



Member of the FM Global Group

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# CERTIFICATE OF COMPLIANCE

## ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

### ***LUC-Ma-bcd-ef-F1. Level Instrument.***

IS / I,II,III / 1 / ABCDEFG / T\*; I / 0 AEx ia IIC T\*; – 16-519FM-12, Entity, – 16-519FM-12, FISCO;  
Type 4X, 6P, IP68

DIP / II,III / 1 / EFG / T\*; Type 4X, 6P, IP68

NI / I / 2 / ABCD / T\*; NI / I / 2 / IIC / T\*; Type 4X, 6P, IP68

#### *Special conditions of use:*

1. For installation instructions and the Temperature Class(\*) which applies to specific models, ambient temperatures (Ta), and process medium temperatures (Tmed), refer to control drawing 16-519FM-12.

#### Entity parameters:

For e = IH (2 wire 4-20 mA HART loop): VMax = 30 V dc, IMax = 300 mA, Pi = 1 W, Ci = 13 nF, Li = 0;

For e = PA (Profibus PA, IS version), FF (Foundation Fieldbus, IS version):  
VMax = 17.5 V dc, IMax = 500 mA, Pi = 5.5 W, Ci = 5 nF, Li = 10 µH; or  
VMax = 24 V dc, IMax = 250 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH;

a = 10 or 20

b = Process connection:

For a = 10: G5 (1 1/2" NPT) or N5 (G 1 1/2");

For a = 20: G6 (NPT 2") or N6 (G 2")

c = Enclosure: A1 (F12 coated aluminum housing) or S\* (F23 stainless steel SS308 housing)

d = Cable entry: 2 (M20 × 1.5), 3 (G 1/2"), 4 (NPT 1/2"), 5 (M12 Profibus PA plug), or  
6 ( 7/8" FF plug)

e = Power Supply Communication:

IH (2 wire 4-20 mA HART loop), PA (2 wire Profibus PA (FISCO or Entity)), FF (2 wire Foundation Fieldbus (FISCO or Entity))

f = Display: B (without display), D (with display VU331), A (prepared for connection of external display, e.g.: LUC-Z40-Ex1\*).

### ***LUC-Ma-bA4c-de-F1. Level Instrument.***

IS / I,II,III / 1 / ABCDEFG / T\*; I / 0 AEx ia IIC T\*; – 16-519FM-12, Entity, – 16-519FM-12, FISCO;  
Type 4X, 6P, IP68

DIP / II,III / 1 / EFG / T\*; Type 4X, 6P, IP68

NI / I / 2 / ABCD / T\*; NI / I / 2 / IIC / T\*; Type 4X, 6P, IP68

#### *Special conditions of use:*

1. For installation instructions and the Temperature Class(\*) which applies to specific models, ambient temperatures (Ta), and process medium temperatures (Tmed), refer to control

- drawing 16-519FM-12.
- Entity parameters:
- For d = IH (2 wire 4-20 mA HART loop): VMax = 30 V dc, IMax = 300 mA, Pi = 1 W, Ci = 13 nF, Li = 0;
- For d = PA (Profibus PA, IS version), FF (Foundation Fieldbus, IS version):  
 VMax = 17.5 V dc, IMax = 273 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH; or  
 VMax = 24 V dc, IMax = 250 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH;
- a = 10 or 20
- b = Process connection:  
 For a = 10: G5 (1 1/2" NPT) or N5 (G 1 1/2");  
 For a = 20: G6 (NPT 2") or N6 (G 2")
- c = Cable entry: 2 (M20 × 1.5), 3 (G 1/2"), 4 (NPT 1/2"), 5 (M12 Profibus PA plug), or 6 (7/8" FF plug)
- d = Power Supply Communication:  
 IH (2 wire 4-20 mA HART loop), PA (2 wire Profibus PA (FISCO or Entity)), FF (2 wire Foundation Fieldbus (FISCO or Entity))
- e = Display: B (without display), D (with display VU331), A (prepared for connection of external display, e.g.: LUC-Z40-Ex1\*).

