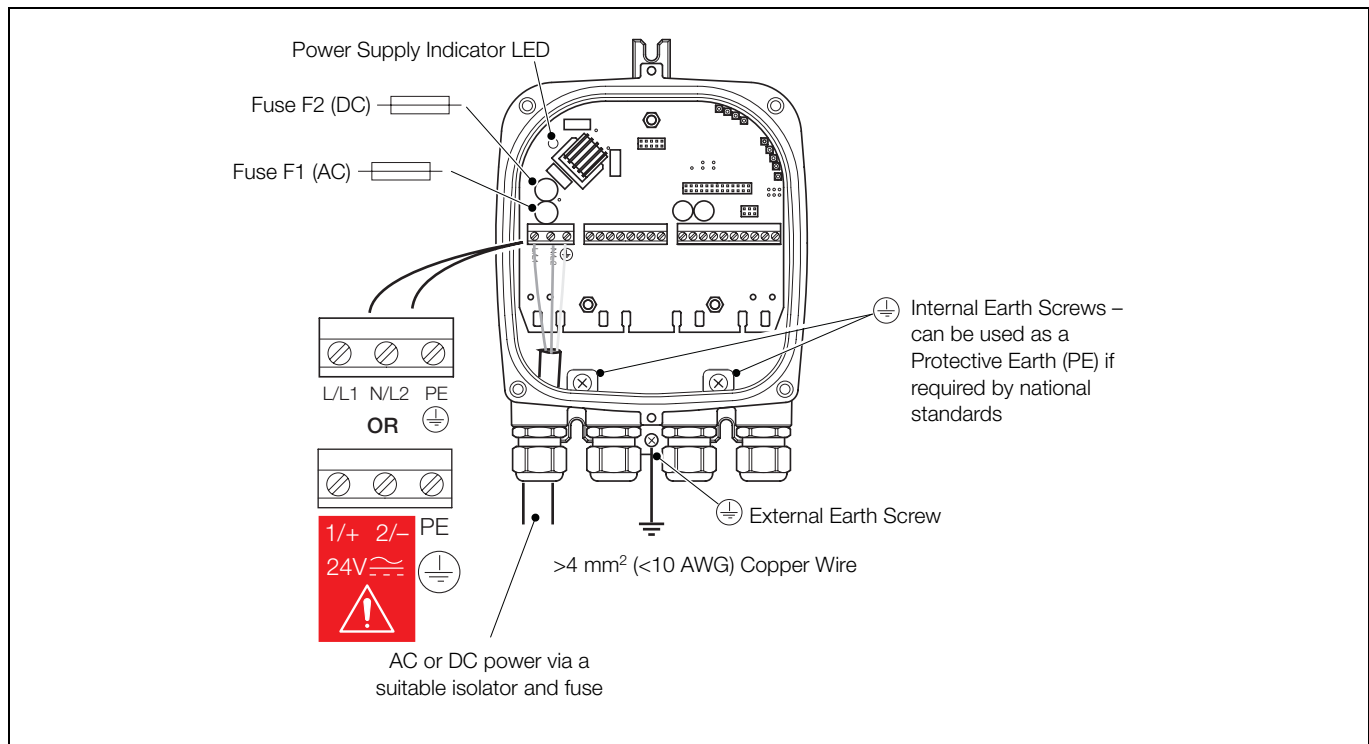
Integral Transmitter



Remote Transmitter



Electrical Connections



AC and DC Power Supply Connections

Ordering Information

Electromagnetic Flowmeter WaterMaster FEF121 and FEF181

Variant digit number		1 ... 6	7 ... 9	10	11	12	13	14, 15	16	17	18	19	20	21	22	23	24	25	26	27
Flowmeter system, full bore, remote mount	FEF121																			
		XXX	X	X	X	X	XX	X	X	X	X	X	X	X	X	X	X	X	X	X
Full bore, for use with WaterMaster transmitter / remote	FEF181																			
Bore Diameter																				
	DN 250 (10 in)		250																	
	DN 300 (12 in)		300																	
	DN 350 (14 in)		350																	
	DN 400 (16 in)		400																	
	DN 450 (18 in)		450																	
	DN 500 (20 in)		500																	
	DN 600 (24 in)		600																	
	DN 700 (28 in)		700																	
	DN 760 (30 in)		760																	
	DN 800 (32 in)		800																	
	DN 900 (36 in)		900																	
	DN 1000 (40 in)		001																	
	DN1050 (42 in)		051																	
	DN 1100 (44 in)		101																	
	DN 1200 (48 in)		201																	
	DN 1400 (54 in)		401																	
	DN 1500 (60 in)		501																	
	DN 1600 (66 in)		601																	
	DN 1800 (72 in)		801																	
	DN 2000 (80 in)		002																	
	DN 2200 (84 in)		202																	
	Others		999																	
Liner Material																				
	Elastomer				K															
	Elastomer with ACS approval				L															
	Others				Z															
Electrode Design																				
	Standard				1															
	Others – FEF181 only				9															
Measuring Electrodes Material																				
	Stainless steel 316Ti (1.4571)					S														
	Hastelloy C-276 (FEF121 – DN350 to DN2200 only)					E														
	Others					Z														
Grounding Accessories																				
	Standard																			
	One grounding plate																			
	Two grounding plates																			
	Others																			
Process Connection Type																				
	Flanges ASME class 150																			
	Flanges AWWA class B																			
	Flanges AWWA class D																			
	Flanges AS 4087 class 16																			
	ISO 7005 PN16																			
Process Connection Material																				
	Carbon steel flanges																			
	Others																			

Continued on page 14

Variant digit number	1 ... 6	7 ... 9	10	11	12	13	14, 15	16	17	18	19	20	21	22	23	24	25	26	27	
Flowmeter system, full bore, remote mount	FEF121																			
Full bore, for use with WaterMaster transmitter / remote	FEF181	XXX	X	X	X	X	XX	X	X	X	X	X	X	X	X	X	X	X	X	
Usage Certifications																				
Standard (without PED)																				1
Material monitoring with inspection certificate 3.1 acc. EN 10204																				2
Others																				9
