FM Approvals®

Member of the FM Global Group

CERTIFICATE OF COMPLIANCE

HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

FMR230-Sbcdddefgh. Micropilot M Level Instrument
IS/I,II,III/1/ABCDEFG/T*;I/0/AEx ia IIC T*; Entity, NI/I/2/ABCD/T*; DIP/II/III/1/EFG/T*; Type 4X,
Antenna Type 6P. *Refer to Control Drawing for Temperature Class.
Maximum entity parameters:
For e = A, B, K: Vmax = 30 Vdc,Imax = 300 mA, Pi = 1 W, Ci = 13 nF,Li = 0;
For e = C, D, L: Profibus PA (FISCO): Vmax = 17.5 Vdc, Imax = 500 mA, Pi = 5.5 W, Ci = 5 nF,Li = 10 µH;
or Vmax = 24 V, Imax = 250 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH.
For e = E, F, M: Foundation Fieldbus (FISCO): Vmax = 17.5 Vdc, Imax = 500 mA, Pi = 5.5 W, Ci = 5 nF,Li = 10 µH;
or Vmax = 24 V, Imax = 250 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH.
For e = A, B and f = D: Vmax = 30 Vdc, Imax = 273 mA, Pi = 1 W, Ci = 13 nF, Li = 0;
For e = C, D and f = D: Profibus PA (FISCO): Vmax = 17.5V dc, Imax = 273 mA, Pi = 1.2 W, Ci = 5nF, Li = 10 µH
Vmax = 24V, Imax = 250mA, Pi = 1.2W, Ci = 5nF, Li = 10 µH
For e = E, F and f = D: Foundation Fieldbus (FISCO): Vmax = 17.5V dc, Imax = 273 mA, Pi = 1.2 W, Ci = 5nF, Li = 10 µH; or Vmax = 24V, Imax = 250mA, Pi = 1.2W, Ci = 5nF, Li = 10 µH

Nonincendive Field Wiring parameters:
For e = A, B, K and f = A, B: Vmax =30Vdc, Imax = not required, Ci = 13nF, Li = 0;
For e = A, B and f = D: T12-OVP: Vmax = 30Vdc, Imax = not required Ci =13nF, Li =0
For e = C, D, L and f = A, B: Vmax =33Vdc, Imax = not required, Ci = 5nF, Li = 10 µH;
For e = C, D and f = D: T12-OVP: Vmax = 33Vdc, Imax = not required, Ci =5nF, Li = 10 µH
For e = E, F, M and f = A, B: Vmax =33Vdc, Imax = not required, Ci = 5nF, Li = 10 µH;
For e = E, F and f = D: T12-OVP: Vmax = 33Vdc, Imax = not required, Ci =5nF, Li = 10 µH

b = Antenna size; any single letter or number.
c = Type of sealing, temperature; any single letter or number (e.g.: E, V, K, D, F, G, H, L or M).
ddd = Process connections, any three letter / number combination representing standard industrial process connections.
e = Output and Operation:
A,B: (4..20 mA HART with/without display VU331),
C,D: (Profibus PA with/without display VU331),
E,F: (Foundation Fieldbus with/without display VU331),
K: (4..20 mA HART prepared for FHX40),
L: (Profibus PA prepared for display FHX40),
M: (Foundation Fieldbus prepared for display FHX40), or
x: (special version not relevant for safety e.g. software adjustment; any not used letter or number).
f = A, B, or D.
g = Cable entry 1 (PG 13.5), 2 (M20x1.5), 3 (G1/2), 4 (NPT 1/2), 5 (M12 PA plug), 6 (7/8" FF plug) or x = special version.
h = Additional options not relevant to safety; any single letter or number.

FMR231-Sbcccdefgh. Micropilot M Level Instrument
IS/I,II,III/1/ABCDEFG/T*;I/0/AEx ia IIC T*; Entity, NI/I/2/ABCD/T*; DIP/II/III/1/EFG/T*; Type 4X,
Antenna Type 6P. *Refer to Control Drawing for Temperature Class.
Maximum entity parameters:
For d = A, B, K: Vmax = 30 Vdc,Imax = 300 mA, Pi = 1 W, Ci = 13 nF,Li = 0;
For d = C, D, L: Profibus PA (FISCO): Vmax = 17.5 Vdc, Imax = 500 mA, Pi = 5.5 W, Ci = 5 nF,Li = 10 µH;
or Vmax = 24 V, Imax = 250 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH.
For d = E, F, M: Foundation Fieldbus (FISCO): Vmax = 17.5 Vdc, Imax = 500 mA, Pi = 5.5 W, Ci = 5 nF,Li = 10 µH;
or Vmax = 24 V, Imax = 250 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH.
For d = A, B and e = D: Vmax = 30 Vdc, Imax = 273 mA, Pi = 1 W, Ci = 13 nF, Li = 0;
For d = C, D and e = D: Profibus PA (FISCO): Vmax = 17.5V dc, Imax = 273 mA, Pi = 1.2 W, Ci = 5nF, Li = 10 µH
Vmax = 24V, Imax = 250mA, Pi = 1.2W, Ci = 5nF, Li = 10 µH
For d = E, F and e = D: Foundation Fieldbus (FISCO): Vmax = 17.5V dc, Imax = 273 mA, Pi = 1.2 W, Ci = 5nF, Li =
10 µH; or Vmax = 24V, Imax = 250mA, Pi = 1.2W, Ci = 5nF,
Li = 10 µH