**LUC-M40-abc-def-F1 Level Instrument.**

IS / I,II,III / 1 / ABCDEFG / T\*; I / 0 AEx ia IIC T\*; – 16519FM-12, Entity, – 16519FM-12, FISCO; Type 4X, 6P, IP68  
 DIP / II,III / 1 / EFG / T\*; Type 4X, 6P, IP68  
 NI / I / 2 / ABCD / T\*; – 16519FM-12, NIFW, – 16519FM-12 FNICO; Type 4X, 6P, IP68  
 NI / I / 2 / IIC / T\*; 16519FM-12, NIFW, – 16519FM-12, FNICO; Type 4X, 6P, IP68

*Special conditions of use:*

- For installation instructions and the Temperature Class(\*) which applies to specific models, ambient temperatures (Ta), and process medium temperatures (Tmed), refer to control drawing 16519FM-12

Entity and Nonincendive Field Wiring parameters:

For d = IH (4-20 mA HART, Entity): VMax = 30 V dc, IMax = 300 mA, Pi = 1 W, Ci = 13 nF, Li = 0;  
 For d = IH (4-20 mA HART, NIFW): VMax = 30 Vdc, Pi = 1 W, Ci = 13 nF, Li = 0;  
 For d = PA (Profibus PA, FISCO), FF (Foundation Fieldbus, FISCO):  
 VMax = 17.5 V dc, IMax = 500 mA, Pi = 5.5 W, Ci = 5 nF, Li = 10 µH; or  
 VMax = 24 V dc, IMax = 250 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH;  
 For d = PA (Profibus PA, FNICO), FF (Foundation Fieldbus, FNICO):  
 VMax = 17.5 V dc, Pi = 5.5 W, Ci = 5 nF, Li = 10 µH; or  
 VMax = 24 V dc, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH;

- a = Process connection: G (DN80 / ANSI 3" / JIS10K80, PP universal flange),  
 Q (DN80 / ANSI 3" / JIS10K80, PVDF universal flange),  
 S (DN80 / ANSI 3" / JIS10K80, 316L universal flange),  
 T (DN100 / 4" / JIS16K100, PP universal flange),  
 U (DN100 / 4" / JIS16K100, PVDF universal flange),  
 V (DN100 / 4" / JIS16K100, 316L universal flange),  
 M (Mounting bracket FAU20), or  
 \* (Special Version)
- b = Enclosure: A1 (F12 coated aluminum housing) or S\* (F23 stainless steel SS308 housing)
- c = Cable entry 2 (M20 × 1.5), 3 (G 1/2"), 4 (NPT 1/2"), 5 (M12 Profibus PA plug), or 6 (7/8" Foundation Fieldbus plug)
- d = Power Supply Communication:  
 IH (2 wire 4-20 mA HART loop), PA (2 wire Profibus PA (FISCO or Entity)), FF (2 wire Foundation Fieldbus (FISCO or Entity))
- e = Display: B (without display), D (with display VU331), A (prepared for connection of external display, e.g.: LUC-Z40-Ex1\*).
- f = Sealing of process connection: 2 (VITON Flat sealing), 3 (EPM flat sealing) or \* (special version, not relevant for safety).

**LUC-M40-aA4c-def-F1 Level Instrument.**

IS / I,II,III / 1 / ABCDEFG / T\*; I / 0 AEx ia IIC T\*; – 16519FM-12, Entity, – 16519FM-12, FISCO;  
Type 4X, 6P, IP68

DIP / II,III / 1 / EFG / T\*; Type 4X, 6P, IP68

NI / I / 2 / ABCD / T\*; – 16519FM-12, NIFW, – 16519FM-12, FNICO; Type 4X, 6P, IP68

NI / I / 2 / IIC / T\*; – 16519FM-12, NIFW, – 16519FM-12, FNICO; Type 4X, 6P, IP68

*Special conditions of use:*

1. For installation instructions and the Temperature Class(\*) which applies to specific models, ambient temperatures (Ta), and process medium temperatures (Tmed), refer to control drawing 16519FM-12

Entity and Nonincendive Field Wiring parameters:

For c = IH (4-20 mA HART, Entity): VMax = 30 V dc, IMax = 273 mA, Pi = 1 W, Ci = 13 nF, Li = 0;

