



# 1 EC-TYPE EXAMINATION CERTIFICATE

2 Equipment or Protective systems intended for use in Potentially  
Explosive Atmospheres - Directive 94/9/EC

3 EC-Type Examination Certificate No: FM08ATEX0080X

4 Equipment or protective system: FEP3\_\_/FEP5\_\_ ProcessMaster, and  
(Type Reference and Name) FEH3\_\_/FEH5\_\_ HygienicMaster Electromagnetic  
Flowmeters and FET3\_\_/FET5\_\_ Transmitters

5 Name of Applicant: ABB Automation Products GmbH

6 Address of Applicant: Dransfelder Straße 2  
D-37079 Göttingen  
GERMANY

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and documents therein referred to.

8 FM Approvals Ltd, notified body number 1725 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report number:

3030760EC dated 18<sup>th</sup> December 2008

9 Compliance with the Essential Health and Safety Requirements, with the exception of those identified in item 15 of the schedule to this certificate, has been assessed by compliance with the following documents:

EN 60079-0:2012, EN 60079-1:2007, EN 60079-7:2007, EN 60079-11:2012, EN 60079-18: 2009,  
EN 60079-31:2009 and EN 60529:1991 + A1:2000.

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC-Type Examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12 The marking of the equipment or protective system shall include:



## FET325/FET525 – Transmitter only

II 2 (2) G Ex de [ia] IIC T6 Gb Ta = -40°C to +60°C FISCO+;

II 2 (2) D Ex tb [ia] IIIC T70°C Db Ta = -40°C to +60°C

\* when option q = E or F

Mick Gower  
Certification Manager, FM Approvals Ltd.

Issue date: 29<sup>th</sup> February 2016

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# SCHEDULE

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12 The marking of the equipment or protective system shall include (contd):



**FET325/FET525 – Transmitter only – option u = H1 or H2 and option m = M**

II 2 D Ex tb IIIC T70°C Db Ta = -40°C to +60°C;

**FEH315/FEH515 – DN3 – DN100 – option u = H2 or H4**

II 2 G Ex d e ia ma IIC T6...T2 Gb Ta = -40°C to +60°C FISCO+;

II 2 D Ex ia tb IIIC T70°C...Tmedium Db Ta = -40 °C to +60°C

\* when option q = E or F

**FEH315/FEH515 – DN3 – DN100 – option m = M;**

II 2 D Ex tb IIIC T70°C...Tmedium Db Ta = -40°C to +60°C

**FEP315/FEP515 – DN3 – DN300 – option u = H2 or H4**

II 2 G Ex d e ia ma IIC T6...T2 Gb Ta = -40 °C to +60°C FISCO+;

II 2 D Ex ia tb IIIC T70°C...Tmedium Db Ta = -40 °C to +60°C

\* when option q = E or F

**FEP315/FEP515 – DN3 – DN300 – option m = M**

II 2 D Ex tb IIIC T70°C...Tmedium Db Ta = -40°C to +60°C

**FEP315/FEP515 - DN350-DN2000 – option u = H2 or H4**

II 2 G Ex d e ia IIC T6...T2 Gb Ta = -40 °C to +60°C FISCO+;

II 2 D Ex ia tb IIIC T70°C...Tmedium Db Ta = -40 °C to +60°C

\* when option q = E or F

**FEP315/FEP515 - DN350-DN2000 – option m = M**

II 2 D Ex tb IIIC T70°C...Tmedium Db Ta = -40°C to +60°C

**FEP325/FEP525 – DN3 – DN300**

II 2 G Ex d e ia ma IIC T6...T2 Gb Ta = -40°C to +60°C FISCO+;

II 2 D Ex ia tb IIIC T70°C...Tmedium Db Ta = -40°C to +60°C

\* when option q = E or F

**FEP325/FEP525 – DN3 – DN300 option m = M**

II 2 D Ex ia tb IIIC T85°C...Tmedium DbTa = -40°C to +60°C

**FEP325/FEP525 – DN350-DN2000**

II 2 G Ex d e ia IIC T6...T2 Gb Ta = -40°C to +60°C FISCO+;

II 2 D Ex ia tb IIIC T70°C...Tmedium Db Ta = -40°C to +60°C

\* when option q = E or F

**FEP325/FEP525 – DN350-DN2000 option m = M**

II 2 D Ex ia tb IIIC T85°C...Tmedium Db Ta = -40°C to +60°C

**FEH325/FEH525 – DN3 – DN100**

II 2 G Ex d e ia ma IIC T6...T2 Gb Ta = -40°C to +60°C FISCO+;

II 2 D Ex ia tb IIIC\* T70°C...Tmedium Db Ta = -40°C to +60°C

\* when option q = E or F

**FEH325/FEH525 – DN3 – DN100 option m = M**

II 2 D Ex ia tb IIIC\* T85°C...Tmedium Db Ta = -40°C to +60°C

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## 13 Description of Equipment or Protective System

The FEP3\_ \_ /FEP5\_ \_ ProcessMaster, and FEH3\_ \_ / FEH5\_ \_ HygienicMaster are series of electromagnetic flowmeters. The electronics enclosure is a cylindrical enclosure identified as a Type 3, a dual compartment rectangular enclosure identified as the Field Housing or a single compartment a rectangular housing identified as a Type 4.

The FEP3\_ \_ /FEP5\_ \_ ProcessMaster, and FEH3\_ \_ / FEH5\_ \_ HygienicMaster are both available as integral and remote designs. In the case of the remote version an optional pre-amplifier can be located on the Primary. A high process temperature version is available and uses a 100 mm stand-off between the Primary and the electronics or remote connection facilities.

The sensor is available in two different versions: Process Sensor and Hygienic Sensor. The Process Sensor is available in meter size DN3 to DN2000, the Hygienic Sensor is available in meter size DN3 to DN100. The medium temperature range for the Hygienic Sensor and the medium temperature range for the Process Sensor are -40°C to 130°C for the normal temperature version and -40°C to +180°C for the high temperature version.

Enclosure rating IP65, IP67, or IP68 depending on the option selected.

### **FEP315abcdefghijk0Mnopqr.AY.t.u.w ProcessMaster Electromagnetic Flowmeter – Integral version** **FEP515abcdefghijk0Mnopqr.AY.t.u.w ProcessMaster Electromagnetic Flowmeter – Integral version**

a = 3 digit number representing the bore diameter; 003, 004, 006, 008, 010, 015, 020, 025, 032, 040, 050, 065, 080, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 760, 800, 900, 001, 051, 101, 201, 401, 505, 601, 801, or 002.

b = liner material: A, E, F, H, M, P, S, U, D, T or W

c = Electrode design; 1, 2, 5, or 6.

d = Measuring electrode material; A, C, D, E, F, G, H, J, K, N, R, S, T, or W

e = Grounding accessories; 1, 2, 3, or 4.

f = Process connection type; Up to PN100/Cl600 or equivalent pressure rating any two characters or A7, A8, A9, H7, H8 or H9

g = Process connection material; any single character

h = Usage certifications; any single character.

i = Calibration type; any single character

j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4

k = Name plate language and type; any single character

n = Protection Class: 1 or 4

o = Cable Conduits; A, or B

p = Power supply; 1, 2, 3, or 4

q = Input and output signal type; A, B, C, D, E, or F

r = Configuration type/Diagnostics; 1, 2, 3, or 4.

t = Laid length; any two characters.

u = Transmitter Housing design; H1, H2 or H4

w = Sensor Housing Material; SMA or SMS

### **FEP315abcdefghijk0Lnopqr.AY.t.u.w ProcessMaster Electromagnetic Flowmeter – Integral version** **FEP515abcdefghijk0Lnopqr.AY.t.u.w ProcessMaster Electromagnetic Flowmeter – Integral version**

a = 3 digit number representing the bore diameter; 003, 004, 006, 008, 010, 015, 020, 025, 032, 040, 050, 065, 080, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 760, 800, 900, 001, 051, 101, 201, 401, 505, 601, 801, or 002,

b = Liner material: A, E, F, H, M, P, S, U, D, T or W

c = Electrode design; 1, 2, 5, or 6.

d = Measuring electrode material; A, C, D, E, F, G, H, J, K, N, R, S, T, or W

e = Grounding accessories; 1, 2, 3, or 4.

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f = Process connection type; Up to PN100/Cl600 or equivalent pressure rating any two characters or A7, A8, A9, H7, H8 or H9  
g = Process connection material; any single character  
h = Usage certifications; any single character.  
i = Calibration type; any single character  
j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4  
k = Name plate language and type; any single character  
n = Protection Class: 1 or 4  
o = Cable Conduits; A, or B  
p = Power supply; 1, 2, 3, or 4  
q = Input and output signal type; A, B, C, D, E, or F  
r = Configuration type/Diagnostics; 1, 2, 3, or 4.  
t = Laid length; any two characters.  
u = Transmitter Housing design; H2 or H4  
w = Sensor Housing Material; SMA or SMS

**FEH315abcdefghijk0Mnopqr.AY.t.u HygenicMaster Electromagnetic Flowmeter – Integral version**  
**FEH515abcdefghijk0Mnopqr.AY.t.u HygenicMaster Electromagnetic Flowmeter – Integral version**

a = 3 digit number representing the bore diameter; 003, 004, 006, 008, 010, 015, 020, 025, 032, 040, 050, 065, 080, or 100  
b = liner material; A, P, or T  
c = Electrode design; 1, 2, 5, or 6.  
d = Measuring electrode material; A, C, D, E, F, G, H, J, K, N, R, S, T, or W  
e = Grounding accessories; 1, or 2  
f = Process connection type; Up to PN100/Cl600 or equivalent pressure rating any two characters.  
g = Process connection material; any single character  
h = Usage certifications; any single character.  
i = Calibration type; any single character  
j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4  
k = Name plate language and type; any single character  
n = Protection Class: 1, or 4  
o = Cable Conduits; A, or B  
p = Power supply; 1, 2, 3, or 4  
q = Input and output signal type; A, B, C, D, E, or F  
r = Configuration type/Diagnostics; 1, 2, 3, or 4.  
t = Laid length; any two characters.  
u = Transmitter Housing design; H1, H2 or H4

