

CERTIFICATE OF CONFORMITY



1. **HAZARDOUS LOCATION ELECTRICAL PER CANADIAN REQUIREMENTS**
2. **Certificate No:** FM17CA0033X
3. **Equipment:** FEP63 _ ProcessMaster, and
(Type Reference and Name) FEH63 _ HygienicMaster Electromagnetic Flowmeters,
and FET63 _ Transmitters
4. **Name of Listing Company:** ABB Automation Products GmbH
5. **Address of Listing Company:** Dransfelder Straße 2,
D-37079 Göttingen,
Germany
6. The examination and test results are recorded in confidential report number:

3059596 dated 22nd May 2018
7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

CSA C22.2 No. 25: 2017, CSA C22.2 No. 30: 1986 (R2016), CSA C22.2 No. 94.1: 2015, CSA C22.2 No. 94.2: 2015, CSA C22.2 No. 213: 2017, CAN/CSA-C22.2 No. 60079-0: 2015, CAN/CSA-C22.2 No. 60079-1: 2016, CAN/CSA-C22.2 No. 60079-7: 2016, CAN/CSA-C22.2 No. 60079-11: 2014, CAN/CSA-C22.2 No. 60079-18: 2016, CAN/CSA-C22.2 No. 60079-31: 2015, CAN/CSA C22.2 No. 60529: 2016, CAN/CSA C22.2 No. 61010-1: 2004, and ANSI/ISA 12.27.01: 2011
8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

Certificate issued by:


J. E. Marquedant
VP, Manager, Electrical Systems

22 May 2018
Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

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Canadian Certificate Of Conformity No: FM17CA0033X

10. Equipment Ratings:

FE*631F1D (6 and 8) – Integral transmitter & sensor

Explosionproof for Class I, Division 1, Groups B, C and D T6...T1; Dust-ignitionproof for Class II, Division 1, Groups E, F and G T6...T1; Class III, Division 1 T6...T3B, Flameproof/increased safety/encapsulated with intrinsically safe outputs for Class I, Zone 1, Ex db eb mb [ia Ga] IIB+H2 T6...T1 Gb, protection by enclosure with intrinsically safe outputs for Zone 21 Ex tb [ia Da] IIC T80°C...T165°C Db, hazardous locations, indoors and outdoors (Type 4X, IP65/67) with an ambient temperature rating of -40°C to +60°C.

FE*632F1A (1 and 2) – Remote sensor

FE*632F1U (1 and 2) – Remote sensor

Explosionproof for Class I, Division 1, Groups B, C and D T6...T1; Dust-ignitionproof for Class II, Division 1, Groups E, F and G T6...T1; Class III, Division 1 T6...T3B, Flameproof/increased safety/encapsulated for Class I, Zone 1, Ex db eb mb IIB+H2 T6...T1 Gb, protection by enclosure/intrinsic safety?? for Zone 21 Ex tb IIC T80°C...T165°C Db hazardous locations, indoors and outdoors (Type 4X, IP65/67) with an ambient temperature rating of -40°C to +60°C.

FET631F1W (5 and 7) – Transmitter only

Explosionproof for Class I, Division 1, Groups B, C and D; Dust-ignitionproof for Class II, Division 1, Groups E, F and G; Class III, Division 1, Flameproof/increased safety/encapsulated with intrinsically safe outputs for Class I, Zone 1, Ex db eb mb IIB + H₂ T6 Gb, protection by enclosure for Zone 21 Ex tb IIC T80°C Db hazardous locations, indoors and outdoors (Type 4X, IP65/67) with an ambient temperature rating of -40°C to +60°C.

FE*631F2 – Integral transmitter & sensor

FEP632F2 – Remote sensor

FEH632F2 – Remote sensor

Nonincendive for Class I Division 2, Groups A, B, C and D T6...T1, Nonincendive for Class II, Division 2, Groups E, F and G, T6...T3B, Class III, Division 1, T6...T3B, Increased safety for Class I, Zone 2 Ex ec IIC T6...T1 Gc, protection by enclosure for Zone 21 Ex tb IIC T80°C...T165°C Db hazardous locations, indoors and outdoors (Type 4X, IP65/67) with an ambient temperature rating of -40°C to +60°C.

FET631F2– Remote transmitter

Nonincendive for Class I Division 2, Groups A, B, C and D, Nonincendive for Class II, Division 2, Groups E, F and G, Class III, Division 1, Increased safety for Class I, Zone 2 Ex ec IIC T6 Gc, protection by enclosure for Zone 21 Ex tb IIC T80°C...T165°C Db hazardous locations, indoors and outdoors (Type 4X, IP65/67) with an ambient temperature rating of -40°C to +60°C.

11. The marking of the equipment shall include:

FE*631F1D (6 and 8)

Class I Division 1, Groups B, C, D; T6...T1 Ta = -40°C to +60°C; Type 4X, IP65/67

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Class II, Division 1, Groups E, F, G, Class III, Division 1; T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67

Class I, Zone 1, Ex db eb mb [ia Ga] IIB+H2 T6...T1 Gb Ta = -40°C to +60°C; Type 4X, IP65/67

Zone 21, Ex tb [ia Da] IIIC T80°C...T165°C Db Ta = -40°C to +60°C; Type 4X, IP65/67

FE*632F1A (1 and 2)

FE*632F1U (1 and 2)

Class I Division 1, Groups B, C, D; T6...T1 Ta = -40°C to +60°C; Type 4X, IP65/67 Type 4X, IP65/67/68

Class II, Division 1, Groups E, F, G, Class III, Division 1; T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67/68

Zone 1, Ex db eb mb IIB+H2 T6...T1 Gb Ta = -40°C to +60°C; Type 4X, IP65/67/68

Zone 21, Ex tb ia IIIC T80°C...T165°C Db Ta = -40°C to +60°C; Type 4X, IP65/67/68

FET631F1W (5 and 7)

Class I Division 1, Groups B, C, D; T6 Ta = -40°C to +60°C; Type 4X, IP65/67

Class II, Division 1, Groups E, F, G, Class III, Division 1; T6 Ta = -40°C to +60°C; Type 4X, IP65/67

Zone 1, Ex db [ia Ga] IIB + H₂ T6 Gb Ta = -40°C to +60°C; Type 4X, IP65/67

Zone 21, Ex tb [ia Da] IIIC T80°C Db Ta = -40°C to +60°C; Type 4X, IP65/67

FE*631F2

FEP632F2

FEH632F2

Class I Division 2, Groups A, B, C, D; T6...T1 Ta = -40°C to +60°C; Type 4X, IP65/67/68 (sensor only)

Class II, Division 2, Groups E, F, G, Class III, Division 1; T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67/68 (sensor only)

Zone 2, Ex ec IIC T6...T1 Gc Ta = -40°C to +60°C; Type 4X, IP65/67/68 (sensor only)

Zone 21, Ex tb IIIC T80°C...T165°C Db Type 4X, IP65/67/68 (sensor only)

FET631F2

Class I Division 2, Groups A, B, C, D; T6 Ta = -40°C to +60°C; Type 4X, IP65/67

Class II, Division 2, Groups E, F, G, Class III, Division 1; T6 Ta = -40°C to +60°C; Type 4X, IP65/67

Zone 2, Ex ec IIC T6 Gc Ta = -40°C to +60°C; Type 4X, IP65/67

Zone 21, Ex tb IIIC T80°C Db Type 4X, IP65/67

12. Description of Equipment:

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General - The FEP6_ _ ProcessMaster, and FEH6_ _ HygienicMaster are series of electromagnetic flowmeters. The electronics enclosure is a cylindrical enclosure identified as a Type 3 or a single compartment a rectangular housing identified as a Type 4. The ambient temperature range for the transmitters and sensors is either -20°C to +60°C or -40°C to +60°C depending on the options chosen.

The FEP6_ _ ProcessMaster, and FEH6_ _ HygienicMaster are both available as integral and remote designs. A high process temperature version is available and uses different length stand-offs 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 identified as Design Level A are -40 °C to 130 °C for the normal temperature version and -40 °C to +180 °C for the high temperature version. The medium temperature range for sensors identified as Design Level B is -40 °C to 100 °C.

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

Operation Temperature Ranges:

The ambient operating temperature range of the FE*6 is -40°C to 60°C. Process temperature range is -40°C to 180°C. See ABB Instruction manual for details on the relationship between ambient temperature, process temperature and temperature class.

Electrical data:

The FE*6 has the following supply parameters;

Power Supply (Terminals L and N)

U_{DC} = 16.8 to 30 V

Power supply (= U_{LOW}); P_{MAX} = ≤ 20 W; C, Ripple < 5 %

U_{AC} = 100 V (-15%) to 240 V (+10%)

Power supply (= U_{HIGH}); S ≤ 20 W

See ABB Instruction Manual for the parameters for the Current Output, Digital Output, and Digital Input connections.

FEH631F2fghijklmnopqrA-t.u.v – Hygienic Integral

FM17CA0033X

NI / I / 2 / ABCD / T6...T1 Ta = +60°C; Type 4X, IP65/67

NI / II / 2 / EFG / T6...T3B Ta = +60°C; Type 4X, IP65/67

DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67

2 / Ex ec / IIC / T6...T1 Gc Ta = +60°C; Type 4X, IP65/67

21 / Ex tb / IIIC / T80°C...T165°C Db Ta = +60°C; Type 4X, IP65/67

Single Seal

f = Housing Type/Housing Material/ Cable entry: S1, S2, D1, D2, D3, D4, D6, or D8

g = Meter Size: 4-digit code – not relevant for safety

h = Process Connection Type: 2-digit code – not relevant for safety

i = Liner material: T1 or P1

j = Process connection material: Single digit – not relevant for safety

k = Electrode design: 1, or 5

l = Measuring electrode material: Single digit code – not relevant for safety

m = Grounding electrode/Full pipe detection: 0 or 2

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- n = Grounding accessories: A, B or C
o = Protection class transmitter/protection class sensor: 70 or 91
p = Power supply: A, D, C or E
q = Display: 0, 1 or 2
r = Outputs: G0, G1, G2, G3 or Y0
Additional Codes
t = Option card 1: DR0, DRN, DRG, DRT or DRA
u = Option card 2: DR0, DSA, DSN or DSG
v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TTK

FEP631F2ghijklmnopqrA-t.u.v.w – Process Integral – Design Level A

FM17CA0033X

NI / I / 2 / ABCD / T6...T1 Ta = +60°C; Type 4X, IP65/67
NI / II / 2 / EFG / T6...T3B Ta = +60°C; Type 4X, IP65/67
DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67
2 / Ex ec / IIC / T6...T1 Gc Ta = +60°C; Type 4X, IP65/67
21 / Ex tb / IIIC / T80°C...T165°C Db Ta = +60°C; Type 4X, IP65/67
Single Seal

- f = Housing Type/Housing Material/ Cable entry: S1, S2, D1, D2, D3, D4, D6, or D8
g = Meter Size: 4-digit code – not relevant for safety
h = Process Connection Type: 2-digit code – not relevant for safety
i = Liner material: R2, R3, R4, E1, T1, T3, T2, P1, C1, E2, or P2
j = Process connection material: Single digit – not relevant for safety
k = Electrode design: 1, or 5
l = Measuring electrode material: Single digit code – not relevant for safety
m = Grounding electrode/Full pipe detection: 0, 1, 2, or 3
n = Grounding accessories: A, B, C, D, E
o = Protection class transmitter/protection class sensor: 70 or 91
p = Power supply: A, D, C or E
q = Display: 0, 1 or 2
r = Outputs: G0, G1, G2, G3 or Y0
Additional Codes
t = Option card 1: DR0, DRN, DRG, DRT or DRA
u = Option card 2: DR0, DSA, DSN or DSG
v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TTK
w = Sensor housing material: SMA, SMS

FEP631F2fghT1ijklmnopqrB-t.u.v.SMA – Process Integral – Design Level B

FM17CA0033X

DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67
2 / Ex ec / IIC / T6...T1 Gc Ta = +60°C; Type 4X, IP65/67
21 / Ex tb / IIIC / T80°C...T165°C Db Ta = +60°C; Type 4X, IP65/67
Single Seal

- f = Housing Type/Housing Material/ Cable entry: S1, S2, D1, D2, D3, D4, D6, or D8
g = Meter Size: 4-digit code – not relevant for safety
h = Process Connection Type: 2-digit code – not relevant for safety

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- j = Process connection material: Single digit – not relevant for safety
 - k = Electrode design: 1, or 5
 - l = Measuring electrode material: Single digit code – not relevant for safety
 - m = Grounding electrode/Full pipe detection: 0, 1, 2, or 3
 - n = Grounding accessories: A, B, C, D, E
 - o = Protection class transmitter/protection class sensor: 70 or 91
 - p = Power supply: A, D, C or E
 - q = Display: 0, 1 or 2
 - r = Outputs: G0, G1, G2, G3 or Y0
- Additional Codes
- t = Option card 1: DR0, DRN, DRG, DRT or DRA
 - u = Option card 2: DR0, DSA, DSN or DSG
 - v = Temperature range of installation/Ambient temperature range: TK1 or TK4