Nonincendive Field Wiring parameters:
For d = A, B, K and e = A, B: Vmax =30Vdc, Imax = not required, Ci = 13nF, Li = 0;
For d = A, B and e = D: T12-OVP: Vmax = 30Vdc, Imax = not required, Ci =13nF, Li =0
For d = C, D, L and e = A, B: Vmax =33Vdc, Imax = not required, Ci = 5nF, Li = 10 µH;
For d = C, D and e = D: T12-OVP: Vmax = 33Vdc, Imax = not required, Ci =5nF, Li = 10 µH
For d = E, F, M and e = A, B: Vmax =33Vdc, Imax = not required, Ci = 5nF, Li = 10 µH;
For d = E, F and e = D: T12-OVP: Vmax = 33Vdc, Imax = not required, Ci =5nF, Li = 10 µH

b = Type of antenna, gasket, inactive length; A, B (PPS antenna, alternate length), E, F (PTFE antenna, alternate length), H, J, (PTFE antenna, antistatic, alternate length) or x (special, e.g.: length).
ccc = Process connections, any three letter / number combination representing standard industrial process connections.
d= Output and Operation:
A,B: (4..20 mA HART with/without display VU331),
C,D: (Profibus PA with/without display VU331),
E,F: (Foundation Fieldbus with/without display VU331),
K: (4..20 mA HART prepared for FHX40),
L: (Profibus PA prepared for display FHX40),
M: (Foundation Fieldbus prepared for display FHX40), or
x: (special version not relevant for safety e.g. software adjustment; any not used letter or number)
e = A, B, or D.
f = Cable entry 1 (PG 13.5), 2 (M20x1.5), 3 (G1/2), 4 (NPT 1/2), 5 (M12 PA plug), 6 (7/8" FF plug) or x = special version.
g = Gas tight feed through A (without) or C (gas tight feed through).
h = Additional options not relevant to safety; any single letter or number.

FMR232-Sbcccdefg. Micropilot M Level Instrument
IS/I,II,III/1/ABCDEFG/T*;I/0/AEx ia IIC T*; Entity, NI/I/2/ABCD/T*; DIP/II/III/1/EFG/T*; Type 4X,
Antenna Type 6P. *Refer to Control Drawing for Temperature Class.
Maximum entity parameters:
For d = A, B, K: Vmax = 30 Vdc,Imax = 300 mA, Pi = 1 W, Ci = 13 nF,Li = 0;
For d = C, D, L: Profibus PA (FISCO): Vmax = 17.5 Vdc, Imax = 500 mA, Pi = 5.5 W, Ci = 5 nF,Li = 10 µH;
or Vmax = 24 V, Imax = 250 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH.
For d = E, F, M: Foundation Fieldbus (FISCO): Vmax = 17.5 Vdc, Imax = 500 mA, Pi = 5.5 W, Ci = 5 nF,Li = 10 µH;
or Vmax = 24 V, Imax = 250 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH.
For d = A, B and e = D: Vmax = 30 Vdc, Imax = 273 mA, Pi = 1 W, Ci = 13 nF, Li = 0;
For d = C, D and e = D: Profibus PA (FISCO): Vmax = 17.5V dc, Imax = 273 mA, Pi = 1.2 W, Ci = 5nF, Li = 10 µH
Vmax = 24V, Imax = 250mA, Pi = 1.2W, Ci = 5nF, Li = 10 µH
For d = E, F and e = D: Foundation Fieldbus (FISCO): Vmax = 17.5V dc, Imax = 273 mA, Pi = 1.2 W, Ci = 5nF, Li =
10 µH; or Vmax = 24V, Imax = 250mA, Pi = 1.2W, Ci = 5nF, Li
= 10 µH
Nonincendive Field Wiring parameters:
For d = A, B, K and e = A, B: Vmax =30Vdc, Imax = not required, Ci = 13nF, Li = 0;
For d = A, B and e = D: T12-OVP: Vmax = 30Vdc, Imax = not requiredCi =13nF, Li =0
For d = C, D, L and e = A, B: Vmax =33Vdc, Imax = not required, Ci = 5nF, Li = 10 µH;

For d = C, D and e = D: T12-OVP: Vmax = 33Vdc, Imax = not required, Ci =5nF, Li = 10 µH
For d = E, F, M and e = A, B: Vmax =33Vdc, Imax = not required, Ci = 5nF, Li = 10 µH;
For d = E, F and e = D: T12-OVP: Vmax = 33Vdc, Imax = not required, Ci =5nF, Li = 10 µH

b= Antenna type; any single letter or number.
ccc = Process connections, any three letter / number combination representing standard industrial process connections.
d= Output and Operation:
A,B: (4..20 mA HART with/without display VU331),
C,D: (Profibus PA with/without display VU331),
E,F: (Foundation Fieldbus with/without display VU331),
K: (4..20 mA HART prepared for FHX40),
L: (Profibus PA prepared for display FHX40),
M: (Foundation Fieldbus prepared for display FHX40), or
x: (special version not relevant for safety e.g. software adjustment; any not used letter or number).
e = A, B, or D.
f = Cable entry 1 (PG 13.5), 2 (M20x1.5), 3 (G1/2), 4 (NPT 1/2), 5 (M12 PA plug), 6 (7/8" FF plug) or x = special version.
g = Additional options not relevant to safety; any single letter or number.

FMR233-Sbcccdefg. Micropilot M Level Instrument
IS/I,II,III/1/ABCDEFG/T*;I/0/AEx ia IIC T*; Entity, NI/I/2/ABCD/T*; DIP/II/III/1/EFG/T*; Type 4X,
Antenna Type 6P. *Refer to Control Drawing for Temperature Class.
Maximum entity parameters:
For d = A, B, K: Vmax = 30 Vdc,Imax = 300 mA, Pi = 1 W, Ci = 13 nF,Li = 0;