**FEH315abcdefghijk0Lnopqr.AY.t.u HygenicMaster Electromagnetic Flowmeter – Integral version**  
**FEH515abcdefghijk0Lnopqr.AY.t.u HygenicMaster Electromagnetic Flowmeter – Integral version**

a = 3 digit number representing the bore diameter; 003, 004, 006, 008, 010, 015, 020, 025, 032, 040, 050, 065, 080, or 100  
b = liner material; A, P, or T  
c = Electrode design; 1, 2, 5, or 6.  
d = Measuring electrode material; A, C, D, E, F, G, H, J, K, N, R, S, T, or W  
e = Grounding accessories; 1, or 2  
f = Process connection type; Up to PN100/Cl600 or equivalent pressure rating any two characters.  
g = Process connection material; any single character  
h = Usage certifications; any single character.  
i = Calibration type; any single character  
j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4  
k = Name plate language and type; any single character  
n = Protection Class: 1, or 4  
o = Cable Conduits; A, or B

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p = Power supply; 1, 2, 3, or 4  
q = Input and output signal type; A, B, C, D, E, or F  
r = Configuration type/Diagnostics; 1, 2, 3, or 4.  
t = Laid length; any two characters.  
u = Transmitter Housing design; H2 or H4

**FEP325abcdefghijklmnopqrstuvwxyzLno0Yr.s.t.v.w ProcessMaster Electromagnetic Flowmeter – Remote version**

**FEP525abcdefghijklmnopqrstuvwxyzLno0Yr.s.t.v.w ProcessMaster Electromagnetic Flowmeter – Remote version**

a = 3 digit number representing the bore diameter; 003, 004, 006, 008, 010, 015, 020, 025, 032, 040, 050, 065, 080, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 760, 800, 900, 001, 051, 101, 201, 401, 505, 601, 801, or 002.

b = liner material: A, E, F, H, M, P, S, U, D, T or W

c = Electrode design; 1, 2, 5, or 6.

d = Measuring electrode material; A, C, D, E, F, G, H, J, K, N, R, S, T, or W

e = Grounding accessories; 1, 2, 3, or 4.

f = Process connection type; Up to PN100/Cl600 or equivalent pressure rating any two characters or A7, A8, A9, H7, H8 or H9

g = Process connection material; any single character

h = Usage certifications; any single character

i = Calibration type; any single character

j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4

k = Name plate language and type; any single character

l = Signal Cable length and type: any single character

n = Protection Class: 1, 2, 3 or 4

o = Cable Conduits; A, or B,

r = Configuration type/Diagnostics; 0, 1, 2, 3, or 4.

s = Accessories: AY or AP

t = Laid length; any two characters.

v = Connection Box: UTA or UTS

w = Sensor Housing Material; SMA or SMS

**FEP325abcdefghijklmnopqrstuvwxyzLMno0Yr.s.t.v.w ProcessMaster Electromagnetic Flowmeter –Remote version**

**FEP525abcdefghijklmnopqrstuvwxyzLMno0Yr.s.t.v.w ProcessMaster Electromagnetic Flowmeter –Remote version**

a = 3 digit number representing the bore diameter; 003, 004, 006, 008, 010, 015, 020, 025, 032, 040, 050, 065, 080, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 760, 800, 900, 001, 051, 101, 201, 401, 505, 601, 801, or 002.

b = liner material: A, E, F, H, M, P, S, U, D, T or W

c = Electrode design; 1, 2, 5, or 6.

d = Measuring electrode material; A, C, D, E, F, G, H, J, K, N, R, S, T, or W

e = Grounding accessories; 1, 2, 3, or 4.

f = Process connection type; Up to PN100/Cl600 or equivalent pressure rating any two characters or A7, A8, A9, H7, H8 or H9

g = Process connection material; any single character

h = Usage certifications; any single character

i = Calibration type; any single character

j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4

k = Name plate language and type; any single character

l = Signal Cable Length and Type; any single character

n = Protection Class: 1, 2, 3, or 4

o = Cable Conduits; A, or B

r = Configuration type/Diagnostics; 0, 1, 2, 3, or 4.

s = Accessories: AY or AP

t = Laid length; any two characters.

v = Connection Box: UTA or UTS

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w = Sensor Housing Material; SMA or SMS

**FEH325abcdefgijklMno0Yr.s.t HygienicMaster Electromagnetic Flowmeter –Remote version**

**FEH525abcdefgijklMno0Yr.s.t HygienicMaster Electromagnetic Flowmeter –Remote version**

a = 3 digit number representing the bore diameter; 003, 004, 006, 008, 010, 015, 020, 025, 032, 040, 050, 065, 080, or 100

b = Liner material: A, P or T

c = Electrode design; 1, 2, 5, or 6.

d = Measuring electrode material; A, C, D, E, F, G, H, J, K, N, R, S, T, or W

e = Grounding accessories; 1, or 2

f = Process connection type; Up to PN100/Cl600 or equivalent pressure rating any two characters.

g = Process connection material; any single character

h = Usage certifications; any single character

i = Calibration type; any single character

j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4

k = Name plate language and type; any single letter

l = Signal Cable Length and Type: any single character

n = Protection Class; 1, 2, 3, or 4

o = Cable Conduits; A, or B

r = Configuration type/Diagnostics; 0, 1, 2, 3, or 4.

s = Accessories; AY or AP

t = Laid length; any two characters.

**FET325jklNopqr.u Transmitter**

**FET525jklNopqr.u Transmitter**

j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4

k = Name plate language and type; any single character

l = Signal Cable length and type: any single character

n = Protection Class: 1, or 4

o = Cable Conduits; A, or B

p = Power supply; 1, 2, 3, or 4

q = Input and output signal type; A, B, C, D, E, or F

r = Configuration type/Diagnostics; 0, 1, 2, 3, or 4.

u = Transmitter Housing design; H2 or H4

**FET325jk0Mnopqr.u Transmitter**

**FET525jk0Mnopqr.u Transmitter**

j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4

k = Name plate language and type; any single character

n = Protection Class: 1 or 4

o = Cable Conduits; A, or B

p = Power supply; 1, 2, 3, or 4

q = Input and output signal type; A, B, C, D, E, or F

r = Configuration type/Diagnostics; 0, 1, 2, 3, or 4.

u = Transmitter Housing design; H1, H2 or H4

## **Electrical parameters**

Assembly with current output 1 active

Power Supply (Terminals L and N)

100 ... 230 V (-15/+10%) AC:

24 V (- 30/+10%) AC:

24 V (- 30/+30%) DC, Ripple: < 5 %.

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FEP_15 ... (L) FEH_15 ... (L) FET_25 ... (L) HART communication		Ex i / IS					
		U <sub>o</sub>	I <sub>o</sub>	P <sub>o</sub>	C <sub>o</sub>	C <sub>OPA</sub>	L <sub>o</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[mH]
<b>Current Output 1</b> Active	Terminal 31/32	20	100	500	210	195	6
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>IPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[mH]
<b>Digital Output</b> DO2 Passive	Terminal 41/42	60	425*	2000*	8.4	24	0.065
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>IPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[mH]
<b>Digital Output</b> DO1 Active/Passive	Terminal 51/52	60	425*	2000*	3.6	3.6	170
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>IPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[mH]
<b>Digital Input</b> Passive	Terminal 81/82	---	---	---	---	---	---
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>IPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[mH]

\* Dual or single channel intrinsically safe barrier with resistive outputs

Non intrinsically safe communications options. (Assembly with current output 1 active)

FEP_15 ... (L) FEH_15 ... (L) FET_25 ... (L) HART communication		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>IPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[nH]
		[V]	[mA]	[mW]	[nF]	[nF]	[nH]
<b>Current Output 1</b> Passive	Terminal 31/32	60	500*	2000*	8,4	24	170
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>IPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[nH]
<b>Digital Output</b> DO2 Passive	Terminal 41/42	60	500*	2000*	3,6	3,6	170
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>IPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[nH]
<b>Digital Output</b> DO1 Active/Passive	Terminal 51/52	60	500*	2000*	3,6	3,6	170
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>IPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[nH]
<b>Digital Input</b> Passive	Terminal 81/82	60	500*	2000*	3,6	3,6	170
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>IPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[nH]

\* Dual or single channel intrinsically safe barrier with resistive outputs

Non intrinsically safe communications options. (Assembly with current output 1 active)

FEP_15 ... (L) FEH_15 ... (L) FET_25 ... (L) HART communication		Rated Value		Operating Value	
		U <sub>M</sub>	I <sub>M</sub>	U <sub>N</sub>	I <sub>N</sub>
		[V]	[mA]	[V]	[mA]
<b>Current Output 1</b> Active	Terminal 31/32	60	35	30	30
		U <sub>M</sub>	I <sub>M</sub>	U <sub>N</sub>	I <sub>N</sub>
		[V]	[mA]	[V]	[mA]
<b>Digital Output</b> DO2 Passive	Terminal 41/42	60	35	30	220
		U <sub>M</sub>	I <sub>M</sub>	U <sub>N</sub>	I <sub>N</sub>
		[V]	[mA]	[V]	[mA]
<b>Digital Output</b> DO1 Active/Passive	Terminal 51/52	60	35	30	220
		U <sub>M</sub>	I <sub>M</sub>	U <sub>N</sub>	I <sub>N</sub>
		[V]	[mA]	[V]	[mA]

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<b>Digital Input</b> Passive	Terminal 81/82	---	---	---	---
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The electrical parameters are (using FISCO certified supplies):

FEP_15 ... (L) FEH_15 ... (L) FET_25 ... (L)		Ex i / IS					
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>IPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[uH]
<b>Fieldbus</b> Passive	Terminal 97/98	17	380	5320	1	1	5
<b>Pulse Output</b> DO2 Passive	Terminal 41/42	U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>IPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[uH]
		60	500*	2000*	3.6	3.6	0.17

\* Dual or single channel intrinsically safe barrier with resistive outputs

The electrical parameters are (using barriers with resistive outputs):

FEP_15...(L) FEH_15...(L) FET_25...(L)		Ex i / IS					
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>IPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[uH]
<b>Fieldbus</b> Passive	Terminal 97/98	60	500	5000	1	1	5
<b>Pulse Output</b> DO2 Passive	Terminal 41/42	U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>IPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[uH]
		60	500*	2000*	3.6	3.6	0.17

\* = dual or single channel intrinsically safe barrier with resistive outputs

## 14 Special Conditions for Safe Use:

1. Sensors option code m = M with Category II 2 D having exposed electrodes in the process shall be used in a non-flammable liquid process only
2. The painted surface of the FET325, ProcessMaster and HygenicMaster may store electrostatic charge and become a source of ignition in applications with a low relative humidity <~30% relative humidity where the painted surface is relatively free of surface contamination such as dirt, dust, or oil. Guidance on protection against the risk of ignition due to electrostatic discharge can be found in EN TR50404 and IEC TR60079-32 (in preparation). Cleaning of the painted surface should only be done with a damp cloth.