FEH632F2fghijklmnop8Y0A-t.u.v – Hygienic remote sensor

FM17CA0033X

NI / I / 2 / ABCD / T6...T1 Ta = +60°C; Type 4X, IP65/67/68
NI / II / 2 / EFG / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
2 / Ex ec / IIC / T6...T1 Gc Ta = +60°C; Type 4X, IP65/67/68
21 / Ex tb / IIIC / T80°C...T165°C Db Ta = +60°C; Type 4X, IP65/67/68
Single Seal

- f = Housing Type/Housing Material/ Cable entry: A1, A2, U1, or U2
 - g = Meter Size: 4-digit code – not relevant for safety
 - h = Process Connection Type: 2-digit code – not relevant for safety
 - i = Liner material: T1 or P1
 - j = Process connection material: Single digit – not relevant for safety
 - k = Electrode design: 1, or 5
 - l = Measuring electrode material: Single digit code – not relevant for safety
 - m = Grounding electrode/Full pipe detection: 0 or 2
 - n = Grounding accessories: A, B or C
 - o = Protection class transmitter/protection class sensor: 70, 76, 77 or 91
 - p = Power supply: Y or W
- Additional Codes
- t = Option card 1: DR0
 - u = Option card 2: DR0
 - v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK

FEP632F2fghijklmnop8Y0A-t.u.v.w – Process remote sensor – Design Level A

FM17CA0033X

NI / I / 2 / ABCD / T6...T1 Ta = +60°C; Type 4X, IP65/67/68
NI / II / 2 / EFG / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
2 / Ex ec / IIC / T6...T1 Gc Ta = +60°C; Type 4X, IP65/67/68
21 / Ex tb / IIIC / T80°C...T165°C Db Ta = +60°C; Type 4X, IP65/67/68
Single Seal

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- f = Housing Type/Housing Material/ Cable entry: A1, A2, U1, or U2
g = Meter Size: 4-digit code – not relevant for safety
h = Process Connection Type: 2-digit code – not relevant for safety
i = Liner material: R2, R3, R4, E1, T1, T3, T2, P1, C1, E2 or P2
j = Process connection material: Single digit – not relevant for safety
k = Electrode design: 1, or 5
l = Measuring electrode material: Single digit code – not relevant for safety
m = Grounding electrode/Full pipe detection: 0, 1, 2 or 3
n = Grounding accessories: A, B, C, D or E
o = Protection class transmitter/protection class sensor: 70, 76, 77 or 91
p = Power supply: Y or W
- Additional Codes**
t = Option card 1: DR0
u = Option card 2: DR0
v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TTK
w = Sensor housing material: SMA or SMS

FEP632F1fghT1jklmnop8Y0B-t.u.v.SMA – Process remote sensor – Design Level B

FM17CA0033X

DIP / II / 1 / EFG / T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67/68

DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67/68

21 / Ex ia tb / IIIC / T80°C...T165°C Db, Type 4X, IP65/67/68

Single Seal

- f = Housing Type/Housing Material/ Cable entry: A1, A2, U1, or U2
g = Meter Size: 4-digit code – not relevant for safety
h = Process Connection Type: 2-digit code – not relevant for safety
j = Process connection material: Single digit – not relevant for safety
k = Electrode design: 1, or 5
l = Measuring electrode material: Single digit code – not relevant for safety
m = Grounding electrode/Full pipe detection: 0, 1, 2 or 3
n = Grounding accessories: A, B, C, D or E
o = Protection class transmitter/protection class sensor: 70, 76, 77 or 91
p = Power supply: Y or W
- Additional Codes**
t = Option card 1: DR0
u = Option card 2: DR0
v = Temperature range of installation/Ambient temperature range: TK1 or TK4

FET632F2fopqr - t.u.v – Remote transmitter

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NI / I / 2 / ABCD / T6 Ta = +60°C; Type 4X, IP65/67

NI / II / 2 / EFG / T6 Ta = +60°C; Type 4X, IP65/67

DIP / III / 1 / T6 Ta = +60°C; Type 4X, IP65/67

2 / Ex ec / IIC / T6 Gc Ta = +60°C; Type 4X, IP65/67

21 / Ex tb / IIIC / T80°C Db Ta = +60°C; Type 4X, IP65/67

- f = Housing Type/Housing Material/ Cable entry: F1 or F2

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- o = Protection class transmitter/protection class sensor: 70 or 91
p = Power supply: A, D, C or E
q = Display: 0, 1 or 2
r = Outputs: G0, G1, G2, G3 or Y0
Additional Codes
t = Option card 1: DR0, DRN, DRG, DRT or DRA
u = Option card 2: DR0, DSA, DSN or DSG
v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TTK

**FEH631F1fghijklmnopqrA-t.u.v – Hygienic Integral
FM17CA0033X**

XP-IS-IPA / I / 1 / BCD / T6...T1 Ta = +60°C; Type 4X, IP65/67
DIP / II / 1 / EFG / T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67
DIP / III / 1 / T6 Ta = +60°C; Type 4X, IP65/67
1 / Ex db eb mb [ia Ga] / IIB+H2 / T6...T1 Gb Ta = +60°C; Type 4X, IP65/67
21 / Ex tb [ia Da] / IIIC / T80°C...T165°C Db, Type 4X, IP65/67
Single Seal

- f = Housing Type/Housing Material/ Cable entry: D1, D2, D3, D4, D6, or D8
g = Meter Size: 4-digit code – not relevant for safety
h = Process Connection Type: 2-digit code – not relevant for safety
i = Process Connection Type: T1 or P1
j = Process connection material: Single digit – not relevant for safety
k = Electrode design: 1, or 5
l = Measuring electrode material: Single digit code – not relevant for safety
m = Grounding electrode/Full pipe detection: 0 or 2
n = Grounding accessories: A, B or C
o = Protection class transmitter/protection class sensor: 70 or 91
p = Power supply: A, D, C or E
q = Display: 1 or 2
r = Outputs: G0, G1, G2, G3 or Y0
Additional Codes
t = Option card 1: DR0, DRN, DRG, DRT or DRA
u = Option card 2: DR0, DSA, DSN or DSG
v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TTK

**FEP631F1fghijklmnopqrA-t.u.v.w – Process Integral
FM17CA0033X**

XP-IS-IPA / I / 1 / BCD / T6...T1 Ta = +60°C; Type 4X, IP65/67
DIP / II / 1 / EFG / T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67
DIP / III / 1 / T6 Ta = +60°C; Type 4X, IP65/67
1 / Ex db eb mb [ia Ga] / IIB+H2 / T6...T1 Gb Ta = +60°C; Type 4X, IP65/67
21 / Ex tb [ia Da] / IIIC / T80°C...T165°C Db, Type 4X, IP65/67
Single Seal

- f = Housing Type/Housing Material/ Cable entry: D1, D2, D3, D4, D6 or D8
g = Meter Size: 4-digit code – not relevant for safety
h = Process Connection Type: 2-digit code – not relevant for safety

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- i = Process Connection Type: R2, R3, R4, E1, T1, T3, T2, P1, C1, E2 or P2
 - j = Process connection material: Single digit – not relevant for safety
 - k = Electrode design: 1, or 5
 - l = Measuring electrode material: Single digit code – not relevant for safety
 - m = Grounding electrode/Full pipe detection: 0, 1, 2, or 3
 - n = Grounding accessories: A, B, C, D or E
 - o = Protection class transmitter/protection class sensor: 70 or 91
 - p = Power supply: A, D, C, or E
 - q = Display: 1 or 2
 - r = Outputs: G0, G1, G2, G3, Y0
- Additional Codes
- t = Option card 1: DR0, DRN, DRG, DRT or DRA
 - u = Option card 2: DR0, DSA, DSN, or DSG
 - v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK
 - w = Sensor housing material: SMA or SMS

**FEH632F1fghijklmnop8Y0A-t.u.v – Hygienic remote sensor
FM17CA0033X**

XP-IPA / I / 1 / BCD / T6...T1 Ta = +60°C; Type 4X, IP65/67/68
DIP / II / 1 / EFG / T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67/68
III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
1 / Ex db eb mb / IIB+H2 / T6...T1 Ta = +60°C; Type 4X, IP65/67/68
21 / Ex tb / IIIC / T80°C...T165°C, Type 4X, IP65/67/68
Single Seal

- f = Housing Type/Housing Material/ Cable entry: A1, A2, U1, or U2
 - g = Meter Size: 4-digit code – not relevant for safety
 - h = Process Connection Type: 2-digit code – not relevant for safety
 - i = Liner material: T1 or P1
 - j = Process connection material: Single digit – not relevant for safety
 - k = Electrode design: 1, or 5
 - l = Measuring electrode material: Single digit code – not relevant for safety
 - m = Grounding electrode/Full pipe detection: 0 or 2
 - n = Grounding accessories: A, B or C
 - o = Protection class transmitter/protection class sensor: 70, 76, 77 or 91
 - p = Power supply: Y or W
- Additional Codes
- t = Option card 1: DR0
 - u = Option card 2: DR0
 - v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK

**FEP632F1fghijklmnop8Y0A-t.u.v.w – Process remote sensor
FM17CA0033X**

XP-IPA / I / 1 / BCD / T6...T1 Ta = +60°C; Type 4X, IP65/67/68
DIP / II / 1 / EFG / T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67/68
III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
1 / Ex db eb mb / IIB+H2 / T6...T1 Ta = +60°C; Type 4X, IP65/67/68
21 / Ex tb / IIIC / T80°C...T165°C, Type 4X, IP65/67/68

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Canadian Certificate Of Conformity No: FM17CA0033X

Single Seal

- f = Housing Type/Housing Material/ Cable entry: A1, A2, U1, or U2
- g = Meter Size: 4-digit code – not relevant for safety
- h = Process Connection Type: 2-digit code – not relevant for safety
- i = Liner material: R2, R3, R4, E1, T1, T3, T2, P1, C1, E2 or P2
- j = Process connection material: Single digit – not relevant for safety
- k = Electrode design: 1, or 5
- l = Measuring electrode material: Single digit code – not relevant for safety
- m = Grounding electrode/Full pipe detection: 0, 1, 2 or 3
- n = Grounding accessories: A, B, C, D or E
- o = Protection class transmitter/protection class sensor: 70, 76, 77 or 91
- p = Power supply: Y or W

Additional Codes

- t = Option card 1: DR0
- u = Option card 2: DR0
- v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK
- w = Sensor housing material: SMA or SMS

FET632F1fopqr - t.u.v – Remote transmitter FM17CA0033X

XP-IS / I / 1 / BCD / T6 Ta = +60°C; Type 4X, IP65/67
DIP / II / 1 / EFG / T6 Ta = +60°C; Type 4X, IP65/67
III / 1 / T6 Ta = +60°C; Type 4X, IP65/67
1 / Ex db [ia Ga] / IIB + H2 / T6 Gb/Ga Ta = +60°C; Type 4X, IP65/67
21 / Ex tb [ia Da] / IIIC / T80°C Db/Da Ta = +60°C; Type 4X, IP65/67

- f = Housing Type/Housing Material/ Cable entry: W5 or W7
- o = Protection class transmitter/protection class sensor: 70 or 91
- p = Power supply: A, D, C or E
- q = Display: 1 or 2
- r = Outputs: G0, G1, G2, G3 or Y0

Additional Codes

- t = Option card 1: DR0, DRN, DRG, DRT or DRA
- u = Option card 2: DR0, DSA, DSN or DSG
- v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK

13. Schedule of Limitations:

1. The ABB Instruction Manual for the ProcessMaster and HygenicMaster details the permitted Temperature Classification and Ambient Temperature ratings as influenced by the Process Medium temperature.
2. The painted surface of the 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 TR60079-32-2 Cleaning of the painted surface should only be done with a damp cloth.

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- 3. Contact the manufacturer for specific flamepath joint details during repair of flameproof Ex d apparatus.
- 4. For Integral and Remote versions FE*63*F1 Zone 21 having exposed electrodes in the process shall be used in a non-flammable liquid process only.
- 5. For installations in flammable dust, the cable entries shall be fitted with an appropriate cable entry device meeting the requirements of IP6x fitted with a gasket or seal between the cable entry device and the wall of the enclosure.

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals Canadian Certification Scheme.

15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

16. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
22 nd May 2018	Original Issue.