For d = C, D, L: Profibus PA (FISCO): Vmax = 17.5 Vdc, Imax = 500 mA, Pi = 5.5 W, Ci = 5 nF,Li = 10 µH; or Vmax = 24 V, Imax = 250 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH.
For d = E, F, M: Foundation Fieldbus (FISCO): Vmax = 17.5 Vdc, Imax = 500 mA, Pi = 5.5 W, Ci = 5 nF,Li = 10 µH; or Vmax = 24 V, Imax = 250 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH.
For d = A, B and e = D: Vmax = 30 Vdc, Imax = 273 mA, Pi = 1 W, Ci = 13 nF, Li = 0;
For d = C, D and e = D: Profibus PA (FISCO): Vmax = 17.5V dc, Imax = 273 mA, Pi = 1.2 W, Ci = 5nF, Li = 10 µH Vmax = 24V, Imax = 250mA, Pi = 1.2W, Ci = 5nF, Li = 10 µH
For d = E, F and e = D: Foundation Fieldbus (FISCO): Vmax = 17.5V dc, Imax = 273 mA, Pi = 1.2 W, Ci = 5nF, Li = 10 µH; or Vmax = 24V, Imax = 250mA, Pi = 1.2W, Ci = 5nF, Li = 10 µH

Nonincendive Field Wiring parameters:
For d = A, B, K and e = A, B: Vmax =30Vdc, Imax = not required, Ci = 13nF, Li = 0;
For d = A, B and e = D: T12-OVP: Vmax = 30Vdc, Imax = not required, Ci =13nF, Li =0
For d = C, D, L and e = A, B: Vmax =33Vdc, Imax = not required, Ci = 5nF, Li = 10 µH;
For d = C, D and e = D: T12-OVP: Vmax = 33Vdc, Imax = not required, Ci =5nF, Li = 10 µH
For d = E, F, M and e = A, B: Vmax =33Vdc, Imax = not required, Ci = 5nF, Li = 10 µH;
For d = E, F and e = D: T12-OVP: Vmax = 33Vdc, Imax = not required, Ci =5nF, Li = 10 µH

b= Antenna type; any single letter or number.
ccc = Process connections, any three letter / number combination representing standard industrial process connections.
d= Output and Operation:
A,B: (4..20 mA HART with/without display VU331),
C,D: (Profibus PA with/without display VU331),
E,F: (Foundation Fieldbus with/without display VU331),
K: (4..20 mA HART prepared for FHX40),
L: (Profibus PA prepared for display FHX40),
M: (Foundation Fieldbus prepared for display FHX40), or
x: (special version not relevant for safety e.g. software adjustment; any not used letter or number).
e = A, B, or D.
f = Cable entry 1 (PG 13.5), 2 (M20x1.5), 3 (G1/2), 4 (NPT 1/2), 5 (M12 PA plug), 6 (7/8" FF plug) or x = special version.
g = Additional options not relevant to safety; any single letter or number.

FMR240-Sbcdeeefghi. Micropilot M Level Instrument

IS/I,II,III/1/ABCDEFG/T*;I/0/AEx ia IIC T*; Entity, NI/I/2/ABCD/T*; DIP/II/III/1/EFG/T*; Type 4X, Antenna Type 6P. *Refer to Control Drawing for Temperature Class.

Maximum entity parameters:

For f = A, B, K: Vmax = 30 Vdc,Imax = 300 mA, Pi = 1 W, Ci = 13 nF,Li = 0;

For f = C, D, L: Profibus PA (FISCO): Vmax = 17.5 Vdc, Imax = 500 mA, Pi = 5.5 W, Ci = 5 nF,Li = 10 µH; or Vmax = 24 V, Imax = 250 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH.

For f = E, F, M: Foundation Fieldbus (FISCO): Vmax = 17.5 Vdc, Imax = 500 mA, Pi = 5.5 W, Ci = 5 nF,Li = 10 µH; or Vmax = 24 V, Imax = 250 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH.

For f = A, B and g = D: Vmax = 30 Vdc, Imax = 273 mA, Pi = 1 W, Ci = 13 nF, Li = 0;

For f = C, D and g = D: Profibus PA (FISCO): Vmax = 17.5V dc, Imax = 273 mA, Pi = 1.2 W, Ci = 5nF, Li = 10 µH Vmax = 24V, Imax = 250mA, Pi = 1.2W, Ci = 5nF, Li = 10 µH

For f = E, F and g = D: Foundation Fieldbus (FISCO): Vmax = 17.5V dc, Imax = 273 mA, Pi = 1.2 W, Ci = 5nF, Li = 10 µH; or Vmax = 24V, Imax = 250mA, Pi = 1.2W, Ci = 5nF, Li = 10 µH

Nonincendive Field Wiring parameters:

For f = A, B, K and g = A, B: Vmax =30Vdc, Imax = not required, Ci = 13nF, Li = 0;

For f = A, B and g = D: T12-OVP: Vmax = 30Vdc, Imax = not required, Ci =13nF, Li =0

For f = C, D, L and g = A, B: Vmax =33Vdc, Imax = not required, Ci = 5nF, Li = 10 µH;

For f = C, D and g = D: T12-OVP: Vmax = 33Vdc, Imax = not required, Ci =5nF, Li = 10 µH

For f = E, F, M and g = A, B: Vmax =33Vdc, Imax = not required, Ci = 5nF, Li = 10 µH;

For f = E, F and g = D: T12-OVP: Vmax = 33Vdc, Imax = not required, Ci =5nF, Li = 10 µH

b = Antenna size; any single letter or number.
and 7 = mm Wave Guide Antenna
8 = inch Wave Guide Antenna
E = 40mm/ 1-1/2"
F = 50mm/ 2"
G = 80mm/ 3"
H = 100mm/ 4"

c = Type of antenna, sealing, temperature, any single letter or number.
Standard: up to 150°C,
with Wave Guide up to 200°C

d = Antenna extension: any single letter or number

eee = Process connections, any three letter / number combination representing standard industrial process connections.

f = Output and Operation:

A,B: (4..20 mA HART with/without display VU331),
C,D: (Profibus PA with/without display VU331),
E,F: (Foundation Fieldbus with/without display VU331),
K: (4..20 mA HART prepared for FHX40),
L: (Profibus PA prepared for display FHX40),
M: (Foundation Fieldbus prepared for display FHX40), or
x: (special version not relevant for safety e.g. software adjustment; any not used letter or number).

g = A, B, or D.

h = Cable entry 1 (PG 13.5), 2 (M20x1.5), 3 (G1/2), 4 (NPT 1/2), 5 (M12 PA plug), 6 (7/8" FF plug) or x = special version.

i = Additional options not relevant to safety: A (basic configuration), B (material certificate), N (material certificate), S (marine approval not verified by FM), D (increased dynamic), E (increased dynamic), F (increased dynamic), G (increased dynamic), T (NUS marine not verified by FM), U (NUS marine not verified by FM), V (NUS marine not verified by FM) or Y (special version, not safety relevant: e.g. multiple combinations between "k" and "l"; siliconfree version; enclosure with special varnish; polished surfaces or equivalent, material certificates acc. customer requirements e.g. NACE MR0175, customer specific marking e.g. TAG no.)