## 15 Essential Health and Safety Requirements:

The relevant EHSRs that have not been addressed by the standards listed in this certificate have been identified and assessed in the confidential report identified in item 8.

## 16 Test and Assessment Procedure and Conditions:

This EC-Type Examination Certificate is the result of testing of a sample of the product submitted, in accordance with the provisions of the relevant specific standard(s), and assessment of supporting documentation. It does not imply an assessment of the whole production.

Whilst this certificate may be used in support of a manufacturer's claim for CE Marking, FM Approvals Ltd accepts no responsibility for the compliance of the equipment against all applicable Directives in all applications.

This Certificate has been issued in accordance with FM Approvals Ltd's ATEX Certification Scheme.

**THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE**

# **SCHEDULE**

to EC-Type Examination Certificate No. FM08ATEX0080X

## 17 **Schedule Drawings**

A list of the significant parts of the technical documentation is annexed to this certificate and a copy has been kept by the Notified Body.

## 18 **Certificate History**

Details of the supplements to this certificate are described below:

Date	Description
18 <sup>th</sup> December, 2008	Original Issue.
14 <sup>th</sup> January, 2009	<u>Supplement 1:</u> Report Reference: 3030760EC Supplement 1 Description of the Change: Ingress protection ratings increased to IPx7 and IPx8
24 <sup>th</sup> July, 2009	<u>Supplement 2:</u> Report Reference: 3030760EC Supplement 2 Description of the Change: Addition of II 2 G versions
7 <sup>th</sup> September, 2009	<u>Supplement 3:</u> Report Reference: 3030760EC Supplement 3 Description of the Change: Addition of FET325 with Field Housing
16 <sup>th</sup> November, 2009	<u>Supplement 4:</u> Report Reference: 3030760EC Supplement 4 Description of the Change: Addition of elastomer liner; option b = M
17 <sup>th</sup> September, 2010	<u>Supplement 6:</u> Report Reference: 3030760EC Supplement 6 Description of the Change: Addition of Profibus and Foundation Fieldbus Communications options
11 <sup>th</sup> January, 2011	<u>Supplement 7:</u> Report Reference: 3030760rev101103 dated 15 <sup>th</sup> December 2010. Description of the Change: 1. Modification of electronic circuit boards. 2. Addition of the alternate manufacturing location in Shanghai, China
18 <sup>th</sup> July, 2011	<u>Supplement 8:</u> Report Reference: 3030760rev110120 dated 15 <sup>th</sup> July 2011. Description of the Change: 1. Addition of two alternative liner options. 2. An alternative manufacturer for the Terminal Box high version. 3. An alternate manufacturer for the I/O Transformers. 4. Removal of components on the IR-Diode circuit
9 <sup>th</sup> January, 2012	<u>Supplement 9:</u> Report Reference: 3030760rev111025 dated 13 <sup>th</sup> December 2011. Description of the Change: Alternative materials for the coils and liner DN450 to DN2000
20 <sup>th</sup> June, 2012	<u>Supplement 10:</u> Report Reference: 3034391rev120530 dated 30 <sup>th</sup> May 2012 Description of the Change: Marking of FEP325/FEP525 for 2 sizes
4 <sup>th</sup> December 2012	<u>Supplement 11:</u> Report Reference: 3034391rev120113 dated 8 <sup>th</sup> November 2012. Description of the Change: Addition of Type 4 enclosure option

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# **SCHEDULE**



Member of the FM Global Group

to EC-Type Examination Certificate No. FM08ATEX0080X

Date	Description
9 <sup>th</sup> July 2013	Supplement 12: Report Reference: 3040495rev130429 dated 2 <sup>nd</sup> July 2013 Description of the Change: Update to Type 4 Remote Housing.
15 <sup>th</sup> January 2014	Supplement 13: Report Reference: 3030760rev130412 dated 9 <sup>th</sup> January 2014 Description of the Change: Update to Terminal Box High
07 <sup>th</sup> March 2014	Supplement 14: Report Reference: 3050589 dated 27 <sup>th</sup> February 2014 Description of the Change: 1. Addition of LP-MAG and HP-MAG versions. 2. Addition of stainless steel transmitter enclosure option 3. Update to the European standards used.
15 <sup>th</sup> June 2015	Supplement 15: Report Reference: 3030760rev141218 dated 09 <sup>th</sup> June 2015 Description of the Change: Corrections to drawing list.;
29 <sup>th</sup> February 2016	Supplement 16: Report Reference: RR203355 dated 26 <sup>h</sup> February 2016 Description of the Change: 1. Appropriate equipment protection levels (EPL's) markings have been added. 2. Ambient temperature for all devices have been updated where necessary to -40°C to +60°C. 3. The table that describes electrical barriers with resistance outputs has been updated to show missing information. 4. Option "a" bore diameter "550" has been added to both descriptions of the FEP/325/FEP525. 5. Option "t" has been changed to read "any two characters".

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FM Approvals Ltd. 1 Windsor Dials, Windsor, Berkshire, UK. SL4 1RS  
T: +44 (0) 1753 750 000 F: +44 (0) 1753 868 700 E-mail: [atex@fmapprovals.com](mailto:atex@fmapprovals.com) [www.fmapprovals.com](http://www.fmapprovals.com)

# 1 EU-TYPE EXAMINATION CERTIFICATE



2 **Equipment or Protective systems intended for use in Potentially Explosive Atmospheres - Directive 2014/34/EU**

3 **EU-Type Examination Certificate No:** FM08ATEX0080X

4 **Equipment or protective system:** FEP3\_\_ /FEP5\_\_ ProcessMaster, and  
(Type Reference and Name) FEH3\_\_ /FEH5\_\_ HygienicMaster Electromagnetic Flowmeters and FET3\_\_ /FET5\_\_ Transmitters

5 **Name of Applicant:** ABB Automation Products GmbH

6 **Address of Applicant:** Dransfelder Straße 2  
D-37079 Göttingen  
GERMANY

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and documents therein referred to.

8 FM Approvals Europe Ltd, notified body number 2809 in accordance with Article 17 of Directive 2014/34/EU of 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report number:

3030760EC dated 18<sup>th</sup> December 2008

9 Compliance with the Essential Health and Safety Requirements, with the exception of those identified in item 15 of the schedule to this certificate, has been assessed by compliance with the following documents:

EN IEC 60079-0:2018, EN 60079-1:2014, EN IEC 60079-7:2015+A1:2018, EN 60079-11:2012, EN 60079-18:2015+A1:2017, EN 60079-31:2014 and EN 60529:1991+A1:2000+A2:2013.

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EU-Type Examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12 The marking of the equipment or protective system shall include:



**FET325/FET525 – Transmitter only**

II 2 (2) G Ex db eb [ia Gb] IIC T6 Gb Ta = -40°C to +60°C FISCO+;

II 2 (2) D Ex tb [ia Db] IIIC T70°C Db Ta = -40°C to +60°C

+ when option q = E or F

Digitally signed by  
Richard Zammitt  
DN: cn=Richard Zammitt,  
o=FM Approvals  
Europe Limited,  
email=richard.zammitt@fmaprovals.com, c=IE

**Richard Zammitt**  
**Certification Manager, FM Approvals Europe Ltd.**

Issue date: 17<sup>th</sup> June 2019

**THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE**

FM Approvals Europe Ltd. One Georges Quay Plaza, Dublin. Ireland. D02 E440  
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# SCHEDULE

to EU-Type Examination Certificate No. FM08ATEX0080X

12 The marking of the equipment or protective system shall include (contd):



**FET325/FET525 – Transmitter only – option u = H1 or H2 and option m = M**

II 2 D Ex tb IIIC T70°C Db Ta = -40°C to +60°C FISCO+;

+ when option q = E or F

**FEH315/FEH515 – DN3 – DN100 – option u = H2 or H4**

II 2 G Ex db eb ia ma IIC T6...T2 Gb Ta = -40°C to +60°C FISCO+;

II 2 D Ex ia tb IIIC T70°C...Tmedium Db Ta = -40 °C to +60°C

+ when option q = E or F

**FEH315/FEH515 – DN3 – DN100 – option m = M;**

II 2 D Ex ia tb IIIC T70°C...Tmedium Db Ta = -40°C to +60°C

**FEP315/FEP515 – DN3 – DN300 – option u = H2 or H4**

II 2 G Ex db eb ia ma IIC T6...T2 Gb Ta = -40 °C to +60°C FISCO+;

II 2 D Ex ia tb IIIC T70°C...Tmedium Db Ta = -40 °C to +60°C

+ when option q = E or F

**FEP315/FEP515 – DN3 – DN300 – option m = M**

II 2 D Ex tb IIIC T70°C...Tmedium Db Ta = -40°C to +60°C

**FEP315/FEP515 - DN350-DN2000 – option u = H2 or H4**

II 2 G Ex db eb ia IIC T6...T2 Gb Ta = -40 °C to +60°C FISCO+;