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CERTIFICATE OF CONFORMITY



1. **HAZARDOUS LOCATION ELECTRICAL PER CANADIAN REQUIREMENTS**
2. **Certificate No:** FM17CA0033X
3. **Equipment:** FEP63 _ ProcessMaster, and
(Type Reference and Name) FEH63 _ HygienicMaster Electromagnetic Flowmeters,
and FET63 _ Transmitters
4. **Name of Listing Company:** ABB Automation Products GmbH
5. **Address of Listing Company:** Dransfelder Straße 2,
D-37079 Göttingen,
Germany
6. The examination and test results are recorded in confidential report number:

3059596 dated 22nd May 2018
7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

CSA C22.2 No. 25: 2017, CSA C22.2 No. 30: 1986 (R2016), CSA C22.2 No. 94.1: 2015, CSA C22.2 No. 94.2: 2015, CSA C22.2 No. 213: 2017, CAN/CSA-C22.2 No. 60079-0: 2015, CAN/CSA-C22.2 No. 60079-1: 2016, CAN/CSA-C22.2 No. 60079-7: 2016, CAN/CSA-C22.2 No. 60079-11: 2014, CAN/CSA-C22.2 No. 60079-18: 2016, CAN/CSA-C22.2 No. 60079-31: 2015, CAN/CSA C22.2 No. 60529: 2016, CAN/CSA C22.2 No. 61010-1: 2004, and ANSI/ISA 12.27.01: 2011
8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

Certificate issued by:



J.E. Marquedant
VP, Manager, Electrical Systems

6 July 2018

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

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Canadian Certificate Of Conformity No: FM17CA0033X

10. Equipment Ratings:

FE*631F1D (6 and 8) – Integral transmitter & sensor

Explosionproof for Class I, Division 1, Groups B, C and D T6...T1; Dust-ignitionproof for Class II, Division 1, Groups E, F and G, T6...T3B; Class III, Division 1, T6...T3B, Flameproof/increased safety/encapsulated with intrinsically safe outputs for Class I, Zone 1, Ex db eb mb [ia Ga] IIB+H2 T6...T1 Gb, protection by enclosure with intrinsically safe outputs for Zone 21 Ex tb [ia Da] IIC T80°C...T165°C Db, hazardous locations, indoors and outdoors (Type 4X, IP65/67) with an ambient temperature rating of -40°C to +60°C.

FE*632F1A (1 and 2) – Remote sensor

FE*632F1U (1 and 2) – Remote sensor

Explosionproof for Class I, Division 1, Groups B, C and D T6...T1; Dust-ignitionproof for Class II, Division 1, Groups E, F and G, T6...T3B; Class III, Division 1, T6...T3B, Flameproof/increased safety/encapsulated for Class I, Zone 1, Ex db eb mb IIB+H2 T6...T1 Gb, protection by enclosure/intrinsic safety for Zone 21 Ex tb IIC T80°C...T165°C Db hazardous locations, indoors and outdoors (Type 4X, IP65/67) with an ambient temperature rating of -40°C to +60°C.

FET632F1W (5 and 7) – Transmitter only

Explosionproof for Class I, Division 1, Groups B, C and D; Dust-ignitionproof for Class II, Division 1, Groups E, F and G, T6; Class III, Division 1, T6; Flameproof/increased safety/encapsulated with intrinsically safe outputs for Class I, Zone 1, Ex db [ia Ga] IIB + H₂ T6 Gb, protection by enclosure for Zone 21 Ex tb [ia Da] IIC T80°C Db hazardous locations, indoors and outdoors (Type 4X, IP65/67 – IP68 Sensor only) with an ambient temperature rating of -40°C to +60°C.

FE*632F2 – Integral transmitter & sensor

FEP632F2 – Remote sensor

FEH632F2 – Remote sensor

Nonincendive for Class I Division 2, Groups A, B, C and D T6...T1; Nonincendive for Class II, Division 2, Groups E, F and G, T6...T3B, Class III, Division 1, T6...T3B, Increased safety for Class I, Zone 2 Ex ec IIC T6...T1 Gc, protection by enclosure for Zone 21 Ex tb IIC T80°C...T165°C Db hazardous locations, indoors and outdoors (Type 4X, IP65/67) with an ambient temperature rating of -40°C to +60°C.

FET631F2– Remote transmitter

Nonincendive for Class I Division 2, Groups A, B, C and D, T6; Nonincendive for Class II, Division 2, Groups E, F and G, Class III, Division 1, Increased safety for Class I, Zone 2 Ex ec IIC T6 Gc, protection by enclosure for Zone 21 Ex tb IIC T80°C Db hazardous locations, indoors and outdoors (Type 4X, IP65/67) with an ambient temperature rating of -40°C to +60°C.

11. The marking of the equipment shall include:

FE*631F1D (6 and 8)

Class I Division 1, Groups B, C, D; T6...T1 Ta = -40°C to +60°C; Type 4X, IP65/67

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Class II, Division 1, Groups E, F, G, Class III, Division 1; T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67

Class I, Zone 1, Ex db eb mb [ia Ga] IIB+H2 T6...T1 Gb Ta = -40°C to +60°C; Type 4X, IP65/67

Zone 21, Ex tb [ia Da] IIIC T80°C...T165°C Db

FE*632F1A (1 and 2)

FE*632F1U (1 and 2)

Class I Division 1, Groups B, C, D; T6...T1 Ta = -40°C to +60°C; Type 4X, IP65/67 Type 4X, IP65/67/68

Class II, Division 1, Groups E, F, G, Class III, Division 1; T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67/68

Zone 1, Ex db eb mb IIB+H2 T6...T1 Gb Ta = -40°C to +60°C; Type 4X, IP65/67/68

Zone 21, Ex tb IIIC T80°C...T165°C Db

FET632F1W (1 to 5 and 7)

Class I Division 1, Groups B, C, D; T6 Ta = -40°C to +60°C; Type 4X, IP65/67

Class II, Division 1, Groups E, F, G, Class III, Division 1; T6 Ta = -40°C to +60°C; Type 4X, IP65/67

Zone 1, Ex db [ia Ga] IIB + H₂ T6 Gb Ta = -40°C to +60°C; Type 4X, IP65/67

Zone 21, Ex tb [ia Da] IIIC T80°C Db

FE*631F2

FEP632F2

FEH632F2

Class I Division 2, Groups A, B, C, D; T6...T1 Ta = -40°C to +60°C; Type 4X, IP65/67/68 (sensor only)

Class II, Division 2, Groups E, F, G, Class III, Division 1; T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67/68 (sensor only)

Zone 2, Ex ec IIC T6...T1 Gc Ta = -40°C to +60°C; Type 4X, IP65/67/68 (sensor only)

Zone 21, Ex tb IIIC T80°C...T165°C Db

FET632F2

Class I Division 2, Groups A, B, C, D; T6 Ta = -40°C to +60°C; Type 4X, IP65/67

Class II, Division 2, Groups E, F, G, Class III, Division 1; T6 Ta = -40°C to +60°C; Type 4X, IP65/67

Zone 2, Ex ec IIC T6 Gc Ta = -40°C to +60°C; Type 4X, IP65/67

Zone 21, Ex tb IIIC T80°C Db

12. Description of Equipment:

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Canadian Certificate Of Conformity No: FM17CA0033X

General - The FEP6__ ProcessMaster, and FEH6__ HygienicMaster are series of electromagnetic flowmeters. The electronics enclosure is a cylindrical enclosure identified as a dual compartment Type 3 or a single compartment a rectangular housing identified as a Type 4. The ambient temperature range for the transmitters and sensors is either -20°C to +60°C or -40°C to +60°C depending on the options chosen.

The FEP6__ ProcessMaster, and FEH6__ HygienicMaster are both available as integral and remote designs. A high process temperature version is available and uses 40mm or 100mm stand-offs 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 identified as Design Level A are -40 °C to 130 °C for the normal temperature version and -40 °C to +180 °C for the high temperature version. The medium temperature range for sensors identified as Design Level B is -40 °C to 100 °C.

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

Operation Temperature Ranges:

The ambient operating temperature range of the FE*6 is -40°C to 60°C. Process temperature range is -40°C to 180°C. See ABB Instruction manual for details on the relationship between ambient temperature, process temperature and temperature class.

Electrical data:

The FE*6 has the following supply parameters;

Power Supply (Terminals L and N)

U_{DC} = 16.8 to 30 V

U_{AC} = 100 V (-15%) to 240 V (+10%)

Power supply (= U_{LOW}); P_{MAX} = ≤ 20 W; C, Ripple < 5 %

Power supply (= U_{HIGH}); S ≤ 20 W

See ABB Drawing Number 1KXF000061G0009 for the parameters for the Current Output, Digital Output, and Digital Input connections.

FEH631F2fghijklmnopqrA-t.u.v – Hygienic Integral

NI / I / 2 / ABCD / T6...T1 Ta = +60°C; Type 4X, IP65/67

NI / II / 2 / EFG / T6...T3B Ta = +60°C; Type 4X, IP65/67

DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67

2 / Ex ec / IIC / T6...T1 Gc Ta = +60°C; Type 4X, IP65/67

21 / Ex tb / IIIC / T80°C...T165°C Db Ta = +60°C; Type 4X, IP65/67

Single Seal

f = Housing Type/Housing Material/ Cable entry: S1, S2, D1, D2, D3, D4, D6, or D8

g = Meter Size: 4-digit code – not relevant for safety

h = Process Connection Type: 2-digit code – not relevant for safety

i = Liner material: T1 or P1

j = Process connection material: Single digit – not relevant for safety

k = Electrode design: 1, or 5

l = Measuring electrode material: Single digit code – not relevant for safety

m = Grounding electrode/Full pipe detection: 0 or 2

n = Grounding accessories: A, B or C

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- o = Protection class transmitter/protection class sensor: 70 or 91
- p = Power supply: A, D, C or E
- q = Display: 0, 1 or 2
- r = Outputs: G0, G1, G2, G3 or Y0
- Additional Codes
- t = Option card 1: DR0, DRN, DRG, DRT or DRA
- u = Option card 2: DR0, DSA, DSN or DSG
- v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK

FEP631F2fghijklmnopqrA-t.u.v.w – Process Integral – Design Level A

NI / I / 2 / ABCD / T6...T1 Ta = +60°C; Type 4X, IP65/67
NI / II / 2 / EFG / T6...T3B Ta = +60°C; Type 4X, IP65/67
DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67
2 / Ex ec / IIC / T6...T1 Gc Ta = +60°C; Type 4X, IP65/67
21 / Ex tb / IIIC / T80°C...T165°C Db Ta = +60°C; Type 4X, IP65/67
Single Seal

- f = Housing Type/Housing Material/ Cable entry: S1, S2, D1, D2, D3, D4, D6, or D8
- g = Meter Size: 4-digit code – not relevant for safety
- h = Process Connection Type: 2-digit code – not relevant for safety
- i = Liner material: R2, R3, R4, E1, T1, T3, T2, P1, C1, E2, or P2
- j = Process connection material: Single digit – not relevant for safety
- k = Electrode design: 1, or 5
- l = Measuring electrode material: Single digit code – not relevant for safety
- m = Grounding electrode/Full pipe detection: 0, 1, 2, or 3
- n = Grounding accessories: A, B, C, D, E
- o = Protection class transmitter/protection class sensor: 70 or 91
- p = Power supply: A, D, C or E
- q = Display: 0, 1 or 2
- r = Outputs: G0, G1, G2, G3 or Y0
- Additional Codes
- t = Option card 1: DR0, DRN, DRG, DRT or DRA
- u = Option card 2: DR0, DSA, DSN or DSG
- v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK
- w = Sensor housing material: SMA, SMS

FEP631F2fghT1jklmnopqrB-t.u.v.SMA – Process Integral – Design Level B

NI / I / 2 / ABCD / T6...T1 Ta = +60°C; Type 4X, IP65/67
NI / II / 2 / EFG / T6...T3B Ta = +60°C; Type 4X, IP65/67
DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67
2 / Ex ec / IIC / T6...T1 Gc Ta = +60°C; Type 4X, IP65/67
21 / Ex tb / IIIC / T80°C...T165°C Db Ta = +60°C; Type 4X, IP65/67
Single Seal

- f = Housing Type/Housing Material/ Cable entry: S1, S2, D1, D2, D3 or D4
- g = Meter Size: 4-digit code – not relevant for safety
- h = Process Connection Type: 2-digit code – not relevant for safety
- j = Process connection material: Single digit – not relevant for safety

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- k = Electrode design: 1, or 5
- l = Measuring electrode material: Single digit code – not relevant for safety
- m = Grounding electrode/Full pipe detection: 0, 1, 2, or 3
- n = Grounding accessories: A, B, C, D, E
- o = Protection class transmitter/protection class sensor: 70 or 91
- p = Power supply: A, D, C or E
- q = Display: 0, 1 or 2
- r = Outputs: G0, G1, G2, G3 or Y0
- Additional Codes
- t = Option card 1: DR0, DRN, DRG, DRT or DRA
- u = Option card 2: DR0, DSA, DSN or DSG
- v = Temperature range of installation/Ambient temperature range: TK1 or TK4