FMR244-Sbcdddefgh. Micropilot M Level Instrument

IS/I,II,III/1/ABCDEFG/T*;I/0/AEx ia IIC T*; Entity; NI/I/2/ABCD/T*; DIP/II/III/1/EFG/T*; Type 4X, Antenna 6P.
*Refer to Control Drawing for Temperature Class.

Maximum entity parameters:

For e = A, B, K: Vmax = 30 Vdc,Imax = 300 mA, Pi = 1 W, Ci = 13 nF,Li = 0;

For e = C, D, L: Profibus PA (FISCO): Vmax = 17.5 Vdc, Imax = 500 mA, Pi = 5.5 W, Ci = 5 nF,Li = 10 µH;
or Vmax = 24 V, Imax = 250 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH.
For e = E, F, M: Foundation Fieldbus (FISCO): Vmax = 17.5 Vdc, Imax = 500 mA, Pi = 5.5 W, Ci = 5 nF,Li = 10 µH;
or Vmax = 24 V, Imax = 250 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH.
For e = A, B and f = D: Vmax = 30 Vdc, Imax = 273 mA, Pi = 1 W, Ci = 13 nF, Li = 0;
For e = C, D and f = D: Profibus PA (FISCO): Vmax = 17.5V dc, Imax = 273 mA, Pi = 1.2 W, Ci = 5nF, Li = 10 µH
Vmax = 24V, Imax = 250mA, Pi = 1.2W, Ci = 5nF, Li = 10 µH
For e = E, F and f = D: Foundation Fieldbus (FISCO): Vmax = 17.5V dc, Imax = 273 mA, Pi = 1.2 W, Ci = 5nF, Li = 10 µH; or Vmax = 24V, Imax = 250mA, Pi = 1.2W, Ci = 5nF, Li = 10 µH

Nonincendive Field Wiring parameters:
For e = A, B, K and f = A, B: Vmax =30Vdc, Imax = not required, Ci = 13nF, Li = 0;
For e = A, B and f = D: T12-OVP: Vmax = 30Vdc, Imax = not required, Ci =13nF, Li =0
For e = C, D, L and f = A, B: Vmax =33Vdc, Imax = not required, Ci = 5nF, Li = 10 µH;
For e = C, D and f = D: T12-OVP: Vmax = 33Vdc, Imax = not required, Ci =5nF, Li = 10 µH
For e = E, F, M and f = A, B: Vmax =33Vdc, Imax = not required, Ci = 5nF, Li = 10 µH;
For e = E, F and f = D: T12-OVP: Vmax = 33Vdc, Imax = not required, Ci =5nF, Li = 10 µH

b = Antenna size; any single letter or number.
c = Type of antenna, sealing, temperature, any single letter or number.
ddd = Process connections, any three letter / number combination representing standard industrial process connections.
e = Output and Operation:
A,B: (4..20 mA HART with/without display VU331),
C,D: (Profibus PA with/without display VU331),
E,F: (Foundation Fieldbus with/without display VU331),
K: (4..20 mA HART prepared for FHX40),
L: (Profibus PA prepared for display FHX40),
M: (Foundation Fieldbus prepared for display FHX40), or
x: (special version not relevant for safety e.g. software adjustment; any not used letter or number).
f = A, B or D.
g = Cable entry 1 (PG 13.5), 2 (M20x1.5), 3 (G1/2), 4 (NPT 1/2), 5 (M12 PA plug), 6 (7/8" FF plug) or x = special version.
h = Additional options not relevant to safety: A (basic configuration), S (marine approval not verified by FM), D (increased dynamic), F (increased dynamic), or Y (special version, not safety relevant: e.g. multiple combinations between "k" and "l"; siliconfree version; enclosure with special varnish; polished surfaces or equivalent, material certificates acc. customer requirements e.g. NACE MR0175, customer specific marking e.g. TAG no.)

FMR245-Sbcccdefg. Micropilot M Level Instrument
IS/I,II,III/1/ABCDEFG/T*;I/0/AEx ia IIC T*; Entity; NI/I/2/ABCD/T*; DIP/II/III/1/EFG/T*; Type 4X, Antenna 6P.
*Refer to Control Drawing for Temperature Class.

Maximum entity parameters:
For d = A, B, K: Vmax = 30 Vdc,Imax = 300 mA, Pi = 1 W, Ci = 13 nF,Li = 0;
For d = C, D, L: Profibus PA (FISCO): Vmax = 17.5 Vdc, Imax = 500 mA, Pi = 5.5 W, Ci = 5 nF,Li = 10 µH;
or Vmax = 24 V, Imax = 250 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH.
For d = E, F, M: Foundation Fieldbus (FISCO) : Vmax = 17.5 Vdc, Imax = 500 mA, Pi = 5.5 W, Ci = 5 nF,Li = 10 µH; or Vmax = 24 V, Imax = 250 mA, Pi = 1.2 W, Ci = 5nF Li = 10 µH.

