FM Approvals
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CERTIFICATE OF COMPLIANCE

HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

I. Intrinsically Safe

Soliphant M, FTM50-abcdefghij. Level Switch
IS/I,II,III/1/ABCDEFG/T5 -50 ºC ≤ Ta ≤ +70 ºC – 960007248; Entity; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
NI/I/2/ABCD/T5 -50 ºC ≤ Ta ≤ +70 ºC – 960007248; NIFW; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
S/II,III/2/EFG/T5 -50 ºC ≤ Ta ≤ +70 ºC – 960007248; NIFW; Type 4X/6P*, IP66/IP67/IP68*; Single Seal

Entity & NIFW Parameters:

FEM55 insert		V_{max}	I_{max}	P_i	C_i	L_i
Terminals	Groups	(V)	(mA)	(W)	(nF)	(μH)
+ and -	A/B	36	100	1.0	0	0

Entity & NIFW Parameters:

FEM57 insert		V_{max}	I_{max}	P_i	C_i	L_i
Terminals	Groups	(V)	(mA)	(W)	(nF)	(μH)
+ and -	A/B	16.7	150	1.0	0	0

Entity & NIFW Parameters:

FEM58 insert		V_{max}	I_{max}	P_i	C_i	L_i
Terminals	Groups	(V)	(mA)	(mW)	(nF)	(μH)
+ and -	A/B	18	52	170	0	0

a = Certificate: F.
b = Process connection: any dual combinations of letter or numbers.
c = Material/Surface Refinement: A, B, C, 2, 5, 7 or 9.
d = Fork length, Bulk Density: A, K or Y.
e = Electronic insert: 5, 7 or 8.
f = Probe type: A, D, E, G, H or Y.
g = Enclosure: H*, Y (color option for F13, F17 or T13), 3, 5*, 6* or 7.
h = Cable entry: 2, 3, 4 or 7.

i = Additional options 1: A, G, R (SIL not evaluated by FM), S (SIL not evaluated by FM) or Y (switch delay).
j = Additional options 2: A, C, D, E, F, H, J, K or Y (NACE material certificate (not evaluated by FM); high temperature; temperature spacing).

Special Conditions of Use:
*1. *Enclosure Type 6P and IP68 is available only for Enclosure option type "H", "5" or "6".*

Soliphant M, FTM51-abcdefghij. Level Switch
IS/I,II,III/1/ABCDEFG/T5 -50 ºC ≤ Ta ≤ +70 ºC – 960007248; Entity; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
NI/I/2/ABCD/T5 -50 ºC ≤ Ta ≤ +70 ºC – 960007248; NIFW; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
S/II,III/2/EFG/T5 -50 ºC ≤ Ta ≤ +70 ºC – 960007248; NIFW; Type 4X/6P*, IP66/IP67/IP68*; Single Seal

Entity & NIFW Parameters:

FEM55 insert		V_{max}	I_{max}	P_i	C_i	L_i
Terminals	Groups	(V)	(mA)	(W)	(nF)	(μH)
+ and -	A/B	36	100	1.0	0	0

Entity & NIFW Parameters:

FEM57 insert		V_{max}	I_{max}	P_i	C_i	L_i
Terminals	Groups	(V)	(mA)	(W)	(nF)	(μH)
+ and -	A/B	16.7	150	1.0	0	0

Entity & NIFW Parameters:

FEM58 insert		V_{max}	I_{max}	P_i	C_i	L_i
Terminals	Groups	(V)	(mA)	(mW)	(nF)	(μH)
+ and -	A/B	18	52	170	0	0

a = Certificate: F.
b = Process connection: any dual combinations of letter or numbers.
c = Material/Surface Refinement: A, B, C, 2, 5, 7 or 9.
d = Overall length, Bulk Density: L, M, P, Q, S, T, U, V or Y.
e = Electronic insert: 5, 7 or 8.
f = Probe type: A, D, E, G, H or Y.
g = Enclosure: H*, Y (color option for F13, F17 or T13), 3, 5*, 6* or 7.
h = Cable entry: 2, 3, 4 or 7.
i = Additional options 1: A, G, R (SIL not evaluated by FM), S (SIL not evaluated by FM) or Y (switch delay).
j = Additional options 2: A, C, D, E, F, H, J, K or Y (NACE material certificate (not evaluated by FM); high temperature; temperature spacing).