FEH632F2ghijklmnop8Y0A-t.u.v – Hygienic remote sensor

NI / I / 2 / ABCD / T6...T1 Ta = +60°C; Type 4X, IP65/67/68
NI / II / 2 / EFG / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
2 / Ex ec / IIC / T6...T1 Gc Ta = +60°C; Type 4X, IP65/67/68
21 / Ex tb / IIIC / T80°C...T165°C Db Ta = +60°C; Type 4X, IP65/67/68
Single Seal

- f = Housing Type/Housing Material/ Cable entry: A1, A2, U1, or U2
- g = Meter Size: 4-digit code – not relevant for safety
- h = Process Connection Type: 2-digit code – not relevant for safety
- i = Liner material: T1 or P1
- j = Process connection material: Single digit – not relevant for safety
- k = Electrode design: 1, or 5
- l = Measuring electrode material: Single digit code – not relevant for safety
- m = Grounding electrode/Full pipe detection: 0 or 2
- n = Grounding accessories: A, B or C
- o = Protection class transmitter/protection class sensor: 70, 76, 77 or 91
- p = Power supply: Y or W
- Additional Codes
- t = Option card 1: DR0
- u = Option card 2: DR0
- v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK

FEP632F2ghijklmnop8Y0A-t.u.v.w – Process remote sensor – Design Level A

NI / I / 2 / ABCD / T6...T1 Ta = +60°C; Type 4X, IP65/67/68
NI / II / 2 / EFG / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
2 / Ex ec / IIC / T6...T1 Gc Ta = +60°C; Type 4X, IP65/67/68
21 / Ex tb / IIIC / T80°C...T165°C Db Ta = +60°C; Type 4X, IP65/67/68
Single Seal

- f = Housing Type/Housing Material/ Cable entry: A1, A2, U1, or U2
- g = Meter Size: 4-digit code – not relevant for safety
- h = Process Connection Type: 2-digit code – not relevant for safety

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Canadian Certificate Of Conformity No: FM17CA0033X

- i = Liner material: R2, R3, R4, E1, T1, T3, T2, P1, C1, E2 or P2
- j = Process connection material: Single digit – not relevant for safety
- k = Electrode design: 1, or 5
- l = Measuring electrode material: Single digit code – not relevant for safety
- m = Grounding electrode/Full pipe detection: 0, 1, 2 or 3
- n = Grounding accessories: A, B, C, D or E
- o = Protection class transmitter/protection class sensor: 70, 76, 77 or 91
- p = Power supply: Y or W
- Additional Codes
- t = Option card 1: DR0
- u = Option card 2: DR0
- v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK
- w = Sensor housing material: SMA or SMS

FEP632F2fghT1jklmnop8Y0B-t.u.v.SMA – Process remote sensor – Design Level B

NI / I / 2 / ABCD / T6...T1 Ta = +60°C; Type 4X, IP65/67
NI / II / 2 / EFG / T6...T3B Ta = +60°C; Type 4X, IP65/67
DIP / II / 1 / EFG / T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67/68
DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
21 / Ex ia tb / IIIC / T80°C...T165°C Db, Type 4X, IP65/67/68
Single Seal

- f = Housing Type/Housing Material/ Cable entry: A1, A2, U1, or U2
- g = Meter Size: 4-digit code – not relevant for safety
- h = Process Connection Type: 2-digit code – not relevant for safety
- j = Process connection material: Single digit – not relevant for safety
- k = Electrode design: 1, or 5
- l = Measuring electrode material: Single digit code – not relevant for safety
- m = Grounding electrode/Full pipe detection: 0, 1, 2 or 3
- n = Grounding accessories: A, B, C, D or E
- o = Protection class transmitter/protection class sensor: 70, 76, 77 or 91
- p = Power supply: Y or W
- Additional Codes
- t = Option card 1: DR0
- u = Option card 2: DR0
- v = Temperature range of installation/Ambient temperature range: TK1 or TK4

FET632F2fopqr - t.u.v – Remote transmitter

NI / I / 2 / ABCD / T6 Ta = +60°C; Type 4X, IP65/67
NI / II / 2 / EFG / T6 Ta = +60°C; Type 4X, IP65/67
DIP / III / 1 / T6 Ta = +60°C; Type 4X, IP65/67
2 / Ex ec / IIC / T6 Gc Ta = +60°C; Type 4X, IP65/67
21 / Ex tb / IIIC / T80°C Db Ta = +60°C; Type 4X, IP65/67

- f = Housing Type/Housing Material/ Cable entry: F1 or F2
- o = Protection class transmitter/protection class sensor: 70 or 91
- p = Power supply: A, D, C or E
- q = Display: 0, 1 or 2

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- r = Outputs: G0, G1, G2, G3 or Y0
Additional Codes
t = Option card 1: DR0, DRN, DRG, DRT or DRA
u = Option card 2: DR0, DSA, DSN or DSG
v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK

FEH631F1fghijklmnopqrA-t.u.v – Hygienic Integral

XP-IS-IPA / I / 1 / BCD / T6...T1 Ta = +60°C; Type 4X, IP65/67
DIP / II / 1 / EFG / T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67
DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67
1 / Ex db eb mb [ia Ga] / IIB+H2 / T6...T1 Gb Ta = +60°C; Type 4X, IP65/67
21 / Ex tb [ia Da] / IIIC / T80°C...T165°C Db, Type 4X, IP65/67
Single Seal

- f = Housing Type/Housing Material/ Cable entry: D1, D2, D3, D4, D6, or D8
g = Meter Size: 4-digit code – not relevant for safety
h = Process Connection Type: 2-digit code – not relevant for safety
i = Liner Material: T1 or P1
j = Process connection material: Single digit – not relevant for safety
k = Electrode design: 1, or 5
l = Measuring electrode material: Single digit code – not relevant for safety
m = Grounding electrode/Full pipe detection: 0 or 2
n = Grounding accessories: A, B or C
o = Protection class transmitter/protection class sensor: 70 or 91
p = Power supply: A, D, C or E
q = Display: 1 or 2
r = Outputs: G0, G1, G2, G3 or Y0
Additional Codes
t = Option card 1: DR0, DRN, DRG, DRT or DRA
u = Option card 2: DR0, DSA, DSN or DSG
v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK

FEP631F1fghijklmnopqrA-t.u.v.w – Process Integral

XP-IS-IPA / I / 1 / BCD / T6...T1 Ta = +60°C; Type 4X, IP65/67
DIP / II / 1 / EFG / T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67
DIP / III / 1 / T6 Ta = +60°C; Type 4X, IP65/67
1 / Ex db eb mb [ia Ga] / IIB+H2 / T6...T1 Gb Ta = +60°C; Type 4X, IP65/67
21 / Ex tb [ia Da] / IIIC / T80°C...T165°C Db, Type 4X, IP65/67
Single Seal

- f = Housing Type/Housing Material/ Cable entry: D1, D2, D3, D4, D6 or D8
g = Meter Size: 4-digit code – not relevant for safety
h = Process Connection Type: 2-digit code – not relevant for safety
i = Liner Material: R2, R3, R4, E1, T1, T3, T2, P1, C1, E2 or P2
j = Process connection material: Single digit – not relevant for safety
k = Electrode design: 1, or 5
l = Measuring electrode material: Single digit code – not relevant for safety
m = Grounding electrode/Full pipe detection: 0, 1, 2, or 3

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- n = Grounding accessories: A, B, C, D or E
- o = Protection class transmitter/protection class sensor: 70 or 91
- p = Power supply: A, D, C, or E
- q = Display: 1 or 2
- r = Outputs: G0, G1, G2, G3, Y0
- Additional Codes
- t = Option card 1: DR0, DRN, DRG, DRT or DRA
- u = Option card 2: DR0, DSA, DSN, or DSG
- v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TTK
- w = Sensor housing material: SMA or SMS

FEH632F1fghijklmnop8Y0A-t.u.v – Hygienic remote sensor

XP-IPA / I / 1 / BCD / T6...T1 Ta = +60°C; Type 4X, IP65/67/68
DIP / II / 1 / EFG / T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67/68
III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
1 / Ex db eb mb / IIB+H2 / T6...T1 Gb Ta = +60°C; Type 4X, IP65/67/68
21 / Ex tb / IIIC / T80°C...T165°C Db, Type 4X, IP65/67/68
Single Seal

- f = Housing Type/Housing Material/ Cable entry: A1, A2, U1, or U2
- g = Meter Size: 4-digit code – not relevant for safety
- h = Process Connection Type: 2-digit code – not relevant for safety
- i = Liner material: T1 or P1
- j = Process connection material: Single digit – not relevant for safety
- k = Electrode design: 1, or 5
- l = Measuring electrode material: Single digit code – not relevant for safety
- m = Grounding electrode/Full pipe detection: 0 or 2
- n = Grounding accessories: A, B or C
- o = Protection class transmitter/protection class sensor: 70, 76, 77 or 91
- p = Power supply: Y or W
- Additional Codes
- t = Option card 1: DR0
- u = Option card 2: DR0
- v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TTK

FEP632F1fghijklmnop8Y0A-t.u.v.w – Process remote sensor

XP-IPA / I / 1 / BCD / T6...T1 Ta = +60°C; Type 4X, IP65/67/68
DIP / II / 1 / EFG / T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67/68
III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
1 / Ex db eb mb / IIB+H2 / T6...T1 Gb Ta = +60°C; Type 4X, IP65/67/68
21 / Ex tb / IIIC / T80°C...T165°C Db, Type 4X, IP65/67/68
Single Seal

- f = Housing Type/Housing Material/ Cable entry: A1, A2, U1, or U2
- g = Meter Size: 4-digit code – not relevant for safety
- h = Process Connection Type: 2-digit code – not relevant for safety
- i = Liner material: R2, R3, R4, E1, T1, T3, T2, P1, C1, E2 or P2
- j = Process connection material: Single digit – not relevant for safety

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- k = Electrode design: 1, or 5
l = Measuring electrode material: Single digit code – not relevant for safety
m = Grounding electrode/Full pipe detection: 0, 1, 2 or 3
n = Grounding accessories: A, B, C, D or E
o = Protection class transmitter/protection class sensor: 70, 76, 77 or 91
p = Power supply: Y or W
Additional Codes
t = Option card 1: DR0
u = Option card 2: DR0
v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK
w = Sensor housing material: SMA or SMS

FET632F1fopqr - t.u.v – Remote transmitter

XP-IS / I / 1 / BCD / T6 Ta = +60°C; Type 4X, IP65/67
DIP / II / 1 / EFG / T6 Ta = +60°C; Type 4X, IP65/67
III / 1 / T6 Ta = +60°C; Type 4X, IP65/67
1 / Ex db [ia Ga] / IIB + H2 / T6 Gb Ta = +60°C; Type 4X, IP65/67
21 / Ex tb [ia Da] / IIIC / T80°C Db Ta = +60°C; Type 4X, IP65/67

- f = Housing Type/Housing Material/ Cable entry: W1, W2, W3, W4, W5 or W7
o = Protection class transmitter/protection class sensor: 70 or 91
p = Power supply: A, D, C or E
q = Display: 1 or 2
r = Outputs: G0, G1, G2, G3 or Y0
Additional Codes
t = Option card 1: DR0, DRN, DRG, DRT or DRA
u = Option card 2: DR0, DSA, DSN or DSG
v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK

13. **Schedule of Limitations:**

1. The ABB Instruction Manual for the ProcessMaster and HygenicMaster details the permitted Temperature Classification and Ambient Temperature ratings as influenced by the Process Medium temperature.
2. The painted surface of the 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 TR60079-32-2 Cleaning of the painted surface should only be done with a damp cloth.
3. Contact the manufacturer for specific flamepath joint details during repair of flameproof Ex d apparatus.
4. For Integral and Remote versions FE*63°F1 Zone 21 having exposed electrodes in the process shall be used in a non-flammable liquid process only.
5. For installations in flammable dust, the cable entries shall be fitted with an appropriate cable entry device meeting the requirements of IP6x fitted with a gasket or seal between the cable entry device and the wall of the enclosure.

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Canadian Certificate Of Conformity No: FM17CA0033X

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals Canadian Certification Scheme.

15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

16. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
22 nd May 2018	Original Issue.
6 th July 2018	Supplement 1: Report Reference: RR214851 dated 6 th July 2018. Description of the Change: Editorial corrections to the certificate.