II 2 D Ex ia tb IIIC T70°C...Tmedium Db Ta = -40 °C to +60°C

+ when option q = E or F

**FEP315/FEP515 - DN350-DN2000 – option m = M**

II 2 D Ex tb IIIC T70°C...Tmedium Db Ta = -40°C to +60°C

**FEP325/FEP525 – DN3 – DN300**

II 2 G Ex eb ia ma IIC T6...T2 Gb Ta = -40°C to +60°C

II 2 D Ex ia tb IIIC T70°C...Tmedium Db Ta = -40°C to +60°C

**FEP325/FEP525 – DN3 – DN300 option m = M**

II 2 D Ex ia tb IIIC T85°C...Tmedium DbTa = -40°C to +60°C

**FEP325/FEP525 – DN350-DN2000**

II 2 G Ex eb ia IIC T6...T2 Gb Ta = -40°C to +60°C

II 2 D Ex ia tb IIIC T70°C...Tmedium Db Ta = -40°C to +60°C

**FEP325/FEP525 – DN350-DN2000 option m = M**

II 2 D Ex ia tb IIIC T85°C...Tmedium Db Ta = -40°C to +60°C

**FEH325/FEH525 – DN3 – DN100**

II 2 G Ex db eb ia ma IIC T6...T2 Gb Ta = -40°C to +60°C FISCO+;

II 2 D Ex ia tb IIIC T70°C...Tmedium Db Ta = -40°C to +60°C

+ when option q = E or F

**FEH325/FEH525 – DN3 – DN100 option m = M**

II 2 D Ex ia tb IIIC T85°C...Tmedium Db Ta = -40°C to +60°C

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# SCHEDULE

to EU-Type Examination Certificate No. FM08ATEX0080X

13

## Description of Equipment or Protective System

The FEP3\_\_ /FEP5\_\_ ProcessMaster, and FEH3\_\_ / FEH5\_\_ HygienicMaster are a series of electromagnetic flowmeters. The electronics enclosure is a cylindrical enclosure identified as a Type 3, a dual compartment rectangular enclosure identified as the Field Housing or a single compartment a rectangular housing identified as a Type 4.

The FEP3\_\_ /FEP5\_\_ ProcessMaster, and FEH3\_\_ / FEH5\_\_ HygienicMaster are both available as integral and remote designs. In the case of the remote version an optional pre-amplifier can be located on the Primary. A high process temperature version is available and uses a 100 mm stand-off between the Primary and the electronics or remote connection facilities.

The FET3\_\_ /FET5\_\_ is a separate transmitter for use with the ProcessMaster or HygienicMaster sensors. This is based on the housings and electronics used in the FEP3\_\_ /FEP5\_\_ ProcessMaster, and FEH3\_\_ / FEH5\_\_ HygienicMaster flowmeters.

The sensor is available in two different versions: Process Sensor and Hygienic Sensor. The Process Sensor is available in meter size DN3 to DN2000, the Hygienic Sensor is available in meter size DN3 to DN100. The medium temperature range for the Hygienic Sensor and the medium temperature range for the Process Sensor are -40°C to 130°C for the normal temperature version and -40°C to +180°C for the high temperature version.

The enclosures have an ingress protection rating of IP65 and IP67 when Option n = 1 or 4, or IP65, IP67 and IP68 when option n= 2 or 3.

### **FEP315abcdefghijk0Mnopqr.AY.t.u.w ProcessMaster Electromagnetic Flowmeter – Integral version**

### **FEP515abcdefghijk0Mnopqr.AY.t.u.w ProcessMaster Electromagnetic Flowmeter – Integral version**

a = 3 digit number representing the bore diameter; 003, 004, 006, 008, 010, 015, 020, 025, 032, 040, 050, 065, 080, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 760, 800, 900, 001, 051, 101, 201, 401, 505, 601, 801, or 002.

b = liner material: A, E, F, H, M, P, S, U, D, T or W

c = Electrode design; 1, 2, 5, or 6.

d = Measuring electrode material; A, C, D, E, F, G, H, J, K, N, R, S, T, or W

e = Grounding accessories; 1, 2, 3, or 4.

f = Process connection type; Up to PN100/Cl600 or equivalent pressure rating any two characters or A7, A8, A9, H7, H8 or H9

g = Process connection material; any single character

h = Usage certifications; any single character.

i = Calibration type; any single character

j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4

k = Name plate language and type; any single character

n = Protection Class: 1 or 4

o = Cable Conduits; A, or B

p = Power supply; 1, 2, 3, or 4

q = Input and output signal type; A, B, C, D, E, or F

r = Configuration type/Diagnostics; 1, 2, 3, or 4.

t = Laid length; any two characters.

u = Transmitter Housing design; H1, H2 or H4

w = Sensor Housing Material; SMA or SMS

### **FEP315abcdefghijk0Lnopqr.AY.t.u.w ProcessMaster Electromagnetic Flowmeter – Integral version**

### **FEP515abcdefghijk0Lnopqr.AY.t.u.w ProcessMaster Electromagnetic Flowmeter – Integral version**

a = 3 digit number representing the bore diameter; 003, 004, 006, 008, 010, 015, 020, 025, 032, 040, 050, 065, 080, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 760, 800, 900, 001, 051, 101, 201, 401, 505, 601, 801, or 002,

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# SCHEDULE

to EU-Type Examination Certificate No. FM08ATEX0080X

b = Liner material: A, E, F, H, M, P, S, U, D, T or W  
c = Electrode design; 1, 2, 5, or 6.  
d = Measuring electrode material; A, C, D, E, F, G, H, J, K, N, R, S, T, or W  
e = Grounding accessories; 1, 2, 3, or 4.  
f = Process connection type; Up to PN100/Cl600 or equivalent pressure rating any two characters or A7, A8, A9, H7, H8 or H9  
g = Process connection material; any single character  
h = Usage certifications; any single character.  
i = Calibration type; any single character  
j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4  
k = Name plate language and type; any single character  
n = Protection Class: 1 or 4  
o = Cable Conduits; A, or B  
p = Power supply; 1, 2, 3, or 4  
q = Input and output signal type; A, B, C, D, E, or F  
r = Configuration type/Diagnostics; 1, 2, 3, or 4.  
t = Laid length; any two characters.  
u = Transmitter Housing design; H2 or H4  
w = Sensor Housing Material; SMA or SMS

**FEH315abcdefghijklmnopqrstuvwxyz0Mnopqr.AY.t.u HygenicMaster Electromagnetic Flowmeter – Integral version**

**FEH515abcdefghijklmnopqrstuvwxyz0Mnopqr.AY.t.u HygenicMaster Electromagnetic Flowmeter – Integral version**

a = 3 digit number representing the bore diameter; 003, 004, 006, 008, 010, 015, 020, 025, 032, 040, 050, 065, 080, or 100

b = liner material: A, P, or T

c = Electrode design; 1, 2, 5, or 6.

d = Measuring electrode material; A, C, D, E, F, G, H, J, K, N, R, S, T, or W

e = Grounding accessories; 1, or 2

f = Process connection type; Up to PN100/Cl600 or equivalent pressure rating any two characters.

g = Process connection material; any single character

h = Usage certifications; any single character.

i = Calibration type; any single character

j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4

k = Name plate language and type; any single character

n = Protection Class: 1, or 4

o = Cable Conduits; A, or B

p = Power supply; 1, 2, 3, or 4

q = Input and output signal type; A, B, C, D, E, or F

r = Configuration type/Diagnostics; 1, 2, 3, or 4.

t = Laid length; any two characters.

u = Transmitter Housing design; H1, H2 or H4

**FEH315abcdefghijklmnopqrstuvwxyz0Lnopqr.AY.t.u HygenicMaster Electromagnetic Flowmeter – Integral version**

**FEH515abcdefghijklmnopqrstuvwxyz0Lnopqr.AY.t.u HygenicMaster Electromagnetic Flowmeter – Integral version**

a = 3 digit number representing the bore diameter; 003, 004, 006, 008, 010, 015, 020, 025, 032, 040, 050, 065, 080, or 100

b = liner material: A, P, or T

c = Electrode design; 1, 2, 5, or 6.

d = Measuring electrode material; A, C, D, E, F, G, H, J, K, N, R, S, T, or W

e = Grounding accessories; 1, or 2

f = Process connection type; Up to PN100/Cl600 or equivalent pressure rating any two characters.

g = Process connection material; any single character

h = Usage certifications; any single character.

i = Calibration type; any single character

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# SCHEDULE

to EU-Type Examination Certificate No. FM08ATEX0080X

j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4  
k = Name plate language and type; any single character  
n = Protection Class: 1, or 4  
o = Cable Conduits; A, or B  
p = Power supply; 1, 2, 3, or 4  
q = Input and output signal type; A, B, C, D, E, or F  
r = Configuration type/Diagnostics; 1, 2, 3, or 4.  
t = Laid length; any two characters.  
u = Transmitter Housing design; H2 or H4

**FEP325abcdefghijklmnopqrstuvwxyzLno0Yr.s.t.v.w ProcessMaster Electromagnetic Flowmeter – Remote version**

**FEP525abcdefghijklmnopqrstuvwxyzLno0Yr.s.t.v.w ProcessMaster Electromagnetic Flowmeter – Remote version**

a = 3 digit number representing the bore diameter; 003, 004, 006, 008, 010, 015, 020, 025, 032, 040, 050, 065, 080, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 760, 800, 900, 001, 051, 101, 201, 401, 505, 601, 801, or 002.

b = liner material: A, E, F, H, M, P, S, U, D, T or W

c = Electrode design; 1, 2, 5, or 6.

d = Measuring electrode material; A, C, D, E, F, G, H, J, K, N, R, S, T, or W

e = Grounding accessories; 1, 2, 3, or 4.