For d = A, B and e = D: Vmax = 30 Vdc, Imax = 273 mA, Pi = 1 W, Ci = 13 nF, Li = 0;
For d = C, D and e = D: Profibus PA (FISCO): Vmax = 17.5V dc, Imax = 273 mA, Pi = 1.2 W, Ci = 5nF, Li = 10 µH

Vmax = 24V, Imax = 250mA, Pi = 1.2W, Ci = 5nF, Li = 10 µH
For d = E, F and e = D: Foundation Fieldbus (FISCO): Vmax = 17.5V dc, Imax = 273 mA, Pi = 1.2 W, Ci = 5nF, Li = 10 µH; or Vmax = 24V, Imax = 250mA, Pi = 1.2W, Ci = 5nF, Li = 10 µH

Nonincendive Field Wiring parameters:
For d = A, B, K and e = A, B: Vmax =30Vdc, Imax = not required, Ci = 13nF, Li = 0;
For d = A, B and e = D: T12-OVP: Vmax = 30Vdc, Imax = not requiredCi =13nF, Li =0
For d = C, D, L and e = A, B: Vmax =33Vdc, Imax = not required, Ci = 5nF, Li = 10 µH;
For d = C, D and e = D: T12-OVP: Vmax = 33Vdc, Imax = not required, Ci =5nF, Li = 10 µH
For d = E, F, M and e = A, B: Vmax =33Vdc, Imax = not required, Ci = 5nF, Li = 10 µH;
For d = E,F and e = D: T12-OVP: Vmax = 33Vdc, Imax = not required, Ci =5nF, Li = 10 µH

b = Antenna size; any single letter or number (e.g., 50mm/2", 80mm/3").
ccc = Process connections, any three letter / number combination representing standard industrial process connections.
d= Output and Operation:
A,B: (4..20 mA HART with/without display VU331),
C,D: (Profibus PA with/without display VU331),
E,F: (Foundation Fieldbus with/without display VU331),
K: (4..20 mA HART prepared for FHX40),
L: (Profibus PA prepared for display FHX40),
M: (Foundation Fieldbus prepared for display FHX40), or
x: (special version not relevant for safety e.g. software adjustment; any not used letter or number).
e = A, B or D.
g = Cable entry 1 (PG 13.5), 2 (M20x1.5), 3 (G1/2), 4 (NPT 1/2), 5 (M12 PA plug), 6 (7/8" FF plug) or x = special version.
h = Additional options not relevant to safety: A (basic configuration), D (increased dynamic), F (increased dynamic), S (marine approval not verified by FM), or Y (special version, not safety relevant: e.g. multiple combinations between "k" and "l"; siliconfree version; enclosure with special varnish; polished surfaces or equivalent, material certificates acc. customer requirements e.g. NACE MR0175, customer specific marking e.g. TAG no.)

FMR250-Sbcdeeefghi. Micropilot M Level Instrument.
IS/I,II,III/1/ABCDEFG/T* — 960006748, 960007254 and 960007257; I/0/AEx ia IIC T* — 960006748, 960007254 and 960007257; Entity, DIP/II/III/1/EFG/T* — 960006748, 960007254 and 960007257; Entity; NI/I/2/ABCD/T* — 960006748, 960007254 and 960007257; NIFW; Type 4X, Antenna Type 6P. * Refer to Control Drawing for Temperature Class.
Entity parameters:
For f = A, B, K and g = A, B: Vmax =30Vdc, Imax = 300mA, Pi = 1W, Ci = 13nF, Li = 0;
For f = C, D, L and g = A, B: Profibus PA (FISCO): Vmax = 17.5 Vdc, Imax = 500 mA, Pi = 5.5 W, Ci = 5nF,Li = 10 µH; or Vmax = 24 V, Imax = 250 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH.

For f = C, D and g = D: T12-OVP: Vmax = 30Vdc, Imax = 273mA, Pi =1W, Ci =13nF, Li =0
For f = C, D and g = D: Profibus PA (FISCO): Vmax = 17.5 Vdc, Imax = 273mA, Pi = 1.2 W, Ci = 5 nF,Li = 10 µH; Vmax = 24 V, Imax = 250 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH.
Nonincendive Field Wiring parameters:
For f = A, B, K and g = A, B: Vmax =30Vdc, Imax = not required, Pi = 1W, Ci = 13nF, Li = 0;
For f = A, B and g = D: T12-OVP: Vmax = 30Vdc, Imax = not required, Pi =1W, Ci =13nF, Li =0
For f = C, D, L and g = A, B: Vmax =33Vdc, Imax = not required, Ci = 5nF, Li = 10 µH;
For f = C, D and g = D: T12-OVP: Vmax = 33Vdc, Imax = not required, Ci =5nF, Li = 10 µH
b = Antenna
D = Horn 80 mm / 3", increased near distance dynamics
E = Horn 100 mm / 4", increased near distance dynamics
G = Parabolic 200 mm / 8", increased near distance dynamics
H = Parabolic 250 mm / 10", increased near distance dynamics
4 = Horn 80 mm / 3"
5 = Horn 00 mm / 4"
6 = Parabolic 200 mm / 8"

9 = Special version (dimension of horn or parabolic reflector)
c = Antenna, sealing/ temperature: any single letter or number.
d = Antenna extension: any single letter or number.
eee = Process connection, any three letter /number combination representing standard industrial process connections.
f = Output and Operation:
A, (4-20mA HART with display VU331).
B, (4-20mA HART without display VU331),
K, (4-20mA HART, prepared for FHX40),
C,D, (Profibus PA with/without display VU331),
L, (Profibus PA prepared for display FHX40),
E, Foundation Fieldbus FF (FISCO) with display VU331)
F, Foundation Fieldbus FF (FISCO) without display VU331)
M, Foundation Fieldbus FF(FISCO), prepared for FHX40
g = Housing: A, B, or D.
h = Cable entry: 1 (PG 13.5), 2 (M20x1.5), 3 (G ½"), 4 (NPT ½"), 5 (M12 PA plug), 6 (7/8" FF plug).
i = Additional options not relevant to safety: K, M, Y.