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CERTIFICATE OF CONFORMITY



1. **HAZARDOUS LOCATION ELECTRICAL PER CANADIAN REQUIREMENTS**
2. **Certificate No:** FM17CA0033X
3. **Equipment:** FEP63 _ ProcessMaster, and
(Type Reference and Name) FEH63 _ HygienicMaster Electromagnetic Flowmeters,
and FET63 _ Transmitters
4. **Name of Listing Company:** ABB Automation Products GmbH
5. **Address of Listing Company:** Dransfelder Straße 2,
D-37079 Göttingen,
Germany
6. The examination and test results are recorded in confidential report number:

3059596 dated 22nd May 2018
7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

CSA C22.2 No. 25: 2017, CSA C22.2 No. 30: 1986 (R2016), CSA C22.2 No. 94.1: 2015, CSA C22.2 No. 94.2: 2015, CSA C22.2 No. 213: 2017, CAN/CSA-C22.2 No. 60079-0: 2015, CAN/CSA-C22.2 No. 60079-1: 2016, CAN/CSA-C22.2 No. 60079-7: 2016, CAN/CSA-C22.2 No. 60079-11: 2014, CAN/CSA-C22.2 No. 60079-18: 2016, CAN/CSA-C22.2 No. 60079-31: 2015, CAN/CSA C22.2 No. 60529: 2016, CAN/CSA C22.2 No. 61010-1: 2004, and ANSI/ISA 12.27.01: 2011
8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

Certificate issued by:

J.E. Marquedant
VP, Manager, Electrical Systems

24 August 2018

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

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Canadian Certificate Of Conformity No: FM17CA0033X

10. Equipment Ratings:

FE*631F1D (6 and 8) – Integral transmitter & sensor

Explosionproof for Class I, Division 1, Groups B, C and D T6...T1; Dust-ignitionproof for Class II, Division 1, Groups E, F and G, T6...T3B; Class III, Division 1, T6...T3B, Flameproof/increased safety/encapsulated with intrinsically safe outputs for Class I, Zone 1, Ex db eb mb [ia Ga] IIB+H2 T6...T1 Gb, protection by enclosure with intrinsically safe outputs for Zone 21 Ex tb [ia Da] IIIC T80°C...T165°C Db, hazardous locations, indoors and outdoors (Type 4X, IP65/67) with an ambient temperature rating of -40°C to +60°C.

FE*632F1A (1 and 2) – Remote sensor

FE*632F1U (1 and 2) – Remote sensor

Explosionproof for Class I, Division 1, Groups B, C and D T6...T1; Dust-ignitionproof for Class II, Division 1, Groups E, F and G, T6...T3B; Class III, Division 1, T6...T3B, Flameproof/increased safety/encapsulated for Class I, Zone 1, Ex db eb mb IIB+H2 T6...T1 Gb, protection by enclosure/intrinsic safety for Zone 21 Ex tb IIIC T80°C...T165°C Db hazardous locations, indoors and outdoors (Type 4X, IP65/67) with an ambient temperature rating of -40°C to +60°C.

FET632F1W (5 and 7) – Transmitter only

Explosionproof for Class I, Division 1, Groups B, C and D; Dust-ignitionproof for Class II, Division 1, Groups E, F and G, T6; Class III, Division 1, T6; Flameproof/increased safety/encapsulated with intrinsically safe outputs for Class I, Zone 1, Ex db [ia Ga] IIB + H₂ T6 Gb, protection by enclosure for Zone 21 Ex tb [ia Da] IIIC T80°C Db hazardous locations, indoors and outdoors (Type 4X, IP65/67 – IP68 Sensor only) with an ambient temperature rating of -40°C to +60°C.

FE*632F2 – Integral transmitter & sensor

FEP632F2 – Remote sensor

FEH632F2 – Remote sensor

Nonincendive for Class I Division 2, Groups A, B, C and D T6...T1; Nonincendive for Class II, Division 2, Groups E, F and G, T6...T3B, Class III, Division 1, T6...T3B, Increased safety for Class I, Zone 2 Ex ec IIIC T6...T1 Gc, protection by enclosure for Zone 21 Ex tb IIIC T80°C...T165°C Db hazardous locations, indoors and outdoors (Type 4X, IP65/67/68 – Sensor only) with an ambient temperature rating of -40°C to +60°C.

FET632F2– Remote transmitter

Nonincendive for Class I Division 2, Groups A, B, C and D, T6; Nonincendive for Class II, Division 2, Groups E, F and G, Class III, Division 1, Increased safety for Class I, Zone 2 Ex ec IIIC T6 Gc, protection by enclosure for Zone 21 Ex tb IIIC T80°C Db hazardous locations, indoors and outdoors (Type 4X, IP65/67) with an ambient temperature rating of -40°C to +60°C.

11. The marking of the equipment shall include:

FE*631F1D (6 and 8)

Class I Division 1, Groups B, C, D; T6...T1 Ta = -40°C to +60°C; Type 4X, IP65/67

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Class II, Division 1, Groups E, F, G, Class III, Division 1; T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67

Class I, Zone 1, Ex db eb mb [ia Ga] IIB+H2 T6...T1 Gb Ta = -40°C to +60°C; Type 4X, IP65/67

Zone 21, Ex tb [ia Da] IIIC T80°C...T165°C Db

FE*632F1A (1 and 2)

FE*632F1U (1 and 2)

Class I Division 1, Groups B, C, D; T6...T1 Ta = -40°C to +60°C; Type 4X, IP65/67 Type 4X, IP65/67/68

Class II, Division 1, Groups E, F, G, Class III, Division 1; T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67/68

Zone 1, Ex db eb mb IIB+H2 T6...T1 Gb Ta = -40°C to +60°C; Type 4X, IP65/67/68

Zone 21, Ex tb IIIC T80°C...T165°C Db

FET632F1W (1 to 5 and 7)

Class I Division 1, Groups B, C, D; T6 Ta = -40°C to +60°C; Type 4X, IP65/67

Class II, Division 1, Groups E, F, G, Class III, Division 1; T6 Ta = -40°C to +60°C; Type 4X, IP65/67

Zone 1, Ex db [ia Ga] IIB + H₂ T6 Gb Ta = -40°C to +60°C; Type 4X, IP65/67

Zone 21, Ex tb [ia Da] IIIC T80°C Db

FE*631F2

FEP632F2

FEH632F2

Class I Division 2, Groups A, B, C, D; T6...T1 Ta = -40°C to +60°C; Type 4X, IP65/67/68 (sensor only)

Class II, Division 2, Groups E, F, G, Class III, Division 1; T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67/68 (sensor only)

Zone 2, Ex ec IIC T6...T1 Gc Ta = -40°C to +60°C; Type 4X, IP65/67/68 (sensor only)

Zone 21, Ex tb IIIC T80°C...T165°C Db

FET632F2

Class I Division 2, Groups A, B, C, D; T6 Ta = -40°C to +60°C; Type 4X, IP65/67

Class II, Division 2, Groups E, F, G, Class III, Division 1; T6 Ta = -40°C to +60°C; Type 4X, IP65/67

Zone 2, Ex ec IIC T6 Gc Ta = -40°C to +60°C; Type 4X, IP65/67

Zone 21, Ex tb IIIC T80°C Db

12. Description of Equipment:

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Canadian Certificate Of Conformity No: FM17CA0033X

General - The FEP6__ ProcessMaster, and FEH6__ HygienicMaster are series of electromagnetic flowmeters. The electronics enclosure is a cylindrical enclosure identified as a dual compartment Type 3 or a single compartment a rectangular housing identified as a Type 4. The ambient temperature range for the transmitters and sensors is either -20°C to +60°C or -40°C to +60°C depending on the options chosen.

The FEP6__ ProcessMaster, and FEH6__ HygienicMaster are both available as integral and remote designs. A high process temperature version is available and uses 40mm or 100mm stand-offs 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 identified as Design Level A are -40 °C to 130 °C for the normal temperature version and -40 °C to +180 °C for the high temperature version. The medium temperature range for sensors identified as Design Level B is -40 °C to 100 °C.

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

Operation Temperature Ranges:

The ambient operating temperature range of the FE*6 is -40°C to 60°C. Process temperature range is -40°C to 180°C. See ABB Instruction manual for details on the relationship between ambient temperature, process temperature and temperature class.

Electrical data:

The FE*6 has the following supply parameters;

Power Supply (Terminals L and N)

U_{DC} = 16.8 to 30 V

U_{AC} = 100 V (-15%) to 240 V (+10%)

Power supply (= U_{LOW}); P_{MAX} = ≤ 20 W; C, Ripple < 5 %

Power supply (= U_{HIGH}); S ≤ 20 W

See ABB Drawing Number 3KXF000061G0009 for the parameters for the Current Output, Digital Output, and Digital Input connections.

FEH631F2fghijklmnopqrA-t.u.v – Hygienic Integral

NI / I / 2 / ABCD / T6...T1 Ta = +60°C; Type 4X, IP65/67

NI / II / 2 / EFG / T6...T3B Ta = +60°C; Type 4X, IP65/67

DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67

2 / Ex ec / IIC / T6...T1 Gc Ta = +60°C; Type 4X, IP65/67

21 / Ex tb / IIIC / T80°C...T165°C Db Ta = +60°C; Type 4X, IP65/67

Single Seal

f = Housing Type/Housing Material/ Cable entry: S1, S2, D1, D2, D3, D4, D6, or D8

g = Meter Size: 4-digit code – not relevant for safety

h = Process Connection Type: 2-digit code – not relevant for safety

i = Liner material: T1 or P1

j = Process connection material: Single digit – not relevant for safety

k = Electrode design: 1, or 5

l = Measuring electrode material: Single digit code – not relevant for safety

m = Grounding electrode/Full pipe detection: 0 or 2

n = Grounding accessories: A, B or C

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Canadian Certificate Of Conformity No: FM17CA0033X

- o = Protection class transmitter/protection class sensor: 70 or 91
- p = Power supply: A, D, C or E
- q = Display: 0, 1 or 2
- r = Outputs: G0, G1, G2, G3 or Y0
- Additional Codes
- t = Option card 1: DR0, DRN, DRG, DRT or DRA
- u = Option card 2: DR0, DSA, DSN or DSG
- v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK

FEP631F2fghijklmnopqrA-t.u.v.w – Process Integral – Design Level A

NI / I / 2 / ABCD / T6...T1 Ta = +60°C; Type 4X, IP65/67
NI / II / 2 / EFG / T6...T3B Ta = +60°C; Type 4X, IP65/67
DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67
2 / Ex ec / IIC / T6...T1 Gc Ta = +60°C; Type 4X, IP65/67
21 / Ex tb / IIIC / T80°C...T165°C Db Ta = +60°C; Type 4X, IP65/67
Single Seal

- f = Housing Type/Housing Material/ Cable entry: S1, S2, D1, D2, D3, D4, D6, or D8
- g = Meter Size: 4-digit code – not relevant for safety
- h = Process Connection Type: 2-digit code – not relevant for safety
- i = Liner material: R2, R3, R4, E1, T1, T3, T2, P1, C1, E2, or P2
- j = Process connection material: Single digit – not relevant for safety
- k = Electrode design: 1, or 5
- l = Measuring electrode material: Single digit code – not relevant for safety
- m = Grounding electrode/Full pipe detection: 0, 1, 2, or 3
- n = Grounding accessories: A, B, C, D, E
- o = Protection class transmitter/protection class sensor: 70 or 91
- p = Power supply: A, D, C or E
- q = Display: 0, 1 or 2
- r = Outputs: G0, G1, G2, G3 or Y0
- Additional Codes
- t = Option card 1: DR0, DRN, DRG, DRT or DRA
- u = Option card 2: DR0, DSA, DSN or DSG
- v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK
- w = Sensor housing material: SMA, SMS

FEP631F2fghT1jklmnopqrB-t.u.v.SMA – Process Integral – Design Level B

NI / I / 2 / ABCD / T6...T1 Ta = +60°C; Type 4X, IP65/67
NI / II / 2 / EFG / T6...T3B Ta = +60°C; Type 4X, IP65/67
DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67
2 / Ex ec / IIC / T6...T1 Gc Ta = +60°C; Type 4X, IP65/67
21 / Ex tb / IIIC / T80°C...T165°C Db Ta = +60°C; Type 4X, IP65/67
Single Seal

- f = Housing Type/Housing Material/ Cable entry: S1, S2, D1, D2, D3 or D4
- g = Meter Size: 4-digit code – not relevant for safety
- h = Process Connection Type: 2-digit code – not relevant for safety
- j = Process connection material: Single digit – not relevant for safety

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Canadian Certificate Of Conformity No: FM17CA0033X

- k = Electrode design: 1, or 5
- l = Measuring electrode material: Single digit code – not relevant for safety
- m = Grounding electrode/Full pipe detection: 0, 1, 2, or 3
- n = Grounding accessories: A, B, C, D, E
- o = Protection class transmitter/protection class sensor: 70 or 91
- p = Power supply: A, D, C or E
- q = Display: 0, 1 or 2
- r = Outputs: G0, G1, G2, G3 or Y0
- Additional Codes
- t = Option card 1: DR0, DRN, DRG, DRT or DRA
- u = Option card 2: DR0, DSA, DSN or DSG
- v = Temperature range of installation/Ambient temperature range: TK1 or TK4