f = Process connection type; Up to PN100/Cl600 or equivalent pressure rating any two characters or A7, A8, A9, H7, H8 or H9

g = Process connection material; any single character

h = Usage certifications; any single character

i = Calibration type; any single character

j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4

k = Name plate language and type; any single character

l = Signal Cable length and type: any single character

n = Protection Class: 1, 2, 3 or 4

o = Cable Conduits; A, or B,

r = Configuration type/Diagnostics; 0, 1, 2, 3, or 4.

s = Accessories: AY or AP

t = Laid length; any two characters.

v = Connection Box: UTA or UTS

w = Sensor Housing Material; SMA or SMS

**FEP325abcdefghijklmnopqrstuvwxyzMno0Yr.s.t.v.w ProcessMaster Electromagnetic Flowmeter –Remote version**

**FEP525abcdefghijklmnopqrstuvwxyzMno0Yr.s.t.v.w ProcessMaster Electromagnetic Flowmeter –Remote version**

a = 3 digit number representing the bore diameter; 003, 004, 006, 008, 010, 015, 020, 025, 032, 040, 050, 065, 080, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 760, 800, 900, 001, 051, 101, 201, 401, 505, 601, 801, or 002.

b = liner material: A, E, F, H, M, P, S, U, D, T or W

c = Electrode design; 1, 2, 5, or 6.

d = Measuring electrode material; A, C, D, E, F, G, H, J, K, N, R, S, T, or W

e = Grounding accessories; 1, 2, 3, or 4.

f = Process connection type; Up to PN100/Cl600 or equivalent pressure rating any two characters or A7, A8, A9, H7, H8 or H9

g = Process connection material; any single character

h = Usage certifications; any single character

i = Calibration type; any single character

j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4

k = Name plate language and type; any single character

l = Signal Cable Length and Type; any single character

n = Protection Class: 1, 2, 3, or 4

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# SCHEDULE

to EU-Type Examination Certificate No. FM08ATEX0080X

o = Cable Conduits; A, or B  
r = Configuration type/Diagnostics; 0, 1, 2, 3, or 4.  
s = Accessories: AY or AP  
t = Laid length; any two characters.  
v = Connection Box: UTA or UTS  
w = Sensor Housing Material; SMA or SMS

**FEH325abcdefghijklMno0Yr.s.t HygienicMaster Electromagnetic Flowmeter –Remote version**

**FEH525abcdefghijklMno0Yr.s.t HygienicMaster Electromagnetic Flowmeter –Remote version**

a = 3 digit number representing the bore diameter; 003, 004, 006, 008, 010, 015, 020, 025, 032, 040, 050, 065, 080, or 100

b = Liner material: A, P or T

c = Electrode design; 1, 2, 5, or 6.

d = Measuring electrode material; A, C, D, E, F, G, H, J, K, N, R, S, T, or W

e = Grounding accessories; 1, or 2

f = Process connection type; Up to PN100/Cl600 or equivalent pressure rating any two characters.

g = Process connection material; any single character

h = Usage certifications; any single character

i = Calibration type; any single character

j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4

k = Name plate language and type; any single letter

l = Signal Cable Length and Type; any single character

n = Protection Class; 1, 2, 3, or 4

o = Cable Conduits; A, or B

r = Configuration type/Diagnostics; 0, 1, 2, 3, or 4.

s = Accessories; AY or AP

t = Laid length; any two characters.

**FET325jklLnopqr.u Transmitter**

**FET525jklLnopqr.u Transmitter**

j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4

k = Name plate language and type; any single character

l = Signal Cable length and type: any single character

n = Protection Class: 1, or 4

o = Cable Conduits; A, or B

p = Power supply; 1, 2, 3, or 4

q = Input and output signal type; A, B, C, D, E, or F

r = Configuration type/Diagnostics; 0, 1, 2, 3, or 4.

u = Transmitter Housing design; H2 or H4

**FET325jk0Mnopqr.u Transmitter**

**FET525jk0Mnopqr.u Transmitter**

j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4

k = Name plate language and type; any single character

n = Protection Class: 1 or 4

o = Cable Conduits; A, or B

p = Power supply; 1, 2, 3, or 4

q = Input and output signal type; A, B, C, D, E, or F

r = Configuration type/Diagnostics; 0, 1, 2, 3, or 4.

u = Transmitter Housing design; H1, H2 or H4

**THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE**

# SCHEDULE

to EU-Type Examination Certificate No. FM08ATEX0080X

## Electrical parameters

Assembly with current output 1 active  
Power Supply (Terminals L and N)  
100 ... 230 V (-15/+10%) AC:  
24 V (-30/+10%) AC:  
24 V (-30/+30%) DC, Ripple: < 5 %.

FEP_15 ... (L) FEH_15 ... (L) FET_25 ... (L) HART communication		Ex i / IS					
		U <sub>o</sub>	I <sub>o</sub>	P <sub>o</sub>	C <sub>o</sub>	C <sub>OPA</sub>	L <sub>o</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[mH]
<b>Current Output 1</b> Active	Terminal 31/32	20	100	500	210	195	6
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>iPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[mH]
		60	425*	2000*	8.4	24	0.065
<b>Digital Output</b> DO2 Passive	Terminal 41/42	U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>iPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[mH]
		60	425*	2000*	3.6	3.6	170
		60	425*	2000*	3.6	3.6	170
<b>Digital Output</b> DO1 Active/Passive	Terminal 51/52	60	425*	2000*	3.6	3.6	170
		60	425*	2000*	3.6	3.6	170
<b>Digital Input</b> Passive	Terminal 81/82	---	---	---	---	---	---
		---	---	---	---	---	---

\* Dual or single channel intrinsically safe barrier with resistive outputs

Non intrinsically safe communications options. (Assembly with current output 1 active)

FEP_15 ... (L) FEH_15 ... (L) FET_25 ... (L) HART communication		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>iPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[nH]
<b>Current Output 1</b> Passive	Terminal 31/32	60	500*	2000*	8,4	24	170
		60	500*	2000*	8,4	24	170
<b>Digital Output</b> DO2 Passive	Terminal 41/42	60	500*	2000*	3,6	3,6	170
		60	500*	2000*	3,6	3,6	170
<b>Digital Output</b> DO1 Active/Passive	Terminal 51/52	60	500*	2000*	3,6	3,6	170
		60	500*	2000*	3,6	3,6	170
<b>Digital Input</b> Passive	Terminal 81/82	60	500*	2000*	3,6	3,6	170
		60	500*	2000*	3,6	3,6	170

\* Dual or single channel intrinsically safe barrier with resistive outputs

Non intrinsically safe communications options. (Assembly with current output 1 active)

FEP_15 ... (L) FEH_15 ... (L) FET_25 ... (L) HART communication		Rated Value		Operating Value	
		U <sub>M</sub>	I <sub>M</sub>	U <sub>N</sub>	I <sub>N</sub>
		[V]	[mA]	[V]	[mA]
<b>Current Output 1</b> Active	Terminal 31/32	60	35	30	30
		60	35	30	30

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# SCHEDULE

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<b>Digital Output</b> DO2 Passive	Terminal 41/42	60	35	30	220
<b>Digital Output</b> DO1 Active/Passive	Terminal 51/52	60	35	30	220
<b>Digital Input</b> Passive	Terminal 81/82	---	---	---	---

The electrical parameters are (using FISCO certified supplies):

		Ex i / IS					
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>iPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[uH]
<b>Fieldbus</b> Passive	Terminal 97/98	17	380	5320	1	1	5
<b>Pulse Output</b> DO2 Passive	Terminal 41/42	U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>iPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[uH]
		60	500*	2000*	3.6	3.6	0.17

\* Dual or single channel intrinsically safe barrier with resistive outputs

The electrical parameters are (using barriers with resistive outputs):

		Ex i / IS					
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>iPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[uH]
<b>Fieldbus</b> Passive	Terminal 97/98	60	500	5000	1	1	5
<b>Pulse Output</b> DO2 Passive	Terminal 41/42	U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>iPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[uH]
		60	500*	2000*	3.6	3.6	0.17

\* = dual or single channel intrinsically safe barrier with resistive outputs

## 14 Special Conditions for Safe Use:

1. Sensors option code m = M with Category II 2 D having exposed electrodes in the process shall be used in a non-flammable liquid process only
2. The painted surface of the FET325, ProcessMaster and HygenicMaster may store electrostatic charge and become a source of ignition in applications with a low relative humidity <~30% relative humidity where the painted surface is relatively free of surface contamination such as dirt, dust, or oil. Guidance on protection against the risk of ignition due to electrostatic discharge can be found in IEC TR60079-32-1. Cleaning of the painted surface should only be done with a damp cloth.
3. Consult the manufacturer if dimensional information on the flameproof joints is necessary.

## 15 Essential Health and Safety Requirements:

The relevant EHSRs that have not been addressed by the standards listed in this certificate have been identified and assessed in the confidential report identified in item 8.

## 16 Test and Assessment Procedure and Conditions:

This EU-Type Examination Certificate is the result of testing of a sample of the product submitted, in accordance with the provisions of the relevant specific standard(s), and assessment of supporting documentation. It does not imply an assessment of the whole production.

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# **SCHEDULE**

to EU-Type Examination Certificate No. FM08ATEX0080X

Whilst this certificate may be used in support of a manufacturer's claim for CE Marking, FM Approvals Europe Ltd accepts no responsibility for the compliance of the equipment against all applicable Directives in all applications.

This Certificate has been issued in accordance with FM Approvals Europe Ltd's ATEX Certification Scheme.

## **17 Schedule Drawings**

A list of the significant parts of the technical documentation is annexed to this certificate and a copy has been kept by the Notified Body. These drawings are maintained under Project ID 3034391.