FMR255-Sbcccdefg. Micropilot M Level Instrument.
IS/I,II,III/1/ABCDEFG/T* — 960006748, 960007254 and 960007257; I/0/AEx ia IIC T* — 960006748, 960007254 and 960007257; Entity, DIP/II/III/1/EFG/T* — 960006748, 960007254 and 960007257; Entity; NI/I/2/ABCD/T* — 960006748, 960007254 and 960007257; NIFW; Type 4X, Antenna Type 6P. * Refer to Control Drawing for Temperature Class.
Entity parameters:
For d = A, B, K and e = A, B: Vmax =30Vdc, Imax = 300mA, Pi = 1W, Ci = 13nF, Li = 0;
For d = C, D, L and e = A; B: Profibus PA (FISCO): Vmax = 17.5 Vdc, Imax = 500 mA, Pi = 5.5 W, Ci = 5 nF, Li = 10 µH; or Vmax = 24 V, Imax = 250 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH.
For d = A, B and e = D: T12-OVP: Vmax = 30Vdc, Imax = 273mA, Pi =1W, Ci =13nF, Li =0
For d = C, D and e = D: Profibus PA (FISCO): Vmax = 17.5 Vdc, Imax = 273mA, Pi = 1.2 W, Ci = 5 nF,Li = 10 µH; Vmax = 24 V, Imax = 250 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH.
Nonincendive Field Wiring parameters:
For d = A, B, K and e = A, B: Vmax =30Vdc, Imax = not required, Ci = 13nF, Li = 0;
For d = A, B and e = D: T12-OVP: Vmax = 30Vdc, Imax = not required, Ci =13nF, Li =0
For d = C, D, L and e = A, B: Vmax =33Vdc, Imax = not required, Ci =5nF, Li = 10 µH;
For d = C, D and e = D: T12-OVP: Vmax = 33Vdc, Imax = not required, Ci =5nF, Li = 10 µH

b = Antenna size: any single letter or number.
ccc = Process connection, any three letter /number combination representing standard industrial process connections.
d = Output and Operation:
A, (4-20mA HART with display VU331).
B, (4-20mA HART without display VU331),
K, (4-20mA HART, prepared for FHX40),
C,D, (Profibus PA with/without display VU331),
L, (Profibus PA prepared for display FHX40),
E, Foundation Fieldbus FF (FISCO) with display VU331)
F, Foundation Fieldbus FF (FISCO) without display VU331)
M, Foundation Fieldbus FF(FISCO), prepared for FHX40
e = Housing: A, B, or D.
f = Cable entry: 1 (PG 13.5), 2 (M20x1.5), 3 (G ½"), 4 (NPT ½"), 5 (M12 PA plug), 6 (7/8" FF plug) or x.
g = Additional options not relevant to safety: A, B, N, S (not evaluated by FM), Y.

FMR230-TbcdddeCgh. Micropilot M Level Instrument
XP-IS/I/1/ABCD/T*;XP/I/1/IIC/T*; Antenna I/0/AEx ia IIC T6; NI/I/2/ABCD/T*;
DIP/I/II/III/1/EFG/T*;Type 4X, Antenna 6P.
*Refer to Control Drawing for Temperature Class.

b = Antenna size; any single letter or number.
c = Type of sealing, temperature; any single letter or number (e.g.: E, V, K, D, F, G, H, L or M).

ddd = Process connections, any three letter / number combination representing standard industrial process connections.
e = Output and Operation:

A,B: (4..20 mA HART with/without display VU331),
C,D: (Profibus PA with/without display VU331),
E,F: (Foundation Fieldbus with/without display VU331),
K: (4..20 mA HART prepared for FHX40),
L: (Profibus PA prepared for display FHX40),
M: (Foundation Fieldbus prepared for display FHX40), or
x: (special version not relevant for safety e.g. software adjustment; any not used letter or number).

g = Cable entry 2 (M20x1.5), 3 (G 1/2), 4 (NPT 1/2) or x = special version.
h = Additional options not relevant to safety; any single letter or number.

FMR231-TbcccdCfgh. Micropilot M Level Instrument

XP-IS/I/1/ABCD/T*;XP/I/1/IIC/T*; Antenna I/0/AEx ia IIC T6; NI/I/2/ABCD/T*;
DIP/I/II/III/1/EFG/T*;Type 4X, Antenna 6P.
*Refer to Control Drawing for Temperature Class.

b = Type of antenna, gasket, inactive length; A, B (PPS antenna, alternate length), E, F (PTFE antenna, alternate length), H, J, (PTFE antenna, antistatic, alternate length) or x (special, e.g.: length).
ccc = Process connections, any three letter / number combination representing standard industrial process connections.
d= Output and Operation:

A,B: (4..20 mA HART with/without display VU331),
C,D: (Profibus PA with/without display VU331),
E,F: (Foundation Fieldbus with/without display VU331),
K: (4..20 mA HART prepared for FHX40),
L: (Profibus PA prepared for display FHX40),
M: (Foundation Fieldbus prepared for display FHX40), or
x: (special version not relevant for safety e.g. software adjustment; any not used letter or number).

f = Cable entry 2 (M20x1.5), 3 (G 1/2), 4 (NPT 1/2) or x = special version.
g = Gas tight feed through A (without) or C (gas tight feed through).
h = Additional options not relevant to safety; any single letter or number.