FEH632F2ghijklmnop8Y0A-t.u.v – Hygienic remote sensor

NI / I / 2 / ABCD / T6...T1 Ta = +60°C; Type 4X, IP65/67/68
NI / II / 2 / EFG / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
2 / Ex ec / IIC / T6...T1 Gc Ta = +60°C; Type 4X, IP65/67/68
21 / Ex tb / IIIC / T80°C...T165°C Db Ta = +60°C; Type 4X, IP65/67/68
Single Seal

- f = Housing Type/Housing Material/ Cable entry: A1, A2, U1, or U2
- g = Meter Size: 4-digit code – not relevant for safety
- h = Process Connection Type: 2-digit code – not relevant for safety
- i = Liner material: T1 or P1
- j = Process connection material: Single digit – not relevant for safety
- k = Electrode design: 1, or 5
- l = Measuring electrode material: Single digit code – not relevant for safety
- m = Grounding electrode/Full pipe detection: 0 or 2
- n = Grounding accessories: A, B or C
- o = Protection class transmitter/protection class sensor: 70, 76, 77 or 91
- p = Power supply: Y or W
- Additional Codes
- t = Option card 1: DR0
- u = Option card 2: DR0
- v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK

FEP632F2ghijklmnop8Y0A-t.u.v.w – Process remote sensor – Design Level A

NI / I / 2 / ABCD / T6...T1 Ta = +60°C; Type 4X, IP65/67/68
NI / II / 2 / EFG / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
2 / Ex ec / IIC / T6...T1 Gc Ta = +60°C; Type 4X, IP65/67/68
21 / Ex tb / IIIC / T80°C...T165°C Db Ta = +60°C; Type 4X, IP65/67/68
Single Seal

- f = Housing Type/Housing Material/ Cable entry: A1, A2, U1, or U2
- g = Meter Size: 4-digit code – not relevant for safety
- h = Process Connection Type: 2-digit code – not relevant for safety

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- i = Liner material: R2, R3, R4, E1, T1, T3, T2, P1, C1, E2 or P2
 - j = Process connection material: Single digit – not relevant for safety
 - k = Electrode design: 1, or 5
 - l = Measuring electrode material: Single digit code – not relevant for safety
 - m = Grounding electrode/Full pipe detection: 0, 1, 2 or 3
 - n = Grounding accessories: A, B, C, D or E
 - o = Protection class transmitter/protection class sensor: 70, 76, 77 or 91
 - p = Power supply: Y or W
- Additional Codes**
- t = Option card 1: DR0
 - u = Option card 2: DR0
 - v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK
 - w = Sensor housing material: SMA or SMS

FEP632F2fghT1jklmnop8Y0B-t.u.v.SMA – Process remote sensor – Design Level B

NI / I / 2 / ABCD / T6...T1 Ta = +60°C; Type 4X, IP65/67
NI / II / 2 / EFG / T6...T3B Ta = +60°C; Type 4X, IP65/67
DIP / II / 1 / EFG / T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67/68
DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
21 / Ex ia tb / IIIC / T80°C...T165°C Db, Type 4X, IP65/67/68
Single Seal

- f = Housing Type/Housing Material/ Cable entry: A1, A2, U1, or U2
 - g = Meter Size: 4-digit code – not relevant for safety
 - h = Process Connection Type: 2-digit code – not relevant for safety
 - j = Process connection material: Single digit – not relevant for safety
 - k = Electrode design: 1, or 5
 - l = Measuring electrode material: Single digit code – not relevant for safety
 - m = Grounding electrode/Full pipe detection: 0, 1, 2 or 3
 - n = Grounding accessories: A, B, C, D or E
 - o = Protection class transmitter/protection class sensor: 70, 76, 77 or 91
 - p = Power supply: Y or W
- Additional Codes**
- t = Option card 1: DR0
 - u = Option card 2: DR0
 - v = Temperature range of installation/Ambient temperature range: TK1 or TK4

FET632F2fopqr - t.u.v – Remote transmitter

NI / I / 2 / ABCD / T6 Ta = +60°C; Type 4X, IP65/67
NI / II / 2 / EFG / T6 Ta = +60°C; Type 4X, IP65/67
DIP / III / 1 / T6 Ta = +60°C; Type 4X, IP65/67
2 / Ex ec / IIC / T6 Gc Ta = +60°C; Type 4X, IP65/67
21 / Ex tb / IIIC / T80°C Db Ta = +60°C; Type 4X, IP65/67

- f = Housing Type/Housing Material/ Cable entry: F1 or F2
- o = Protection class transmitter/protection class sensor: 70 or 91
- p = Power supply: A, D, C or E
- q = Display: 0, 1 or 2

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- r = Outputs: G0, G1, G2, G3 or Y0
Additional Codes
t = Option card 1: DR0, DRN, DRG, DRT or DRA
u = Option card 2: DR0, DSA, DSN or DSG
v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK

FEH631F1fghijklmnopqrA-t.u.v – Hygienic Integral

XP-IS-IPA / I / 1 / BCD / T6...T1 Ta = +60°C; Type 4X, IP65/67
DIP / II / 1 / EFG / T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67
DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67
1 / Ex db eb mb [ia Ga] / IIB+H2 / T6...T1 Gb Ta = +60°C; Type 4X, IP65/67
21 / Ex tb [ia Da] / IIIC / T80°C...T165°C Db, Type 4X, IP65/67
Single Seal

- f = Housing Type/Housing Material/ Cable entry: D1, D2, D3, D4, D6, or D8
g = Meter Size: 4-digit code – not relevant for safety
h = Process Connection Type: 2-digit code – not relevant for safety
i = Liner Material: T1 or P1
j = Process connection material: Single digit – not relevant for safety
k = Electrode design: 1, or 5
l = Measuring electrode material: Single digit code – not relevant for safety
m = Grounding electrode/Full pipe detection: 0 or 2
n = Grounding accessories: A, B or C
o = Protection class transmitter/protection class sensor: 70 or 91
p = Power supply: A, D, C or E
q = Display: 1 or 2
r = Outputs: G0, G1, G2, G3 or Y0
Additional Codes
t = Option card 1: DR0, DRN, DRG, DRT or DRA
u = Option card 2: DR0, DSA, DSN or DSG
v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK

FEP631F1fghijklmnopqrA-t.u.v.w – Process Integral

XP-IS-IPA / I / 1 / BCD / T6...T1 Ta = +60°C; Type 4X, IP65/67
DIP / II / 1 / EFG / T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67
DIP / III / 1 / T6 Ta = +60°C; Type 4X, IP65/67
1 / Ex db eb mb [ia Ga] / IIB+H2 / T6...T1 Gb Ta = +60°C; Type 4X, IP65/67
21 / Ex tb [ia Da] / IIIC / T80°C...T165°C Db, Type 4X, IP65/67
Single Seal

- f = Housing Type/Housing Material/ Cable entry: D1, D2, D3, D4, D6 or D8
g = Meter Size: 4-digit code – not relevant for safety
h = Process Connection Type: 2-digit code – not relevant for safety
i = Liner Material: R2, R3, R4, E1, T1, T3, T2, P1, C1, E2 or P2
j = Process connection material: Single digit – not relevant for safety
k = Electrode design: 1, or 5
l = Measuring electrode material: Single digit code – not relevant for safety
m = Grounding electrode/Full pipe detection: 0, 1, 2, or 3

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- n = Grounding accessories: A, B, C, D or E
o = Protection class transmitter/protection class sensor: 70 or 91
p = Power supply: A, D, C, or E
q = Display: 1 or 2
r = Outputs: G0, G1, G2, G3, Y0
Additional Codes
t = Option card 1: DR0, DRN, DRG, DRT or DRA
u = Option card 2: DR0, DSA, DSN, or DSG
v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK
w = Sensor housing material: SMA or SMS

FEH632F1fghijklmnop8Y0A-t.u.v – Hygienic remote sensor

XP-IPA / I / 1 / BCD / T6...T1 Ta = +60°C; Type 4X, IP65/67/68
DIP / II / 1 / EFG / T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67/68
III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
1 / Ex db eb mb / IIB+H2 / T6...T1 Gb Ta = +60°C; Type 4X, IP65/67/68
21 / Ex tb / IIIC / T80°C...T165°C Db, Type 4X, IP65/67/68
Single Seal

- f = Housing Type/Housing Material/ Cable entry: A1, A2, U1, or U2
g = Meter Size: 4-digit code – not relevant for safety
h = Process Connection Type: 2-digit code – not relevant for safety
i = Liner material: T1 or P1
j = Process connection material: Single digit – not relevant for safety
k = Electrode design: 1, or 5
l = Measuring electrode material: Single digit code – not relevant for safety
m = Grounding electrode/Full pipe detection: 0 or 2
n = Grounding accessories: A, B or C
o = Protection class transmitter/protection class sensor: 70, 76, 77 or 91
p = Power supply: Y or W
Additional Codes
t = Option card 1: DR0
u = Option card 2: DR0
v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK

FEP632F1fghijklmnop8Y0A-t.u.v.w – Process remote sensor

XP-IPA / I / 1 / BCD / T6...T1 Ta = +60°C; Type 4X, IP65/67/68
DIP / II / 1 / EFG / T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67/68
III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
1 / Ex db eb mb / IIB+H2 / T6...T1 Gb Ta = +60°C; Type 4X, IP65/67/68
21 / Ex tb / IIIC / T80°C...T165°C Db, Type 4X, IP65/67/68
Single Seal

- f = Housing Type/Housing Material/ Cable entry: A1, A2, U1, or U2
g = Meter Size: 4-digit code – not relevant for safety
h = Process Connection Type: 2-digit code – not relevant for safety
i = Liner material: R2, R3, R4, E1, T1, T3, T2, P1, C1, E2 or P2
j = Process connection material: Single digit – not relevant for safety

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- k = Electrode design: 1, or 5
l = Measuring electrode material: Single digit code – not relevant for safety
m = Grounding electrode/Full pipe detection: 0, 1, 2 or 3
n = Grounding accessories: A, B, C, D or E
o = Protection class transmitter/protection class sensor: 70, 76, 77 or 91
p = Power supply: Y or W
Additional Codes
t = Option card 1: DR0
u = Option card 2: DR0
v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK
w = Sensor housing material: SMA or SMS

FET632F1fopqr - t.u.v – Remote transmitter

XP-IS / I / 1 / BCD / T6 Ta = +60°C; Type 4X, IP65/67
DIP / II / 1 / EFG / T6 Ta = +60°C; Type 4X, IP65/67
III / 1 / T6 Ta = +60°C; Type 4X, IP65/67
1 / Ex db [ia Ga] / IIB + H2 / T6 Gb Ta = +60°C; Type 4X, IP65/67
21 / Ex tb [ia Da] / IIIC / T80°C Db Ta = +60°C; Type 4X, IP65/67

- f = Housing Type/Housing Material/ Cable entry: W1, W2, W3, W4, W5 or W7
o = Protection class transmitter/protection class sensor: 70 or 91
p = Power supply: A, D, C or E
q = Display: 1 or 2
r = Outputs: G0, G1, G2, G3 or Y0
Additional Codes
t = Option card 1: DR0, DRN, DRG, DRT or DRA
u = Option card 2: DR0, DSA, DSN or DSG
v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK

13. Schedule of Limitations:

1. The ABB Instruction Manual for the ProcessMaster and HygenicMaster details the permitted Temperature Classification and Ambient Temperature ratings as influenced by the Process Medium temperature.
2. The painted surface of the 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 TR60079-32-2 Cleaning of the painted surface should only be done with a damp cloth.
3. Contact the manufacturer for specific flamepath joint details during repair of flameproof Ex d apparatus.
4. For Integral and Remote versions FE*63°F1 Zone 21 having exposed electrodes in the process shall be used in a non-flammable liquid process only.
5. For installations in flammable dust, the cable entries shall be fitted with an appropriate cable entry device meeting the requirements of IP6x fitted with a gasket or seal between the cable entry device and the wall of the enclosure.

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Canadian Certificate Of Conformity No: FM17CA0033X

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals Canadian Certification Scheme.

15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

16. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
22 nd May 2018	Original Issue.
6 th July 2018	Supplement 1: Report Reference: RR214851 dated 6 th July 2018. Description of the Change: Editorial corrections to the certificate.
24 th August 2018	Supplement 2: Report Reference: RR215360 dated 24 th August 2018. Description of the Change: Corrections to the certificate.