Special Conditions of Use:
*1. *Enclosure Type 6P and IP68 is available only for Enclosure option type "H", "5" or "6".*

Soliphant M, FTM52-abcdefghij. Level Switch
IS/I,II,III/1/ABCDEFG/T5 -50 ºC ≤ Ta ≤ +70 ºC – 960007248; Entity; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
NI/I/2/ABCD/T5 -50 ºC ≤ Ta ≤ +70 ºC – 960007248; NIFW; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
S/II,III/2/EFG/T5 -50 ºC ≤ Ta ≤ +70 ºC – 960007248; NIFW; Type 4X/6P*, IP66/IP67/IP68*; Single Seal

Entity & NIFW Parameters:

FEM55 insert		V_{max}	I_{max}	P_i	C_i	L_i
Terminals	Groups	(V)	(mA)	(W)	(nF)	(μH)
+ and -	A/B	36	100	1.0	0	0

Entity & NIFW Parameters:

FEM57 insert		V_{max}	I_{max}	P_i	C_i	L_i
Terminals	Groups	(V)	(mA)	(W)	(nF)	(μH)
+ and -	A/B	16.7	150	1.0	0	0

Entity & NIFW Parameters:

FEM58 insert		V_{max}	I_{max}	P_i	C_i	L_i
Terminals	Groups	(V)	(mA)	(mW)	(nF)	(μH)
+ and -	A/B	18	52	170	0	0

a = Certificate: F.
b = Process connection: any dual combinations of letter or numbers.
c = Material/Surface Refinement: A, 2, 5 or 9.
d = Overall length, Bulk Density: B, C, F, G or Y.
e = Electronic insert: 5, 7 or 8.
f = Probe type: A, D, E, G, H or Y.
g = Enclosure: H*, Y (color option for F13, F17 or T13), 3, 5*, 6* or 7.
h = Cable entry: 2, 3, 4 or 7.
i = Additional options 1: A, G, R (SIL not evaluated by FM), S (SIL not evaluated by FM) or Y (switch delay).
j = Additional options 2: A, C or Y (NACE material certificate (not evaluated by FM); high temperature; temperature spacing).

Special Conditions of Use:
*1. *Enclosure Type 6P and IP68 is available only for Enclosure option type "H", "5" or "6".*

II. Explosionproof

Soliphant M, FTM50-abcdefghij. Level Switch
XP-AIS/I/1/ABCD/T4A -50 ºC ≤ Ta ≤ +70 ºC; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
DIP-AIS/II,III/1/EFG/T4A -50 ºC ≤ Ta ≤ +70 ºC; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
NI/I/2/ABCD/T4A -50 ºC ≤ Ta ≤ +70 ºC; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
S/II,III/2/EFG/T4A -50 ºC ≤ Ta ≤ +70 ºC; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
a = Certificate: H.
b = Process connection: any dual combinations of letter or numbers.
c = Material/Surface Refinement: A, B, C, 2, 5, 7 or 9.
d = Fork length, Bulk Density: A, K or Y.
e = Electronic insert: 1, 2, 4 or 5.
f = Probe type: A, D, E, G, H or Y.
g = Enclosure: H*, Y (color option for F13 or T13), 5* or 6*.
h = Cable entry: 2, 3, 4 or 7.
i = Additional options 1: A, G, R (SIL not evaluated by FM), S (SIL not evaluated by FM) or Y (switch delay).
j = Additional options 2: A, C, D, E, F, H, J, K or Y (NACE material certificate (not evaluated by FM); high temperature; temperature spacing).