## **18 Certificate History**

Details of the supplements to this certificate are described below:

Date	Description
18 <sup>th</sup> December, 2008	Original Issue.
14 <sup>th</sup> January, 2009 to 9 <sup>th</sup> January, 2012	<u>Supplement 1 to 9:</u> See certificate dated 9 <sup>th</sup> January, 2012.
20 <sup>th</sup> June, 2012	<u>Supplement 10:</u> Report Reference: 3034391rev120530 dated 30 <sup>th</sup> May 2012 Description of the Change: Marking of FEP325/FEP525 for 2 sizes
4 <sup>th</sup> December 2012	<u>Supplement 11:</u> Report Reference: 3034391rev120113 dated 8 <sup>th</sup> November 2012. Description of the Change: Addition of Type 4 enclosure option
9 <sup>th</sup> July 2013	<u>Supplement 12:</u> Report Reference: 3040495rev130429 dated 2 <sup>nd</sup> July 2013 Description of the Change: Update to Type 4 Remote Housing.
15 <sup>th</sup> January 2014	<u>Supplement 13:</u> Report Reference: 3030760rev130412 dated 9 <sup>th</sup> January 2014 Description of the Change: Update to Terminal Box High
07 <sup>th</sup> March 2014	<u>Supplement 14:</u> Report Reference: 3050589 dated 27 <sup>th</sup> February 2014 Description of the Change: 1. Addition of LP-MAG and HP-MAG versions. 2. Addition of stainless steel transmitter enclosure option 3. Update to the European standards used.
15 <sup>th</sup> June 2015	<u>Supplement 15:</u> Report Reference: 3030760rev141218 dated 09 <sup>th</sup> June 2015 Description of the Change: Corrections to drawing list.:

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# **SCHEDULE**

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Date	Description
29 <sup>th</sup> February 2016	<u>Supplement 16:</u> Report Reference: RR203355 dated 26 <sup>h</sup> February 2016 Description of the Change: <ol style="list-style-type: none"><li>1. Appropriate equipment protection levels (EPL's) markings have been added.</li><li>2. Ambient temperature for all devices have been updated where necessary to -40°C to +60°C.</li><li>3. The table that describes electrical barriers with resistance outputs has been updated to show missing information.</li><li>4. Option "a" bore diameter "550" has been added to both descriptions of the FEP/325/FEP525.</li><li>5. Option "t" has been changed to read "any two characters".</li></ol>
14 <sup>th</sup> October 2016	<u>Supplement 17:</u> Report Reference: 3055837 dated 19 <sup>th</sup> July 2016 Description of the Change: Documentation updates. Certificate updated to EU format.
17 <sup>th</sup> June 2019	<u>Supplement 18:</u> Report Reference: RR218336 dated 5 <sup>th</sup> June 2019 Description of the Change: Update to the standards used; EN IEC 60079-0:2018, EN 60079-1:2014, EN IEC 60079-7:2015+A1:2018, EN 60079-18: 2015+A1:2017, EN 60079-31:2014 and EN 60529:1991+A1:2000+A2:2013. Certificate transferred from FM Approvals Ltd., Notified Body No. 1725, to FM Approvals Europe Ltd., Notified Body No. 2809.

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FM Approvals Europe Ltd. One Georges Quay Plaza, Dublin. Ireland. D02 E440  
T: +353 (0) 1761 4200 E-mail: [atex@fmapprovals.com](mailto:atex@fmapprovals.com) [www.fmapprovals.com](http://www.fmapprovals.com)

# 1 EU-TYPE EXAMINATION CERTIFICATE



2 **Equipment or Protective systems intended for use in Potentially Explosive Atmospheres - Directive 2014/34/EU**

3 **EU-Type Examination Certificate No:** FM08ATEX0080X

4 **Equipment or protective system:** FEP3\_\_ /FEP5\_\_ ProcessMaster, and  
(Type Reference and Name) FEH3\_\_ /FEH5\_\_ HygienicMaster Electromagnetic Flowmeters and FET3\_\_ /FET5\_\_ Transmitters

5 **Name of Applicant:** ABB Automation Products GmbH

6 **Address of Applicant:** Dransfelder Straße 2  
D-37079 Göttingen  
GERMANY

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and documents therein referred to.

8 FM Approvals Europe Ltd, notified body number 2809 in accordance with Article 17 of Directive 2014/34/EU of 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report number:

3030760EC dated 18<sup>th</sup> December 2008

9 Compliance with the Essential Health and Safety Requirements, with the exception of those identified in item 15 of the schedule to this certificate, has been assessed by compliance with the following documents:

EN IEC 60079-0:2018, EN 60079-1:2014, EN IEC 60079-7:2015+A1:2018, EN 60079-11:2012,  
EN 60079-18:2015+A1:2017, EN 60079-31:2014 and EN 60529:1991+A1:2000+A2:2013.

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EU-Type Examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12 The marking of the equipment or protective system shall include:



## **FET325/FET525 – Transmitter only**

II 2 (2) G Ex db eb [ia Gb] IIC T6 Gb Ta = -40°C to +60°C FISCO+;

II 2 (2) D Ex tb [ia Db] IIIC T70°C Db Ta = -40°C to +60°C

+ when option q = E or F

Digitally signed by  
Richard Zammitt  
DN: cn=Richard  
Zammitt, o, ou=FM  
Approvals Europe  
Limited,  
email=richard.zammitt  
@fmapprovals.com,  
c=IE

**Richard Zammitt**  
**Certification Manager, FM Approvals Europe Ltd.**

Issue date: 06th January 2020

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FM Approvals Europe Ltd. One Georges Quay Plaza, Dublin. Ireland. D02 E440  
T: +353 (0) 1761 4200 E-mail: [atex@fmapprovals.com](mailto:atex@fmapprovals.com) [www.fmapprovals.com](http://www.fmapprovals.com)

# SCHEDULE

to EU-Type Examination Certificate No. FM08ATEX0080X

12 The marking of the equipment or protective system shall include (contd):



**FET325/FET525 – Transmitter only – option u = H1 or H2 and option m = M**

II 2 D Ex tb IIIC T70°C Db Ta = -40°C to +60°C FISCO+;

+ when option q = E or F

**FEH315/FEH515 – DN3 – DN100 – option u = H2 or H4**

II 2 G Ex db eb ia ma IIC T6...T2 Gb Ta = -40°C to +60°C FISCO+;

II 2 D Ex ia tb IIIC T70°C...Tmedium Db Ta = -40 °C to +60°C

+ when option q = E or F

**FEH315/FEH515 – DN3 – DN100 – option m = M;**

II 2 D Ex ia tb IIIC T70°C...Tmedium Db Ta = -40°C to +60°C

**FEP315/FEP515 – DN3 – DN300 – option u = H2 or H4**

II 2 G Ex db eb ia ma IIC T6...T2 Gb Ta = -40 °C to +60°C FISCO+;

II 2 D Ex ia tb IIIC T70°C...Tmedium Db Ta = -40 °C to +60°C

+ when option q = E or F

**FEP315/FEP515 – DN3 – DN300 – option m = M**

II 2 D Ex tb IIIC T70°C...Tmedium Db Ta = -40°C to +60°C

**FEP315/FEP515 - DN350-DN2000 – option u = H2 or H4**

II 2 G Ex db eb ia IIC T6...T2 Gb Ta = -40 °C to +60°C FISCO+;

II 2 D Ex ia tb IIIC T70°C...Tmedium Db Ta = -40 °C to +60°C

+ when option q = E or F

**FEP315/FEP515 - DN350-DN2000 – option m = M**

II 2 D Ex tb IIIC T70°C...Tmedium Db Ta = -40°C to +60°C

**FEP325/FEP525 – DN3 – DN300**

II 2 G Ex eb ia ma IIC T6...T2 Gb Ta = -40°C to +60°C

II 2 D Ex ia tb IIIC T70°C...Tmedium Db Ta = -40°C to +60°C

**FEP325/FEP525 – DN3 – DN300 option m = M**

II 2 D Ex ia tb IIIC T85°C...Tmedium DbTa = -40°C to +60°C

**FEP325/FEP525 – DN350-DN2000**

II 2 G Ex eb ia IIC T6...T2 Gb Ta = -40°C to +60°C

II 2 D Ex ia tb IIIC T70°C...Tmedium Db Ta = -40°C to +60°C

**FEP325/FEP525 – DN350-DN2000 option m = M**

II 2 D Ex ia tb IIIC T85°C...Tmedium Db Ta = -40°C to +60°C

**FEH325/FEH525 – DN3 – DN100**

II 2 G Ex db eb ia ma IIC T6...T2 Gb Ta = -40°C to +60°C FISCO+;

II 2 D Ex ia tb IIIC T70°C...Tmedium Db Ta = -40°C to +60°C

+ when option q = E or F

**FEH325/FEH525 – DN3 – DN100 option m = M**

II 2 D Ex ia tb IIIC T85°C...Tmedium Db Ta = -40°C to +60°C

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# SCHEDULE

to EU-Type Examination Certificate No. FM08ATEX0080X

13

## Description of Equipment or Protective System

The FEP3\_\_ /FEP5\_\_ ProcessMaster, and FEH3\_\_ / FEH5\_\_ HygienicMaster are a series of electromagnetic flowmeters. The electronics enclosure is a cylindrical enclosure identified as a Type 3, a dual compartment rectangular enclosure identified as the Field Housing or a single compartment a rectangular housing identified as a Type 4.

The FEP3\_\_ /FEP5\_\_ ProcessMaster, and FEH3\_\_ / FEH5\_\_ HygienicMaster are both available as integral and remote designs. In the case of the remote version an optional pre-amplifier can be located on the Primary. A high process temperature version is available and uses a 100 mm stand-off between the Primary and the electronics or remote connection facilities.

The FET3\_\_ /FET5\_\_ is a separate transmitter for use with the ProcessMaster or HygienicMaster sensors. This is based on the housings and electronics used in the FEP3\_\_ /FEP5\_\_ ProcessMaster, and FEH3\_\_ / FEH5\_\_ HygienicMaster flowmeters.