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CERTIFICATE OF CONFORMITY



1. **HAZARDOUS LOCATION ELECTRICAL PER CANADIAN REQUIREMENTS**
2. **Certificate No:** FM17CA0033X
3. **Equipment:** FEP63 _ ProcessMaster, and
(Type Reference and Name) FEH63 _ HygienicMaster Electromagnetic Flowmeters, -
and FET63 _ Transmitters
4. **Name of Listing Company:** ABB Automation Products GmbH
5. **Address of Listing Company:** Dransfelder Straße 2,
D-37079 Göttingen,
Germany
6. The examination and test results are recorded in confidential report number:

3059596 dated 22nd May 2018
7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

CSA C22.2 No. 25: 2017, CSA C22.2 No. 30: 1986 (R2016), CSA C22.2 No. 94.1: 2015, CSA C22.2 No. 94.2: 2015, CSA C22.2 No. 213: 2017, CAN/CSA-C22.2 No. 60079-0: 2015, CAN/CSA-C22.2 No. 60079-1: 2016, CAN/CSA-C22.2 No. 60079-7: 2016, CAN/CSA-C22.2 No. 60079-11: 2014, CAN/CSA-C22.2 No. 60079-18: 2016, CAN/CSA-C22.2 No. 60079-31: 2015, CAN/CSA C22.2 No. 60529: 2016, CAN/CSA C22.2 No. 61010-1: 2004, and ANSI/ISA 12.27.01: 2011
8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

Certificate issued by:

J.E. Marquedant
VP, Manager, Electrical Systems

2 January 2019

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

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10. Equipment Ratings:

FE*631F1D (6 and 8) – Integral transmitter & sensor

Explosionproof for Class I, Division 1, Groups B, C and D T6...T1; Dust-ignitionproof for Class II, Division 1, Groups E, F and G, T6...T3B; Class III, Division 1, T6...T3B, Flameproof/increased safety/encapsulated with intrinsically safe outputs for Class I, Zone 1, Ex db eb mb [ia Ga] IIB+H2 T6...T1 Gb, protection by enclosure with intrinsically safe outputs for Zone 21 Ex tb [ia Da] IIIC T80°C...T165°C Db, hazardous locations, indoors and outdoors (Type 4X, IP65/67) with an ambient temperature rating of -40°C to +60°C.

FE*632F1A (1 and 2) – Remote sensor

FE*632F1U (1 and 2) – Remote sensor

Explosionproof for Class I, Division 1, Groups B, C and D T6...T1; Dust-ignitionproof for Class II, Division 1, Groups E, F and G, T6...T3B; Class III, Division 1, T6...T3B, Flameproof/increased safety/encapsulated for Class I, Zone 1, Ex db eb mb IIB+H2 T6...T1 Gb, protection by enclosure/intrinsic safety for Zone 21 Ex tb IIIC T80°C...T165°C Db hazardous locations, indoors and outdoors (Type 4X, IP65/67) with an ambient temperature rating of -40°C to +60°C.

FET632F1W (5 and 7) – Transmitter only

Explosionproof for Class I, Division 1, Groups B, C and D; Dust-ignitionproof for Class II, Division 1, Groups E, F and G, T6; Class III, Division 1, T6; Flameproof/increased safety/encapsulated with intrinsically safe outputs for Class I, Zone 1, Ex db [ia Ga] IIB + H2 T6 Gb, protection by enclosure for Zone 21 Ex tb [ia Da] IIIC T80°C Db hazardous locations, indoors and outdoors (Type 4X, IP65/67 – IP68 Sensor only) with an ambient temperature rating of -40°C to +60°C.

FE*632F2 – Integral transmitter & sensor

FEP632F2 – Remote sensor

FEH632F2 – Remote sensor

Nonincendive for Class I Division 2, Groups A, B, C and D T6...T1; Nonincendive for Class II, Division 2, Groups E, F and G, T6...T3B, Class III, Division 1, T6...T3B, Increased safety for Class I, Zone 2 Ex ec IIIC T6...T1 Gc, protection by enclosure for Zone 21 Ex tb IIIC T80°C...T165°C Db hazardous locations, indoors and outdoors (Type 4X, IP65/67/68 – Sensor only) with an ambient temperature rating of -40°C to +60°C.

FET632F2– Remote transmitter

Nonincendive for Class I Division 2, Groups A, B, C and D, T6; Nonincendive for Class II, Division 2, Groups E, F and G, Class III, Division 1, Increased safety for Class I, Zone 2 Ex ec IIIC T6 Gc, protection by enclosure for Zone 21 Ex tb IIIC T80°C Db hazardous locations, indoors and outdoors (Type 4X, IP65/67) with an ambient temperature rating of -40°C to +60°C.

11. The marking of the equipment shall include:

FE*631F1D (6 and 8)

Class I Division 1, Groups B, C, D; T6...T1 Ta = -40°C to +60°C; Type 4X, IP65/67

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Class II, Division 1, Groups E, F, G, Class III, Division 1; T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67

Class I, Zone 1, Ex db eb mb [ia Ga] IIB+H2 T6...T1 Gb Ta = -40°C to +60°C; Type 4X, IP65/67

Zone 21, Ex tb [ia Da] IIIC T80°C...T165°C Db

FE*632F1A (1 and 2)

FE*632F1U (1 and 2)

Class I Division 1, Groups B, C, D; T6...T1 Ta = -40°C to +60°C; Type 4X, IP65/67 Type 4X, IP65/67/68

Class II, Division 1, Groups E, F, G, Class III, Division 1; T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67/68

Zone 1, Ex db eb mb IIB+H2 T6...T1 Gb Ta = -40°C to +60°C; Type 4X, IP65/67/68

Zone 21, Ex tb IIIC T80°C...T165°C Db

FET632F1W (1 to 5 and 7)

Class I Division 1, Groups B, C, D; T6 Ta = -40°C to +60°C; Type 4X, IP65/67

Class II, Division 1, Groups E, F, G, Class III, Division 1; T6 Ta = -40°C to +60°C; Type 4X, IP65/67

Zone 1, Ex db [ia Ga] IIB + H₂ T6 Gb Ta = -40°C to +60°C; Type 4X, IP65/67

Zone 21, Ex tb [ia Da] IIIC T80°C Db

FE*631F2

FEP632F2

FEH632F2

Class I Division 2, Groups A, B, C, D; T6...T1 Ta = -40°C to +60°C; Type 4X, IP65/67/68 (sensor only)

Class II, Division 2, Groups E, F, G, Class III, Division 1; T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67/68 (sensor only)

Zone 2, Ex ec IIC T6...T1 Gc Ta = -40°C to +60°C; Type 4X, IP65/67/68 (sensor only)

Zone 21, Ex tb IIIC T80°C...T165°C Db

FET632F2

Class I Division 2, Groups A, B, C, D; T6 Ta = -40°C to +60°C; Type 4X, IP65/67

Class II, Division 2, Groups E, F, G, Class III, Division 1; T6 Ta = -40°C to +60°C; Type 4X, IP65/67

Zone 2, Ex ec IIC T6 Gc Ta = -40°C to +60°C; Type 4X, IP65/67

Zone 21, Ex tb IIIC T80°C Db

12. Description of Equipment:

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General - The FEP6_ _ ProcessMaster, and FEH6_ _ HygienicMaster are series of electromagnetic flowmeters. The electronics enclosure is a cylindrical enclosure identified as a dual compartment Type 3 or a single compartment a rectangular housing identified as a Type 4. The ambient temperature range for the transmitters and sensors is either -20°C to +60°C or -40°C to +60°C depending on the options chosen.

The FEP6_ _ ProcessMaster, and FEH6_ _ HygienicMaster are both available as integral and remote designs. A high process temperature version is available and uses 40mm or 100mm stand-offs 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 identified as Design Level A are -40 °C to 130 °C for the normal temperature version and -40 °C to +180 °C for the high temperature version. The medium temperature range for sensors identified as Design Level B is -40 °C to 100 °C.

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

Operation Temperature Ranges:

The ambient operating temperature range of the FE*6 is -40°C to 60°C. Process temperature range is -40°C to 180°C. See ABB Instruction manual for details on the relationship between ambient temperature, process temperature and temperature class.

Electrical data:

The FE*6 has the following supply parameters;

Power Supply (Terminals L and N)

U_{DC} = 16.8 to 30 V

Power supply (= U_{LOW}); P_{MAX} = ≤ 20 W; C, Ripple < 5 %

U_{AC} = 100 V (-15%) to 240 V (+10%)

Power supply (= U_{HIGH}); S ≤ 20 W

See ABB Drawing Number 3KXF000061G0009 for the parameters for the Current Output, Digital Output, and Digital Input connections.

FEH631F2fghijklmnopqrA-t.u.v – Hygienic Integral

NI / I / 2 / ABCD / T6...T1 Ta = +60°C; Type 4X, IP65/67

NI / II / 2 / EFG / T6...T3B Ta = +60°C; Type 4X, IP65/67

DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67

2 / Ex ec / IIC / T6...T1 Gc Ta = +60°C; Type 4X, IP65/67

21 / Ex tb / IIIC / T80°C...T165°C Db Ta = +60°C; Type 4X, IP65/67

Single Seal

f = Housing Type/Housing Material/ Cable entry: S1, S2, D1, D2, D3, D4, D6, or D8

g = Meter Size: 4-digit code – not relevant for safety

h = Process Connection Type: 2-digit code – not relevant for safety

i = Liner material: T1 or P1

j = Process connection material: Single digit – not relevant for safety

k = Electrode design: 1, or 5

l = Measuring electrode material: Single digit code – not relevant for safety

m = Grounding electrode/Full pipe detection: 0 or 2

n = Grounding accessories: A, B or C

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- o = Protection class transmitter/protection class sensor: 70 or 91
p = Power supply: A, D, C or E
q = Display: 0, 1 or 2
r = Outputs: G0, G1, G2, G3, G4, G5, G6, G7, G8, G9, M5, D1 or Y0
Additional Codes
t = Option card 1: DR0, DRN, DRG, DRT or DRA
u = Option card 2: DR0, DSA, DSN, DRM, DRD or DSG
v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TTK

FEP631F2fghijklmnopqrA-t.u.v.w – Process Integral – Design Level A

NI / I / 2 / ABCD / T6...T1 Ta = +60°C; Type 4X, IP65/67
NI / II / 2 / EFG / T6...T3B Ta = +60°C; Type 4X, IP65/67
DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67
2 / Ex ec / IIC / T6...T1 Gc Ta = +60°C; Type 4X, IP65/67
21 / Ex tb / IIIC / T80°C...T165°C Db Ta = +60°C; Type 4X, IP65/67
Single Seal

- f = Housing Type/Housing Material/ Cable entry: S1, S2, D1, D2, D3, D4, D6, or D8
g = Meter Size: 4-digit code – not relevant for safety
h = Process Connection Type: 2-digit code – not relevant for safety
i = Liner material: R2, R3, R4, E1, T1, T3, T2, P1, C1, E2, or P2
j = Process connection material: Single digit – not relevant for safety
k = Electrode design: 1, or 5
l = Measuring electrode material: Single digit code – not relevant for safety
m = Grounding electrode/Full pipe detection: 0, 1, 2, or 3
n = Grounding accessories: A, B, C, D, E
o = Protection class transmitter/protection class sensor: 70 or 91
p = Power supply: A, D, C or E
q = Display: 0, 1 or 2
r = Outputs: G0, G1, G2, G3, G4, G5, G6, G7, G8, G9, M5, D1 or Y0
Additional Codes
t = Option card 1: DR0, DRN, DRG, DRT or DRA
u = Option card 2: DR0, DSA, DSN, DRM, DRD or DSG
v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TTK
w = Sensor housing material: SMA, SMS

FEP631F2fghT1jklmnopqrB-t.u.v.SMA – Process Integral – Design Level B

NI / I / 2 / ABCD / T6...T1 Ta = +60°C; Type 4X, IP65/67
NI / II / 2 / EFG / T6...T3B Ta = +60°C; Type 4X, IP65/67
DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67
2 / Ex ec / IIC / T6...T1 Gc Ta = +60°C; Type 4X, IP65/67
21 / Ex tb / IIIC / T80°C...T165°C Db Ta = +60°C; Type 4X, IP65/67
Single Seal

- f = Housing Type/Housing Material/ Cable entry: S1, S2, D1, D2, D3 or D4
g = Meter Size: 4-digit code – not relevant for safety
h = Process Connection Type: 2-digit code – not relevant for safety
j = Process connection material: Single digit – not relevant for safety

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- k = Electrode design: 1, or 5
l = Measuring electrode material: Single digit code – not relevant for safety
m = Grounding electrode/Full pipe detection: 0, 1, 2, or 3
n = Grounding accessories: A, B, C, D, E
o = Protection class transmitter/protection class sensor: 70 or 91
p = Power supply: A, D, C or E
q = Display: 0, 1 or 2
r = Outputs: G0, G1, G2, G3, G4, G5, G6, G7, G8, G9, M5, D1 or Y0
Additional Codes
t = Option card 1: DR0, DRN, DRG, DRT or DRA
u = Option card 2: DR0, DSA, DSN, DRM, DRD or DSG
v = Temperature range of installation/Ambient temperature range: TK1 or TK4