For c = IH (4-20 mA HART, NIFW): VMax = 30 V dc, Pi = 1 W, Ci = 13 nF, Li = 0;

For c = D (Profibus PA, FISCO), F (Foundation Fieldbus, FISCO):

VMax = 17.5 V dc, IMax = 273 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH; or

VMax = 24 V dc, IMax = 250 mA, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH;

For c = PA (Profibus PA, FNICO), FF (Foundation Fieldbus, FNICO):

VMax = 17.5 V dc, Pi = 1.2 W, Ci = 5 nF, Li = 10 µH; or

VMax = 24 V dc, Pi = 1.2 W, Ci = 5 nF, Li = 10 µHb

a = Process connection: G (DN80 / ANSI 3" / JIS10K80, PP universal flange),  
Q (DN80 / ANSI 3" / JIS10K80, PVDF universal flange),  
S (DN80 / ANSI 3" / JIS10K80, 316L universal flange),  
T (DN100 / 4" / JIS16K100, PP universal flange),  
U (DN100 / 4" / JIS16K100, PVDF universal flange),  
V (DN100 / 4" / JIS16K100, 316L universal flange),  
M (Mounting bracket FAU20), or  
\* (Special Version)

b = Cable entry 2 (M20 × 1.5), 3 (G ½"), 4 (NPT ½"), 5 (M12 Profibus PA plug), or 6 (7 / 8" Foundation Fieldbus plug)

c = Power Supply Communication:

IH (2 wire 4-20 mA HART loop), PA (2 wire Profibus PA (FISCO or Entity)), FF (2 wire Foundation Fieldbus (FISCO or Entity))

d = Display: B (without display), D (with display VU331), A (prepared for connection of external display, e.g.: LUC-Z40-Ex1\*).

e = Sealing of process connection: 2 (VITON Flat sealing), 3 (EPM flat sealing) or \* (special version, not relevant for safety).

Intrinsically safe apparatus for Class I, II and III, Division 1, Groups A, B, C, D, E, F and G; Class I, Zone 0, AEx ia IIC in accordance with FM Control Drawing 16-519FM-12; 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; Class I, Zone 2 IIC hazardous (classified) outdoor (Type 4X, 6P, IP68) locations (temperature codes per applicable control drawings).

**And**

**LUC-Ma-bA2c-deF2 Level Instrument.**

XP-IS / I / 1 / ABCD / T\*; Transmitter I / 1 / AEx d ia IIC T\*; Sensor IS / I / 0 AEx ia IIC T\*; – 16-519FM-12 sheet 4; Type 4X, 6P, IP68

DIP / II,III / 1 / EFG / T\*; Type 4X, 6P, IP68

NI / I / 2 / ABCD / T\*; NI / I / 2 / IIC / T\*; Type 4X, 6P, IP68

*Special conditions of use:*

1. For installation instructions and the Temperature Class(\*) which applies to specific models, ambient temperatures (Ta), and process medium temperatures (Tmed), refer to control drawings 16-519FM-12 sheet 4

a = 10 or 20

b = Process connection:

- For a = 10: G5 (1 1/2" NPT) or N5 (G 1 1/2");  
 For a = 20: G6 (NPT 2") or N6 (G 2")  
 c = Cable entry: 2 (M20 × 1.5), 3 (G 1/2"), 4 (NPT 1/2")  
 d = Power Supply Communication:  
 IH (2 wire 4-20 mA HART loop), PA (2 wire Profibus PA), or FF (2 wire Foundation Fieldbus)  
 e = Display: B (without display), D (with display VU33),  
 A (prepared for connection of external display, e.g.: LUC-Z40-Ex1\*).