Calibration Type																				
Standard accuracy 0.4 %																				A
Enhanced accuracy 0.2%																				B
Witnessed factory calibration																				M
Custody transfer for cold/waste water (witnessed calibration) (FEF181 only)																				N
UKAS/NAMAS (FEF181 only)																				U
Others																				Z
Temperature Range Installation / Ambient Temperature Range																				
Standard design / -20 ... 60 °C (-4 ... 140 °F)																				1
Language																				
English																				A
German																				D
French																				G
Spanish																				K
Italian																				N
Signal Cable Length and Type *																				
Without signal cable – FEF181 only																				0
5 m (15 ft.) cable																				1
10 m (30 ft.) cable																				2
20 m (60 ft.) cable																				3
30 m (100 ft.) cable																				4
50 m (165 ft.) cable																				5
80 m (260 ft.) cable																				6
100 m (325 ft.) cable																				7
150 m (490 ft.) cable																				8
Special Length > 150 m (> 490 ft.) (and/or armored cable – FEF181 only)																				9
Explosion Protection Certification																				
General purpose (non-Ex design)																				A
Others (FEF181 only)																				Z
Protection Class Transmitter / Protection Class Sensor																				
IP67 (NEMA 4X) / IP68 (NEMA 6X) – cable not fitted and not potted																				2
IP67 (NEMA 4X) / IP68 (NEMA 6X) – cable fitted and potted																				3
Others (FEF181 only)																				9
Cable Conduits *																				
M20 x 1.5																				A
NPT 1/2 in																				B
M20 SWA armored																				D
Others (FEF181 only)																				Z

Continued on page 15

Variant digit number		1 ... 6	7 ... 9	10	11	12	13	14, 15	16	17	18	19	20	21	22	23	24	25	26	27
Flowmeter system, full bore, remote mount	FEF121																			
	FEF181	XXX	X	X	X	X	XX	X	X	X	X	X	X	X	X	X	X	X	X	X
Full bore, for use with WaterMaster transmitter / remote																				
Power Supply																				
Without (FEF181 only)																			0	
100... 230 V AC, 50 Hz (FEF121 only)																			1	
24 V AC or 24V DC, 50 Hz (FEF121 only)																			2	
100 ... 230 V AC, 60 Hz (FEF121 only)																			3	
24 V AC or 24 V DC, 60 Hz (FEF121 only)																			4	
Input and Output Signal Type																				
HART + 20 mA + pulse + contact output (FEF121 only)																			A	
Without (FEF181 only)																			Y	
Configuration Type / Diagnostics Type																				
Factory defaults / standard diagnostics																			1	

* The type of signal cable supplied (standard or armored) depends on the type of cable conduit (variant digit number 24) ordered.