FMR232-TbcccdCfg. Micropilot M Level Instrument

XP-IS/I/1/ABCD/T*;XP/I/1/IIC/T*; Antenna I/0/AEx ia IIC T6; NI/I/2/ABCD/T*;
DIP/I/II/III/1/EFG/T*;Type 4X, Antenna 6P.
*Refer to Control Drawing for Temperature Class.

b= Antenna type; any single letter or number.
ccc = Process connections, any three letter / number combination representing standard industrial process connections.
d= Output and Operation:

A,B: (4..20 mA HART with/without display VU331),
C,D: (Profibus PA with/without display VU331),
E,F: (Foundation Fieldbus with/without display VU331),
K: (4..20 mA HART prepared for FHX40),
L: (Profibus PA prepared for display FHX40),

M: (Foundation Fieldbus prepared for display FHX40), or
x: (special version not relevant for safety e.g. software adjustment; any not used letter or number).
f = Cable entry 2 (M20x1.5), 3 (G 1/2), 4 (NPT 1/2) or x = special version.
g = Additional options not relevant to safety; any single letter or number.

FMR233-TbcccdCfg. Micropilot M Level Instrument
XP-IS/I/1/ABCD/T*;XP/I/1/IIC/T*; Antenna I/0/AEx ia IIC T6; NI/I/2/ABCD/T*;
DIP/I/II/III/1/EFG/T*;Type 4X, Antenna 6P.
*Refer to Control Drawing for Temperature Class.

b= Antenna type; any single letter or number.
ccc = Process connections, any three letter / number combination representing standard industrial process connections.
d= Output and Operation:
A,B: (4..20 mA HART with/without display VU331),
C,D: (Profibus PA with/without display VU331),
E,F: (Foundation Fieldbus with/without display VU331),
K: (4..20 mA HART prepared for FHX40),
L: (Profibus PA prepared for display FHX40),
M: (Foundation Fieldbus prepared for display FHX40), or
x: (special version not relevant for safety e.g. software adjustment; any not used letter or number).
f = Cable entry 2 (M20x1.5), 3 (G 1/2), 4 (NPT 1/2) or x = special version.
g = Additional options not relevant to safety; any single letter or number.

FMR240-TbcdeeefChi. Micropilot M Level Instrument
XP-IS/I/1/ABCD/T*;XP/I/1/IIC/T*; Antenna I/0/AEx ia IIC T6; NI/I/2/ABCD/T*;
DIP/I/II/III/1/EFG/T*;Type 4X, Antenna 6P.
*Refer to Control Drawing for Temperature Class.

b= Antenna size; any single letter or number.
and 7 = mm Wave Guide Antenna
8 = inch Wave Guide Antenna
E = 40mm/ 1-1/2"
F = 50mm/ 2"
G = 80mm/ 3"
H = 100mm/ 4"
c = Type of antenna, sealing, temperature, any single letter or number.
Standard: up to 150°C
with Wave guide: up to 200°C
d= Antenna extension; any single letter or number.
eee = Process connections, any three letter / number combination representing standard industrial process connections.
f = Output and Operation:
A,B: (4..20 mA HART with/without display VU331),
C,D: (Profibus PA with/without display VU331),
E,F: (Foundation Fieldbus with/without display VU331),
K: (4..20 mA HART prepared for FHX40),
L: (Profibus PA prepared for display FHX40),
M: (Foundation Fieldbus prepared for display FHX40), or
x: (special version not relevant for safety e.g. software adjustment; any not used letter or number).
h = Cable entry 2 (M20x1.5), 3 (G 1/2), 4 (NPT 1/2) or x = special version.
i = Additional options not relevant to safety:A (basic configuration), B (material certificate), N (material certificate), S (marine approval not verified by FM), D (increased dynamic), E (increased dynamic), F (increased dynamic), G (increased dynamic), T (NUS marine not verified by FM), U (NUS marine not verified by FM), V (NUS marine not

verified by FM) or Y (special version, not safety relevant: e.g. multiple combinations between "k" and "l"; siliconfree version; enclosure with special varnish; polished surfaces or equivalent, material certificates acc. customer requirements e.g. NACE MR0175, customer specific marking e.g. TAG no.)

FMR244-TbcdddeCgh. Micropilot M Level Instrument

XP-IS/I/1/ABCD/T*;XP/I/1/IIC/T*; Antenna I/0/AEx ia IIC T6; NI/I/2/ABCD/T*;
DIP/II/III/1/EFG/T*;Type 4X, Antenna 6P.
*Refer to Control Drawing for Temperature Class.

b = Antenna size; any single letter or number.
c = Type of antenna, sealing, temperature, any single letter or number.
ddd = Process connections, any three letter / number combination representing standard industrial process connections.
e = Output and Operation:
A,B: (4..20 mA HART with/without display VU331),
C,D: (Profibus PA with/without display VU331),
E,F: (Foundation Fieldbus with/without display VU331),
K: (4..20 mA HART prepared for FHX40),
L: (Profibus PA prepared for display FHX40),
M: (Foundation Fieldbus prepared for display FHX40), or

x: (special version not relevant for safety e.g. software adjustment; any not used letter or number).
g = Cable entry 2 (M20x1.5), 3 (G 1/2), 4 (NPT 1/2) or x = special version.
h = Additional options not relevant to safety: A (basic configuration), S (marine approval not verified by FM), D (increased dynamic), F (increased dynamic), or Y (special version, not safety relevant: e.g. multiple combinations between "k" and "l"; siliconfree version; enclosure with special varnish; polished surfaces or equivalent, material certificates acc. customer requirements e.g. NACE MR0175, customer specific marking e.g. TAG no.)