**LUC-M40-aA2c-def-F2 Level Instrument.**

XP-IS / I / 1 / ABCD / T\*; Transmitter I / 1 / AEx d ia IIC T\*; Sensor IS / I / 0 AEx ia IIC T\*; – 16-519FM-12; Type 4X, 6P, IP68

DIP / II,III / 1 / EFG / T\*; Type 4X, 6P, IP68

NI / I / 2 / ABCD / T\*– 16-519FM-12; Type 4X, 6P, IP68

NI / I / 2 / IIC / T\*– 16-519FM-12; Type 4X, 6P, IP68

*Special conditions of use:*

- For installation instructions and the Temperature Class(\*) which applies to specific models, ambient temperatures (Ta), and process medium temperatures (Tmed), refer to control drawing 16-519FM-12

a = Process connection: G (DN80 / ANSI 3" / JIS10K80, PP universal flange),  
 Q (DN80 / ANSI 3" / JIS10K80, PVDF universal flange),  
 S (DN80 / ANSI 3" / JIS10K80, 316L universal flange),  
 T (DN100 / 4" / JIS16K100, PP universal flange),  
 U (DN100 / 4" / JIS16K100, PVDF universal flange),  
 V (DN100 / 4" / JIS16K100, 316L universal flange),  
 M (Mounting bracket FAU20), or  
 \* (Special Version)

c = Cable entry: 2 (M20 × 1.5), or 4 (NPT 1/2")

d = Power Supply Communication:

IH (2 wire 4-20 mA HART loop), PA (2 wire Profibus PA), or FF (2 wire Foundation Fieldbus)

e = Display: B (without display), D (with display VU33), A (prepared for connection of external display, e.g.: LUC-Z40-Ex1\*).

f = Sealing of process connection: 2 (VITON Flat sealing), 3 (EPM flat sealing) or \* (special version, not relevant for safety).

**Equipment Ratings:**

Explosionproof apparatus with intrinsically safe sensor; transmitter and sensor for Class I, Division 1, Groups A, B, C and D; transmitter for Class I, Zone 1, AEx d ia IIC; sensor for Class I, Zone 0 AEx ia IIC when installed per FM Control Drawing 16-519FM-12; Dust ignitionproof for Class II, Division 1, Groups E, F and G; Class III; nonincendive for Class I, Division 2, Groups A, B, C and D; Class I, Zone 2 IIC hazardous (classified) outdoor (Type 4X, 6P, IP68) locations

**And**

**LUC-M30-abc-de-FM Level Instrument.**

DIP / II,III / 1 / EFG / T5 TA = 60 °C; T4A TA = 80 °C; Type 4X, 6P, IP68

NI / I / 2 / ABCD / T5 TA = 60 °C; T4A TA = 80 °C; Type 4X, 6P, IP68

a = Process connection:

FA (flange DN 100 / ANSI 4" / JIS 16K100, PP, universal slip on flange),  
 FS (flange DN 100 / ANSI 4" / JIS 16K100, 1.4571, universal slip on flange),  
 FK (without flange or mounting device)  
 FM (with mounting bracket)

b = Enclosure: A1 (F12 coated aluminum housing) or S1 (F23 stainless steel SS308 housing)

c = Cable entry 2 (M20 × 1.5), 3 (G 1/2"), 4 (NPT 1/2"), 5 (M12 Profibus PA plug), or 6 (7/8" Foundation Fieldbus plug)

d = Power Supply Communication:



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PA (Profibus PA), FF (Foundation Fieldbus), AH (90-253 V ac, 4-20 mA HART), DH (10.5-32 V dc, 4-20 mA HART), or \* (4..20 mA Loop HART)

e = display: B (without display VU331), D (with display VU331), A (prepared for connection of external display, e.g.: LUC-Z40-Ex1\*)

### Equipment Ratings:

Dust ignitionproof apparatus for Class II, Division 1, Groups E, F and G; Class III; nonincendive for Class I, Division 2, Groups A, B, C and D; Class I, Zone 2 IIC hazardous (classified) outdoor (Type 4X, 6P, IP68) locations.

### FM Approved for:

Pepperl + Fuchs GmbH  
Mannheim, Germany

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

Class 3600	1998
Class 3610	1999
Class 3611	1999
Class 3615	1999
Class 3810	1989
including Supplement #1	1995
ANSI/NEMA-250	1991

Original Project ID: 3025694

Approval Granted: *March 24, 2006*

Subsequent Revision Reports / Date Approval Amended

Report Number	Date	Report Number	Date
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FM Approvals LLC

  
Robert L. Martell Jr.  
Assistant Vice President

*March 24, 2006*  
Date