Electromagnetic Flowmeter WaterMaster FEV111, FEV121, FEV181 and FEF191

Variant digit number	1 ... 6	7 ... 9	10	11	12	13	14, 15	16	17	18	19	20	21	22	23	24	25	26	27
Flowmeter system, optimized full bore, integral mount	FEV111																		
Flowmeter system, optimized full bore, remote mount	FEV121																		
Optimized full bore, for use with WaterMaster transmitter / remote	FEV181	XXX	X	X	X	X	XX	X	X	X	X	X	X	X	X	X	X	X	X
Optimized full bore, for use with WaterMaster transmitter / integral	FEV191																		
Bore Diameter																			
DN 40 (1 ³ / ₄ in)		040																	
DN 50 (2 in)		050																	
DN 80 (3 in)		080																	
DN 100 (4 in)		100																	
DN 150 (6 in)		150																	
DN 200 (8 in)		200																	
DN 250 (10 in)		250																	
DN 300 (12 in)		300																	
Others		999																	
Liner Material																			
Polypropylene (DN 40 ... DN 200 only)			V																
Electrode Design																			
Standard				1															
Measuring Electrodes Material																			
Stainless steel 316Ti (1.4571)					S														
Grounding Accessories																			
Standard						1													
Process Connection Type																			
Flanges ASME class 150								A1											
Flanges AS 4087 class 16 (DN50 ... DN300 only)								E1											
Flanges AS 2129 table F (DN40 only)								E3											
ISO 7005 PN16 (DN50 ... DN300 only)								S2											
ISO 7005 PN40 (DN40 only)								S4											
Process Connection Material																			
Carbon steel flanges									B										
Usage Certifications																			
Standard (without PED)										1									
Material monitoring with inspection certificate 3.1 acc. EN 10204										2									
Others (FEV121, FEV181 and FEV191 only)										9									
Calibration Type																			
Standard accuracy 0.4 %																			A
Enhanced accuracy 0.2%																			B
Witnessed factory calibration																			M
Others																			Z
Temperature Range Installation / Ambient Temperature Range																			
Standard design / -20 ... 60 °C (-4 ... 140 °F)																			1