FMR245-TbcccdCfg. Micropilot M Level Instrument

XP-IS/I/1/ABCD/T*;XP/I/1/IIC/T*; Antenna I/0/AEx ia IIC T6; NI/I/2/ABCD/T*;
DIP/II/III/1/EFG/T*;Type 4X, Antenna 6P.
*Refer to Control Drawing for Temperature Class.
b = Antenna size; any single letter or number (e.g., 50mm/2", 80mm/3").
ccc = Process connections, any three letter / number combination representing standard industrial process connections.
d = Output and Operation:
A,B: (4..20 mA HART with/without display VU331),
C,D: (Profibus PA with/without display VU331),
E,F: (Foundation Fieldbus with/without display VU331),
K: (4..20 mA HART prepared for FHX40),
L: (Profibus PA prepared for display FHX40),
M: (Foundation Fieldbus prepared for display FHX40), or
x: (special version not relevant for safety e.g. software adjustment; any not used letter or number).
f = Cable entry 2 (M20x1.5), 3 (G 1/2), 4 (NPT 1/2) or x = special version.
g = Additional options not relevant to safety: A (basic configuration), D (increased dynamic), F (increased dynamic), S (marine approval not verified by FM), or Y (special version, not safety relevant: e.g. multiple combinations between "k" and "l"; siliconfree version; enclosure with special varnish; polished surfaces or equivalent, material certificates acc. customer requirements e.g. NACE MR0175, customer specific marking e.g. TAG no.)

FMR250-TbcdeeefChi. Micropilot M Level Instrument.

XP-IS/I/1/ABCD/T*; XP/I/1/IIC/T*; Antenna I/0/AEx ia IIC T6 - 960006749; NI/I/2/ABCD/T* ; DIP/II/III/1/EFG/T*; Type 4X, Antenna Type 6P.
* Refer to Control Drawing for Temperature Class.
b = Antenna
D = Horn 80 mm / 3", increased near distance dynamics

E = Horn 100 mm / 4", increased near distance dynamics
G = Parabolic 200 mm / 8", increased near distance dynamics
H = Parabolic 250 mm / 10", increased near distance dynamics
4 = Horn 80 mm / 3"
5 = Horn 00 mm / 4"
6 = Parabolic 200 mm / 8"
9 = Special version (dimension of horn or parabolic reflector)

c = Antenna, sealing/ temperature: any single letter or number.
d = Antenna extension: any single letter or number.
eee = Process connection, any three letter /number combination representing standard industrial process connections.
f = Output and Operation:
A, (4-20mA HART with display VU331).
B, (4-20mA HART without display VU331),
K (4-20mA HART, prepared for FHX40), or
C,D, (Profibus PA with/without display VU331),
L, (Profibus PA prepared for display FHX40).
E, Foundation Fieldbus FF (FISCO) with display VU331)
F, Foundation Fieldbus FF (FISCO) without display VU331)
M, Foundation Fieldbus FF(FISCO), prepared for FHX40
h = Cable entry: 2 (M20x1.5), 3 (G ½"), 4 (NPT ½").
i = Additional options not relevant to safety: K, M, Y.

FMR255-TbcccdCfg. Micropilot M Level Instrument.
XP-IS/I/1/ABCD/T*; XP/I/1/IIC/T*; Antenna I/0/AEx ia IIC T6 - 960006749; NI/I/2/ABCD/T* DIP/II/III/1/EFG/T*; Type 4X, Antenna Type 6P.
* Refer to Control Drawing for Temperature Class.
b = Antenna size: any single letter or number.
ccc = Process connection, any three letter /number combination representing standard industrial process connections.
d = Output and Operation:
A, (4-20mA HART with display VU331).
B, (4-20mA HART without display VU331),
K (4-20mA HART, prepared for FHX40 or),
C,D, (Profibus PA with/without display VU331),
L, (Profibus PA prepared for display FHX40)
E, Foundation Fieldbus FF (FISCO) with display VU331)
F, Foundation Fieldbus FF (FISCO) without display VU331)
M, Foundation Fieldbus FF(FISCO), prepared for FHX40
f = Cable entry: 2 (M20x1.5), 3 (G ½"), 4 (NPT ½"),
g = Additional options not relevant to safety: A, B, N, S (not evaluated by FM), Y.

Special conditions of use:
1. Refer Control Drawing for installation instructions and table of Temperature Identification Numbers which apply to specific models, ambient temperatures (Ta), and process medium temperatures (Tmed)

Equipment Ratings:

Intrinsically safe apparatus for Class I,II and III Division 1, Groups A, B, C, D, E, F, and G; alternatively Class I, Zone 0, GP IIC in accordance with entity requirements when installed per Control Drawings 960402-1065, 960402-1066, 960402-1087, 960402-1069, 960402-1070, 960402-1071, 960402-1072, 960402-1073, 960402-1074, 960006748, 960006748, 960007254 and 960007257; dust-ignitionproof for Class II, III, Division 1, Groups E, F and G;
non-incendive for Class I, Division 2, Groups A, B, C and D hazardous (classified) outdoor (Enclosure Type 4X; Antenna Type 6P) locations.

Explosionproof with intrinsically safe antenna for Class I, Division 1, Group A, B, C, D; alternatively for use in Class I, Zone 1, Group IIC; dust-ignitionproof for Class II, III, Division 1, Groups E, F and G; nonincendive for Class I, Division 2; Groups A, B, C and D hazardous (classified) outdoor (Enclosure Type 4X, AntennaType 6P) locations when installed in accordance with Control Drawing 960402-1067 and 960006749.

FM Approvals®
Member of the FM Global Group

FM Approved for:

Endress + Hauser GmbH + Co. KG,
Hauptstrasse 1,
D-79689 Maulburg, Germany

FM Approvals®

Member of the FM Global Group

This certifies that the equipment described has been found to comply with the following Approval Standards and other documents:

Class 3600	1998
Class 3810	1989
Class 3611	2004
Class 3610	1999
Class 3615	1989
ANSI/ NEMA-250	1991

Original Project ID: 3008903 Approval Granted: January 30, 2001

Subsequent Revision Reports / Date Approval Amended

Report Number	Date	Report Number	Date
3013157	February 11, 2002		
3016004	June 17, 2003		
3018045	July 24, 2003		
040206	February 26, 2004		
3021674	November 15, 2004		
050112	February 25, 2005		
050725	October 5, 2005		
3028055	July 6, 2007		
3032197	March 20, 2008		
090518	June 11, 2009		

FM Approvals LLC

J. E. Marquedant
Group Manager, Electrical

11 June 2009
Date