FEH632F2fghijklmnop8Y0A-t.u.v – Hygienic remote sensor

NI / I / 2 / ABCD / T6...T1 Ta = +60°C; Type 4X, IP65/67/68
NI / II / 2 / EFG / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
2 / Ex ec / IIC / T6...T1 Gc Ta = +60°C; Type 4X, IP65/67/68
21 / Ex tb / IIIC / T80°C...T165°C Db Ta = +60°C; Type 4X, IP65/67/68
Single Seal

- f = Housing Type/Housing Material/ Cable entry: A1, A2, U1, or U2
g = Meter Size: 4-digit code – not relevant for safety
h = Process Connection Type: 2-digit code – not relevant for safety
i = Liner material: T1 or P1
j = Process connection material: Single digit – not relevant for safety
k = Electrode design: 1, or 5
l = Measuring electrode material: Single digit code – not relevant for safety
m = Grounding electrode/Full pipe detection: 0 or 2
n = Grounding accessories: A, B or C
o = Protection class transmitter/protection class sensor: 70, 76, 77 or 91
p = Power supply: Y or W
Additional Codes
t = Option card 1: DR0
u = Option card 2: DR0
v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TTK

FEP632F2fghijklmnop8Y0A-t.u.v.w – Process remote sensor – Design Level A

NI / I / 2 / ABCD / T6...T1 Ta = +60°C; Type 4X, IP65/67/68
NI / II / 2 / EFG / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
2 / Ex ec / IIC / T6...T1 Gc Ta = +60°C; Type 4X, IP65/67/68
21 / Ex tb / IIIC / T80°C...T165°C Db Ta = +60°C; Type 4X, IP65/67/68
Single Seal

- f = Housing Type/Housing Material/ Cable entry: A1, A2, U1, or U2
g = Meter Size: 4-digit code – not relevant for safety
h = Process Connection Type: 2-digit code – not relevant for safety

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- i = Liner material: R2, R3, R4, E1, T1, T3, T2, P1, C1, E2 or P2
- j = Process connection material: Single digit – not relevant for safety
- k = Electrode design: 1, or 5
- l = Measuring electrode material: Single digit code – not relevant for safety
- m = Grounding electrode/Full pipe detection: 0, 1, 2 or 3
- n = Grounding accessories: A, B, C, D or E
- o = Protection class transmitter/protection class sensor: 70, 76, 77 or 91
- p = Power supply: Y or W
- Additional Codes
- t = Option card 1: DR0
- u = Option card 2: DR0
- v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TTK
- w = Sensor housing material: SMA or SMS

FEP632F2fghT1jklmnop8Y0B-t.u.v.SMA – Process remote sensor – Design Level B

NI / I / 2 / ABCD / T6...T1 Ta = +60°C; Type 4X, IP65/67
NI / II / 2 / EFG / T6...T3B Ta = +60°C; Type 4X, IP65/67
DIP / II / 1 / EFG / T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67/68
DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
21 / Ex ia tb / IIIC / T80°C...T165°C Db, Type 4X, IP65/67/68
Single Seal

- f = Housing Type/Housing Material/ Cable entry: A1, A2, U1, or U2
- g = Meter Size: 4-digit code – not relevant for safety
- h = Process Connection Type: 2-digit code – not relevant for safety
- j = Process connection material: Single digit – not relevant for safety
- k = Electrode design: 1, or 5
- l = Measuring electrode material: Single digit code – not relevant for safety
- m = Grounding electrode/Full pipe detection: 0, 1, 2 or 3
- n = Grounding accessories: A, B, C, D or E
- o = Protection class transmitter/protection class sensor: 70, 76, 77 or 91
- p = Power supply: Y or W
- Additional Codes
- t = Option card 1: DR0
- u = Option card 2: DR0
- v = Temperature range of installation/Ambient temperature range: TK1 or TK4

FET632F2fopqr - t.u.v – Remote transmitter

NI / I / 2 / ABCD / T6 Ta = +60°C; Type 4X, IP65/67
NI / II / 2 / EFG / T6 Ta = +60°C; Type 4X, IP65/67
DIP / III / 1 / T6 Ta = +60°C; Type 4X, IP65/67
2 / Ex ec / IIC / T6 Gc Ta = +60°C; Type 4X, IP65/67
21 / Ex tb / IIIC / T80°C Db Ta = +60°C; Type 4X, IP65/67

- f = Housing Type/Housing Material/ Cable entry: F1 or F2
- o = Protection class transmitter/protection class sensor: 70 or 91
- p = Power supply: A, D, C or E
- q = Display: 0, 1 or 2

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- r = Outputs: G0, G1, G2, G3, G4, G5, G6, G7, G8, G9, M5, D1 or Y0
Additional Codes
t = Option card 1: DR0, DRN, DRG, DRT or DRA
u = Option card 2: DR0, DSA, DSN, DRM, DRD or DSG
v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK

FEH631F1fghijklmnopqrA-t.u.v – Hygienic Integral

XP-IS-IPA / I / 1 / BCD / T6...T1 Ta = +60°C; Type 4X, IP65/67
DIP / II / 1 / EFG / T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67
DIP / III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67
1 / Ex db eb mb [ia Ga] / IIB+H2 / T6...T1 Gb Ta = +60°C; Type 4X, IP65/67
21 / Ex tb [ia Da] / IIIC / T80°C...T165°C Db, Type 4X, IP65/67
Single Seal

- f = Housing Type/Housing Material/ Cable entry: D1, D2, D3, D4, D6, or D8
g = Meter Size: 4-digit code – not relevant for safety
h = Process Connection Type: 2-digit code – not relevant for safety
i = Liner Material: T1 or P1
j = Process connection material: Single digit – not relevant for safety
k = Electrode design: 1, or 5
l = Measuring electrode material: Single digit code – not relevant for safety
m = Grounding electrode/Full pipe detection: 0 or 2
n = Grounding accessories: A, B or C
o = Protection class transmitter/protection class sensor: 70 or 91
p = Power supply: A, D, C or E
q = Display: 1 or 2
r = Outputs: G0, G1, G2, G3, G4, G5, G6, G7, G8, G9, M5, D1 or Y0
Additional Codes
t = Option card 1: DR0, DRN, DRG, DRT or DRA
u = Option card 2: DR0, DSA, DSN, DRM, DRD or DSG
v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TKK

FEP631F1fghijklmnopqrA-t.u.v.w – Process Integral

XP-IS-IPA / I / 1 / BCD / T6...T1 Ta = +60°C; Type 4X, IP65/67
DIP / II / 1 / EFG / T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67
DIP / III / 1 / T6 Ta = +60°C; Type 4X, IP65/67
1 / Ex db eb mb [ia Ga] / IIB+H2 / T6...T1 Gb Ta = +60°C; Type 4X, IP65/67
21 / Ex tb [ia Da] / IIIC / T80°C...T165°C Db, Type 4X, IP65/67
Single Seal

- f = Housing Type/Housing Material/ Cable entry: D1, D2, D3, D4, D6 or D8
g = Meter Size: 4-digit code – not relevant for safety
h = Process Connection Type: 2-digit code – not relevant for safety
i = Liner Material: R2, R3, R4, E1, T1, T3, T2, P1, C1, E2 or P2
j = Process connection material: Single digit – not relevant for safety
k = Electrode design: 1, or 5
l = Measuring electrode material: Single digit code – not relevant for safety
m = Grounding electrode/Full pipe detection: 0, 1, 2, or 3

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- n = Grounding accessories: A, B, C, D or E
o = Protection class transmitter/protection class sensor: 70 or 91
p = Power supply: A, D, C, or E
q = Display: 1 or 2
r = Outputs: G0, G1, G2, G3, G4, G5, G6, G7, G8, G9, M5, D1 or Y0
Additional Codes
t = Option card 1: DR0, DRN, DRG, DRT or DRA
u = Option card 2: DR0, DSA, DSN, DRM, DRD or DSG
v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TTK
w = Sensor housing material: SMA or SMS

FEH632F1fghijklmnop8Y0A-t.u.v – Hygienic remote sensor

XP-IPA / I / 1 / BCD / T6...T1 Ta = +60°C; Type 4X, IP65/67/68
DIP / II / 1 / EFG / T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67/68
III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
1 / Ex db eb mb / IIB+H2 / T6...T1 Gb Ta = +60°C; Type 4X, IP65/67/68
21 / Ex tb / IIIC / T80°C...T165°C Db, Type 4X, IP65/67/68
Single Seal

- f = Housing Type/Housing Material/ Cable entry: A1, A2, U1, or U2
g = Meter Size: 4-digit code – not relevant for safety
h = Process Connection Type: 2-digit code – not relevant for safety
i = Liner material: T1 or P1
j = Process connection material: Single digit – not relevant for safety
k = Electrode design: 1, or 5
l = Measuring electrode material: Single digit code – not relevant for safety
m = Grounding electrode/Full pipe detection: 0 or 2
n = Grounding accessories: A, B or C
o = Protection class transmitter/protection class sensor: 70, 76, 77 or 91
p = Power supply: Y or W
Additional Codes
t = Option card 1: DR0
u = Option card 2: DR0
v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TTK

FEP632F1fghijklmnop8Y0A-t.u.v.w – Process remote sensor

XP-IPA / I / 1 / BCD / T6...T1 Ta = +60°C; Type 4X, IP65/67/68
DIP / II / 1 / EFG / T6...T3B Ta = -40°C to +60°C; Type 4X, IP65/67/68
III / 1 / T6...T3B Ta = +60°C; Type 4X, IP65/67/68
1 / Ex db eb mb / IIB+H2 / T6...T1 Gb Ta = +60°C; Type 4X, IP65/67/68
21 / Ex tb / IIIC / T80°C...T165°C Db, Type 4X, IP65/67/68
Single Seal

- f = Housing Type/Housing Material/ Cable entry: A1, A2, U1, or U2
g = Meter Size: 4-digit code – not relevant for safety
h = Process Connection Type: 2-digit code – not relevant for safety
i = Liner material: R2, R3, R4, E1, T1, T3, T2, P1, C1, E2 or P2
j = Process connection material: Single digit – not relevant for safety

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- k = Electrode design: 1, or 5
- l = Measuring electrode material: Single digit code – not relevant for safety
- m = Grounding electrode/Full pipe detection: 0, 1, 2 or 3
- n = Grounding accessories: A, B, C, D or E
- o = Protection class transmitter/protection class sensor: 70, 76, 77 or 91
- p = Power supply: Y or W
- Additional Codes
- t = Option card 1: DR0
- u = Option card 2: DR0
- v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TTK
- w = Sensor housing material: SMA or SMS

FET632F1fopqr - t.u.v – Remote transmitter

XP-IS / I / 1 / BCD / T6 Ta = +60°C; Type 4X, IP65/67

DIP / II / 1 / EFG / T6 Ta = +60°C; Type 4X, IP65/67

III / 1 / T6 Ta = +60°C; Type 4X, IP65/67

1 / Ex db [ia Ga] / IIB + H2 / T6 Gb Ta = +60°C; Type 4X, IP65/67

21 / Ex tb [ia Da] / IIIC / T80°C Db Ta = +60°C; Type 4X, IP65/67

- f = Housing Type/Housing Material/ Cable entry: W1, W2, W3, W4, W5 or W7
- o = Protection class transmitter/protection class sensor: 70 or 91
- p = Power supply: A, D, C or E
- q = Display: 1 or 2
- r = Outputs: G0, G1, G2, G3, G4, G5, G6, G7, G8, G9, M5, D1 or Y0
- Additional Codes
- t = Option card 1: DR0, DRN, DRG, DRT or DRA
- u = Option card 2: DR0, DSA, DSN, DRM, DRD or DSG
- v = Temperature range of installation/Ambient temperature range: TK1, TK4, TKH or TTK

13. Schedule of Limitations:

1. The ABB Instruction Manual for the ProcessMaster and HygenicMaster details the permitted Temperature Classification and Ambient Temperature ratings as influenced by the Process Medium temperature.
2. The painted surface of the 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 TR60079-32-2 Cleaning of the painted surface should only be done with a damp cloth.
3. Contact the manufacturer for specific flamepath joint details during repair of flameproof Ex d apparatus.
4. For Integral and Remote versions FE*63°F1 Zone 21 having exposed electrodes in the process shall be used in a non-flammable liquid process only.
5. For installations in flammable dust, the cable entries shall be fitted with an appropriate cable entry device meeting the requirements of IP6x fitted with a gasket or seal between the cable entry device and the wall of the enclosure.

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14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals Canadian Certification Scheme.

15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

16. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
22 nd May 2018	Original Issue.
6 th July 2018	Supplement 1: Report Reference: RR214851 dated 6 th July 2018. Description of the Change: Editorial corrections to the certificate.
24 th August 2018	Supplement 2: Report Reference: RR215360 dated 24 th August 2018. Description of the Change: Corrections to the certificate.
2 nd January 2019	Supplement 3: Report Reference: RR215454 dated 2 nd January 2019. Description of the Change: Addition of Modbus option card. Modifications to PWBs.

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