Continued on page 17

Variant digit number	1 ... 6	7 ... 9	10	11	12	13	14, 15	16	17	18	19	20	21	22	23	24	25	26	27
Flowmeter system, optimized full bore, integral mount	FEV111																		
Flowmeter system, optimized full bore, remote mount	FEV121																		
Optimized full bore, for use with WaterMaster transmitter / remote	FEV181	XXX	X	X	X	X	XX	X	X	X	X	X	X	X	X	X	X	X	X
Optimized full bore, for use with WaterMaster transmitter / integral	FEV191																		
Language																			
English																			A
German																			D
French																			G
Spanish																			K
Italian																			N
Signal Cable Length and Type *																			
Without signal cable (FEV111 and FEV 191 only)																			0
5 m (15 ft.) cable (FEV121 and FEV181 only)																			1
10 m (30 ft.) cable (FEV121 and FEV181 only)																			2
20 m (60 ft.) cable (FEV121 and FEV181 only)																			3
30 m (100 ft.) cable (FEV121 and FEV181 only)																			4
50 m (165 ft.) cable (FEV121 and FEV181 only)																			5
80 m (260 ft.) cable (FEV121 and FEV181 only)																			6
100 m (325 ft.) cable (FEV121 and FEV181 only)																			7
150 m (490 ft.) cable (FEV121 and FEV181 only)																			8
Special Length > 150 m (> 490 ft.) (FEV121 and FEV181 only)																			9
Explosion Protection Certification																			
General purpose (non-Ex design)																			A
Protection Class Transmitter / Protection Class Sensor																			
IP67 (NEMA 4X) / IP67 (NEMA 4X) – integral (FEV111 and FEV191 only)																			1
IP67 (NEMA 4X) / IP68 (NEMA 6X) – cable not fitted and not potted (FEV121 and FEV181 only)																			2
IP67 (NEMA 4X) / IP68 (NEMA 6X) – cable fitted and potted (FEV121 and FEV181 only)																			3
Cable Conduits *																			
M20 x 1.5																			A
NPT 1/2 in																			B
M20 SWA armored (FEV121 and FEV181 only)																			D
Power Supply																			
Without (FEV181 and FEV191 only)																			0
100... 230 V AC, 50 Hz (FEV111 and FEV121 only)																			1
24 V AC or 24V DC, 50 Hz (FEV111 and FEV121 only)																			2
100... 230 V AC, 60 Hz (FEV111 and FEV121 only)																			3
24 V AC or 24V DC, 60 Hz (FEV111 and FEV121 only)																			4
Others (FEV111 only)																			9
Input and Output Signal Type																			
HART + 20 mA + pulse + contact output (FEV111 and FEV121 only)																			A
Without (FEV181 and FEV191 only)																			Y
Configuration Type / Diagnostics Type																			
Factory defaults / standard diagnostics																			1

* The type of signal cable supplied (standard or armored) depends on the type of cable conduit (variant digit number 24) ordered.

Electromagnetic Flowmeter Transmitter for WaterMaster FET101, FET111 and FET121

Variant digit number	1 ... 6	7 ... 9	10	11	12	13	14, 15	16	17	18	19	20	21	22	23	24	25	26	27
Transmitter cartridge	FET101																		
Integral transmitter	FET111	XXX	X	X	X	X	XX	X	X	X	X	X	X	X	X	X	X	X	X
Remote transmitter	FEV181																		
Bore Diameter																			
Transmitter only		000																	
Liner Material																			
Without (transmitter only)			Y																
Electrode Design																			
Without (transmitter only)				0															
Measuring Electrodes Material																			
Without (transmitter only)					Y														
Grounding Accessories																			
Without (transmitter only)						0													
Process Connection Type																			
Without (transmitter only)							Y0												
Process Connection Material																			
Without (transmitter only)								Y											
Usage Certifications																			
Without (transmitter only)									8										
Calibration Type																			
Without (transmitter only)										Y									
Temperature Range Installation / Ambient Temperature Range																			
Standard design / -20 ... 60 °C (-4 ... 140 °F)											1								
Language																			
English												A							
German												D							
French												G							
Spanish												K							
Italian												N							
Signal Cable Length and Type																			
Without signal cable													0						
Explosion Protection Certification																			
Without (transmitter only)														Y					
Protection Class Transmitter / Protection Class Sensor																			
IP67 (NEMA 4X) / IP67 (NEMA 4X)															1				
Cable Conduits																			
Without (FET101 only)																		Y	
M20 x 1.5 (FET111 and 121 only)																			A
NPT 1/2 in (FET111 and 121 only)																			B
M20 SWA armored (FET111 and 121 only)																			D
Others (FET111 and 121 only)																			Z

Continued on page 19

Variant digit number	1 ... 6	7 ... 9	10	11	12	13	14, 15	16	17	18	19	20	21	22	23	24	25	26	27
Transmitter cartridge	FET101																		
Integral transmitter	FET111	XXX	X	X	X	X	XX	X	X	X	X	X	X	X	X	X	X	X	X
Remote transmitter	FEV181																		
Power Supply																			
100... 230 V AC, 50 Hz																	1		
24 V AC or 24V DC, 50 Hz																	2		
100... 230 V AC, 60 Hz																	3		
24 V AC or 24V DC, 60 Hz																	4		
Input and Output Signal Type																			
HART + 20 mA + pulse + contact output (FEV111 and FEV121 only)																	A		
Configuration Type / Diagnostics Type																			
Factory defaults / standard diagnostics																	1		