The sensor is available in two different versions: Process Sensor and Hygienic Sensor. The Process Sensor is available in meter size DN3 to DN2000, the Hygienic Sensor is available in meter size DN3 to DN100. The medium temperature range for the Hygienic Sensor and the medium temperature range for the Process Sensor are -40°C to 130°C for the normal temperature version and -40°C to +180°C for the high temperature version.

The enclosures have an ingress protection rating of IP65 and IP67 when Option n = 1 or 4, or IP65, IP67 and IP68 when option n= 2 or 3.

**FEP315abcdefghijk0Mnopqr.AY.t.u.w ProcessMaster Electromagnetic Flowmeter – Integral version**

**FEP515abcdefghijk0Mnopqr.AY.t.u.w ProcessMaster Electromagnetic Flowmeter – Integral version**

a = 3 digit number representing the bore diameter; 003, 004, 006, 008, 010, 015, 020, 025, 032, 040, 050, 065, 080, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 760, 800, 900, 001, 051, 101, 201, 401, 505, 601, 801, or 002.

b = liner material: A, E, F, H, M, P, S, U, D, T or W

c = Electrode design; 1, 2, 5, or 6.

d = Measuring electrode material; A, C, D, E, F, G, H, J, K, N, R, S, T, or W

e = Grounding accessories; 1, 2, 3, or 4.

f = Process connection type; Up to PN100/Cl600 or equivalent pressure rating any two characters or A7, A8, A9, H7, H8 or H9

g = Process connection material; any single character

h = Usage certifications; any single character.

i = Calibration type; any single character

j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4

k = Name plate language and type; any single character

n = Protection Class: 1 or 4

o = Cable Conduits; A, or B

p = Power supply; 1, 2, 3, or 4

q = Input and output signal type; A, B, C, D, E, or F

r = Configuration type/Diagnostics; 1, 2, 3, or 4.

t = Laid length; any two characters.

u = Transmitter Housing design; H1, H2 or H4

w = Sensor Housing Material; SMA or SMS

**FEP315abcdefghijk0Lnopqr.AY.t.u.w ProcessMaster Electromagnetic Flowmeter – Integral version**

**FEP515abcdefghijk0Lnopqr.AY.t.u.w ProcessMaster Electromagnetic Flowmeter – Integral version**

a = 3 digit number representing the bore diameter; 003, 004, 006, 008, 010, 015, 020, 025, 032, 040, 050,

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065, 080, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 760, 800, 900, 001, 051, 101, 201, 401, 505, 601, 801, or 002,  
b = Liner material: A, E, F, H, M, P, S, U, D, T or W  
c = Electrode design; 1, 2, 5, or 6.  
d = Measuring electrode material; A, C, D, E, F, G, H, J, K, N, R, S, T, or W  
e = Grounding accessories; 1, 2, 3, or 4.  
f = Process connection type; Up to PN100/CI600 or equivalent pressure rating any two characters or A7, A8, A9, H7, H8 or H9  
g = Process connection material; any single character  
h = Usage certifications; any single character.  
i = Calibration type; any single character  
j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4  
k = Name plate language and type; any single character  
n = Protection Class: 1 or 4  
o = Cable Conduits; A, or B  
p = Power supply; 1, 2, 3, or 4  
q = Input and output signal type; A, B, C, D, E, or F  
r = Configuration type/Diagnostics; 1, 2, 3, or 4.  
t = Laid length; any two characters.  
u = Transmitter Housing design; H2 or H4  
w = Sensor Housing Material; SMA or SMS

**FEH315abcdefghijklmnopqrstuvwxyz0Mnopqr.AY.t.u HygenicMaster Electromagnetic Flowmeter – Integral version**

**FEH515abcdefghijklmnopqrstuvwxyz0Mnopqr.AY.t.u HygenicMaster Electromagnetic Flowmeter – Integral version**  
a = 3 digit number representing the bore diameter; 003, 004, 006, 008, 010, 015, 020, 025, 032, 040, 050, 065, 080, or 100

b = liner material: A, P, or T  
c = Electrode design; 1, 2, 5, or 6.  
d = Measuring electrode material; A, C, D, E, F, G, H, J, K, N, R, S, T, or W  
e = Grounding accessories; 1, or 2  
f = Process connection type; Up to PN100/CI600 or equivalent pressure rating any two characters.  
g = Process connection material; any single character  
h = Usage certifications; any single character.  
i = Calibration type; any single character  
j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4  
k = Name plate language and type; any single character  
n = Protection Class: 1, or 4  
o = Cable Conduits; A, or B  
p = Power supply; 1, 2, 3, or 4  
q = Input and output signal type; A, B, C, D, E, or F  
r = Configuration type/Diagnostics; 1, 2, 3, or 4.  
t = Laid length; any two characters.  
u = Transmitter Housing design; H1, H2 or H4

**FEH315abcdefghijklmnopqrstuvwxyz0Lnopqr.AY.t.u HygenicMaster Electromagnetic Flowmeter – Integral version**

**FEH515abcdefghijklmnopqrstuvwxyz0Lnopqr.AY.t.u HygenicMaster Electromagnetic Flowmeter – Integral version**  
a = 3 digit number representing the bore diameter; 003, 004, 006, 008, 010, 015, 020, 025, 032, 040, 050, 065, 080, or 100

b = liner material: A, P, or T  
c = Electrode design; 1, 2, 5, or 6.  
d = Measuring electrode material; A, C, D, E, F, G, H, J, K, N, R, S, T, or W  
e = Grounding accessories; 1, or 2  
f = Process connection type; Up to PN100/CI600 or equivalent pressure rating any two characters.

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g = Process connection material; any single character  
h = Usage certifications; any single character.  
i = Calibration type; any single character  
j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4  
k = Name plate language and type; any single character  
n = Protection Class: 1, or 4  
o = Cable Conduits; A, or B  
p = Power supply; 1, 2, 3, or 4  
q = Input and output signal type; A, B, C, D, E, or F  
r = Configuration type/Diagnostics; 1, 2, 3, or 4.  
t = Laid length; any two characters.  
u = Transmitter Housing design; H2 or H4

**FEP325abcdefghijklmnoYr.s.t.v.w ProcessMaster Electromagnetic Flowmeter – Remote version**

**FEP525abcdefghijklmnoYr.s.t.v.w ProcessMaster Electromagnetic Flowmeter – Remote version**

a = 3 digit number representing the bore diameter; 003, 004, 006, 008, 010, 015, 020, 025, 032, 040, 050, 065, 080, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 760, 800, 900, 001, 051, 101, 201, 401, 505, 601, 801, or 002.

b = liner material: A, E, F, H, M, P, S, U, D, T or W

c = Electrode design; 1, 2, 5, or 6.

d = Measuring electrode material; A, C, D, E, F, G, H, J, K, N, R, S, T, or W

e = Grounding accessories; 1, 2, 3, or 4.

f = Process connection type; Up to PN100/Cl600 or equivalent pressure rating any two characters or A7, A8, A9, H7, H8 or H9

g = Process connection material; any single character

h = Usage certifications; any single character

i = Calibration type; any single character

j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4

k = Name plate language and type; any single character

l = Signal Cable length and type: any single character

n = Protection Class: 1, 2, 3 or 4

o = Cable Conduits; A, or B,

r = Configuration type/Diagnostics; 0, 1, 2, 3, or 4.

s = Accessories: AY or AP

t = Laid length; any two characters.

v = Connection Box: UTA or UTS

w = Sensor Housing Material; SMA or SMS

**FEP325abcdefghijklmnoYr.s.t.v.w ProcessMaster Electromagnetic Flowmeter –Remote version**

**FEP525abcdefghijklmnoYr.s.t.v.w ProcessMaster Electromagnetic Flowmeter –Remote version**

a = 3 digit number representing the bore diameter; 003, 004, 006, 008, 010, 015, 020, 025, 032, 040, 050, 065, 080, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 760, 800, 900, 001, 051, 101, 201, 401, 505, 601, 801, or 002.

b = liner material: A, E, F, H, M, P, S, U, D, T or W

c = Electrode design; 1, 2, 5, or 6.

d = Measuring electrode material; A, C, D, E, F, G, H, J, K, N, R, S, T, or W

e = Grounding accessories; 1, 2, 3, or 4.

f = Process connection type; Up to PN100/Cl600 or equivalent pressure rating any two characters or A7, A8, A9, H7, H8 or H9

g = Process connection material; any single character

h = Usage certifications; any single character

i = Calibration type; any single character

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j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4  
k = Name plate language and type; any single character  
l = Signal Cable Length and Type; any single character  
n = Protection Class: 1, 2, 3, or 4  
o = Cable Conduits; A, or B  
r = Configuration type/Diagnostics; 0, 1, 2, 3, or 4.  
s = Accessories: AY or AP  
t = Laid length; any two characters.  
v = Connection Box: UTA or UTS  
w = Sensor Housing Material; SMA or SMS

**FEH325abcdefghijklMno0Yr.s.t HygienicMaster Electromagnetic Flowmeter –Remote version**

**FEH525abcdefghijklMno0Yr.s.t HygienicMaster Electromagnetic Flowmeter –Remote version**

a = 3 digit number representing the bore diameter; 003, 004, 006, 008, 010, 015, 020, 025, 032, 040, 050, 065, 080, or 100

b = Liner material: A, P or T

c = Electrode design; 1, 2, 5, or 6.

d = Measuring electrode material; A, C, D, E, F, G, H, J, K, N, R, S, T, or W

e = Grounding accessories; 1, or 2

f = Process connection type; Up to PN100/Cl600 or equivalent pressure rating any two characters.

g = Process connection material; any single character

h = Usage certifications; any single character

i = Calibration type; any single character

j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4

k = Name plate language and type; any single letter

l = Signal Cable Length and Type: any single character

n = Protection Class; 1, 2, 3, or 4

o = Cable Conduits; A, or B

r = Configuration type/Diagnostics; 0, 1, 2, 3, or 4.

s = Accessories; AY or AP

t = Laid length; any two characters.

**FET325jklNopqr.u Transmitter**

**FET525jklNopqr.u Transmitter**

j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4

k = Name plate language and type; any single character

l = Signal Cable length and type: any single character

n = Protection Class: 1, or 4

o = Cable Conduits; A, or B

p = Power supply; 1, 2, 3, or 4

q = Input and output signal type; A, B, C, D, E, or F

r = Configuration type/Diagnostics; 0, 1, 2, 3, or 4.

u = Transmitter Housing design; H2 or H4

**FET325jk0Mnopqr.u Transmitter**

**FET525jk0Mnopqr.u Transmitter**

j = Temperature range of sensor/Ambient temperature range; 1, 2, 3, or 4

k = Name plate language and type; any single character

n = Protection Class: 1 or 4

o = Cable Conduits; A, or B

p = Power supply; 1, 2, 3, or 4

q = Input and output signal type; A, B, C, D, E, or F

r = Configuration type/Diagnostics; 0, 1, 2, 3, or 4.

u = Transmitter Housing design; H1, H2 or H4

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## Electrical parameters

Assembly with current output 1 active  
Power Supply (Terminals L and N)  
100 ... 230 V (-15/+10%) AC:  
24 V (- 30/+10%) AC:  
24 V (- 30/+30%) DC, Ripple: < 5 %.

FEP_15 ... (L) FEH_15 ... (L) FET_25 ... (L) HART communication		Ex i / IS					
		U <sub>o</sub>	I <sub>o</sub>	P <sub>o</sub>	C <sub>o</sub>	C <sub>OPA</sub>	L <sub>o</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[mH]
<b>Current Output 1</b> Active	Terminal 31/32	20	100	500	210	195	6
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>IPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[mH]
<b>Digital Output</b> DO2 Passive	Terminal 41/42	60	425*	2000*	8.4	24	0.065
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>IPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[mH]
<b>Digital Output</b> DO1 Active/Passive	Terminal 51/52	60	425*	2000*	3.6	3.6	170
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>IPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[mH]
<b>Digital Input</b> Passive	Terminal 81/82	---	---	---	---	---	---
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>IPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[mH]

\* Dual or single channel intrinsically safe barrier with resistive outputs

Non intrinsically safe communications options. (Assembly with current output 1 active)

FEP_15 ... (L) FEH_15 ... (L) FET_25 ... (L) HART communication		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>IPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[nH]
		[V]	[mA]	[mW]	[nF]	[nF]	[nH]
<b>Current Output 1</b> Passive	Terminal 31/32	60	500*	2000*	8,4	24	170
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>IPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[nH]
<b>Digital Output</b> DO2 Passive	Terminal 41/42	60	500*	2000*	3,6	3,6	170
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>IPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[nH]
<b>Digital Output</b> DO1 Active/Passive	Terminal 51/52	60	500*	2000*	3,6	3,6	170
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>IPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[nH]
<b>Digital Input</b> Passive	Terminal 81/82	60	500*	2000*	3,6	3,6	170
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>IPA</sub>	L <sub>i</sub>
		[V]	[mA]	[mW]	[nF]	[nF]	[nH]

\* Dual or single channel intrinsically safe barrier with resistive outputs

Non intrinsically safe communications options. (Assembly with current output 1 active)

FEP_15 ... (L)	Rated Value		Operating Value	
	U <sub>M</sub>	I <sub>M</sub>	U <sub>N</sub>	I <sub>N</sub>

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<b>FEH_15 ... (L)</b> <b>FET_25 ... (L)</b> <b>HART communication</b>		[V]	[mA]	[V]	[mA]
<b>Current Output 1</b> Active	Terminal 31/32	60	35	30	30
<b>Digital Output</b> DO2 Passive	Terminal 41/42	60	35	30	220
<b>Digital Output</b> DO1 Active/Passive	Terminal 51/52	60	35	30	220
<b>Digital Input</b> Passive	Terminal 81/82	---	---	---	---

The electrical parameters are (using FISCO certified supplies):

<b>FEP_15 ... (L)</b> <b>FEH_15 ... (L)</b> <b>FET_25 ... (L)</b>		Ex i / IS				
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>iPA</sub>
		[V]	[mA]	[mW]	[nF]	[nF]
<b>Fieldbus</b> Passive	Terminal 97/98	17	380	5320	1	1
		L <sub>i</sub>				
		[uH]				
<b>Pulse Output</b> DO2 Passive	Terminal 41/42	60	500*	2000*	3.6	3.6
						0.17

\* Dual or single channel intrinsically safe barrier with resistive outputs

The electrical parameters are (using barriers with resistive outputs):

<b>FEP_15...(L)</b> <b>FEH_15...(L)</b> <b>FET_25...(L)</b>		Ex i / IS				
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	C <sub>i</sub>	C <sub>iPA</sub>
		[V]	[mA]	[mW]	[nF]	[nF]
<b>Fieldbus</b> Passive	Terminal 97/98	60	500	5000	1	1
		L <sub>i</sub>				
		[uH]				
<b>Pulse Output</b> DO2 Passive	Terminal 41/42	60	500*	2000*	3.6	3.6
						0.17

\* = dual or single channel intrinsically safe barrier with resistive outputs

## 14 Special Conditions for Safe Use:

1. Sensors option code m = M with Category II 2 D having exposed electrodes in the process shall be used in a non-flammable liquid process only
2. The painted surface of the FET325, ProcessMaster and HygenicMaster may store electrostatic charge and become a source of ignition in applications with a low relative humidity <~30% relative humidity where the painted surface is relatively free of surface contamination such as dirt, dust, or oil. Guidance on protection against the risk of ignition due to electrostatic discharge can be found in IEC TR60079-32-1. Cleaning of the painted surface should only be done with a damp cloth.
3. Consult the manufacturer if dimensional information on the flameproof joints is necessary.

## 15 Essential Health and Safety Requirements:

The relevant EHSRs that have not been addressed by the standards listed in this certificate have been identified and assessed in the confidential report identified in item 8.

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**16 Test and Assessment Procedure and Conditions:**

This EU-Type Examination Certificate is the result of testing of a sample of the product submitted, in accordance with the provisions of the relevant specific standard(s), and assessment of supporting documentation. It does not imply an assessment of the whole production.

Whilst this certificate may be used in support of a manufacturer's claim for CE Marking, FM Approvals Europe Ltd accepts no responsibility for the compliance of the equipment against all applicable Directives in all applications.

This Certificate has been issued in accordance with FM Approvals Europe Ltd's ATEX Certification Scheme.

**17 Schedule Drawings**

A list of the significant parts of the technical documentation is annexed to this certificate and a copy has been kept by the Notified Body. These drawings are maintained under Project ID 3034391.

**18 Certificate History**

Details of the supplements to this certificate are described below:

Date	Description
18 <sup>th</sup> December 2008	Original Issue.
14 <sup>th</sup> January 2009 to 9 <sup>th</sup> January 2012	<u>Supplement 1 to 9:</u> See certificate dated 9 <sup>th</sup> January 2012.
20 <sup>th</sup> June 2012	<u>Supplement 10:</u> Report Reference: 3034391rev120530 dated 30 <sup>th</sup> May 2012. Description of the Change: Marking of FEP325/FEP525 for 2 sizes
4 <sup>th</sup> December 2012	<u>Supplement 11:</u> Report Reference: 3034391rev120113 dated 8 <sup>th</sup> November 2012. Description of the Change: Addition of Type 4 enclosure option
9 <sup>th</sup> July 2013	<u>Supplement 12:</u> Report Reference: 3040495rev130429 dated 2 <sup>nd</sup> July 2013. Description of the Change: Update to Type 4 Remote Housing.
15 <sup>th</sup> January 2014	<u>Supplement 13:</u> Report Reference: 3030760rev130412 dated 9 <sup>th</sup> January 2014. Description of the Change: Update to Terminal Box High
7 <sup>th</sup> March 2014	<u>Supplement 14:</u> Report Reference: 3050589 dated 27 <sup>th</sup> February 2014. Description of the Change: 1. Addition of LP-MAG and HP-MAG versions. 2. Addition of stainless steel transmitter enclosure option 3. Update to the European standards used.
15 <sup>th</sup> June 2015	<u>Supplement 15:</u> Report Reference: 3030760rev141218 dated 9 <sup>th</sup> June 2015. Description of the Change: Corrections to drawing list.;

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Date	Description
29 <sup>th</sup> February 2016	<p><u>Supplement 16:</u> Report Reference: RR203355 dated 26<sup>th</sup> February 2016. Description of the Change:</p> <ol style="list-style-type: none"><li>1. Appropriate equipment protection levels (EPL's) markings have been added.</li><li>2. Ambient temperature for all devices have been updated where necessary to -40°C to +60°C.</li><li>3. The table that describes electrical barriers with resistance outputs has been updated to show missing information.</li><li>4. Option "a" bore diameter "550" has been added to both descriptions of the FEP/325/FEP525.</li><li>5. Option "t" has been changed to read "any two characters".</li></ol>
14 <sup>th</sup> October 2016	<p><u>Supplement 17:</u> Report Reference: 3055837 dated 19<sup>th</sup> July 2016. Description of the Change: Documentation updates. Certificate updated to EU format.</p>
17 <sup>th</sup> June 2019	<p><u>Supplement 18:</u> Report Reference: RR218336 dated 5<sup>th</sup> June 2019. Description of the Change: Update to the standards used; EN IEC 60079-0:2018, EN 60079-1:2014, EN IEC 60079-7:2015+A1:2018, EN 60079-18: 2015+A1:2017, EN 60079-31:2014 and EN 60529:1991+A1:2000+A2:2013. Certificate transferred from FM Approvals Ltd., Notified Body No. 1725, to FM Approvals Europe Ltd., Notified Body No. 2809.</p>
06 <sup>th</sup> January 2020	<p><u>Supplement 19:</u> Report Reference: RR220973 dated 23<sup>rd</sup> December 2019. Description of the Change: Removal of project 3034391 related documents.</p>

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