Special Conditions of Use:
*1. *Enclosure Type 6P and IP68 is available only for Enclosure option type "H", "5" or "6".*

Soliphant M, FTM51-abcdefghij. Level Switch
XP-AIS/I/1/ABCD/T4A -50 ºC ≤ Ta ≤ +70 ºC; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
DIP-AIS/II,III/1/EFG/T4A -50 ºC ≤ Ta ≤ +70 ºC; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
NI/I/2/ABCD/T4A -50 ºC ≤ Ta ≤ +70 ºC; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
S/II,III/2/EFG/T4A -50 ºC ≤ Ta ≤ +70 ºC; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
a = Certificate: H.
b = Process connection: any dual combinations of letter or numbers.
c = Material/Surface Refinement: A, B, C, 2, 5, 7 or 9.
d = Overall length, Bulk Density: L, M, P, Q, S, T, U, V or Y.
e = Electronic insert: 1, 2, 4 or 5.
f = Probe type: A, D, E, G, H or Y.
g = Enclosure: H*, Y (color option for F13 or T13), 5* or 6*.
h = Cable entry: 2, 3, 4 or 7.
i = Additional options 1: A, G, R (SIL not evaluated by FM), S (SIL not evaluated by FM) or Y (switch delay).
j = Additional options 2: A, C, D, E, F, H, J, K or Y (NACE material certificate (not evaluated by FM); high temperature; temperature spacing).

Special Conditions of Use:
*1. *Enclosure Type 6P and IP68 is available only for Enclosure option type "H", "5" or "6".*

Soliphant M, FTM52-abcdefghij. Level Switch
XP-AIS/I/1/ABCD/T4A -50 ºC ≤ Ta ≤ +70 ºC; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
DIP-AIS/II,III/1/EFG/T4A -50 ºC ≤ Ta ≤ +70 ºC; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
NI/I/2/ABCD/T4A -50 ºC ≤ Ta ≤ +70 ºC; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
S/II,III/2/EFG/T4A -50 ºC ≤ Ta ≤ +70 ºC; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
a = Certificate: H.
b = Process connection: any dual combinations of letter or numbers.
c = Material/Surface Refinement: A, 2, 5 or 9.
d = Overall length, Bulk Density: B, C, F, G or Y.
e = Electronic insert: 1, 2, 4 or 5.
f = Probe type: A, D, E, G, H or Y.
g = Enclosure: H*, Y (color option for F13 or T13), 5* or 6*.
h = Cable entry: 2, 3, 4 or 7.
i = Additional options 1: A, G, R (SIL not evaluated by FM), S (SIL not evaluated by FM) or Y (switch delay).
j = Additional options 2: A, C or Y (NACE material certificate (not evaluated by FM); high temperature; temperature spacing).

Special Conditions of Use:
*1. *Enclosure Type 6P and IP68 is available only for Enclosure option type "H", "5" or "6".*

III. Dust-Ignitionproof

Soliphant M, FTM50-abcdefghij. Level Switch
DIP-AIS/II,III/1/EFG/T4A -50 ºC ≤ Ta ≤ +70 ºC; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
NI/I/2/ABCD/T4A -50 ºC ≤ Ta ≤ +70 ºC; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
S/II,III/2/EFG/T4A -50 ºC ≤ Ta ≤ +70 ºC; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
a = Certificate: D.
b = Process connection: any dual combinations of letter or numbers.
c = Material/Surface Refinement: A, B, C, 2, 5, 7 or 9.
d = Fork length, Bulk Density: A, K or Y.
e = Electronic insert: 1, 2, 4 or 5.
f = Probe type: A, D, E, G, H or Y.
g = Enclosure: H*, Y (color option for F13, F17 or T13), 3, 5*, 6* or 7.

h = Cable entry: 2, 3, 4 or 7.
i = Additional options 1: A, G, R (SIL not evaluated by FM), S (SIL not evaluated by FM) or Y (switch delay).
j = Additional options 2: A, C, D, E, F, H, J, K or Y (NACE material certificate (not evaluated by FM); high temperature; temperature spacing).

Special Conditions of Use:
*1. *Enclosure Type 6P and IP68 is available only for Enclosure option type "H", "5" or "6".*

Soliphant M, FTM51-abcdefghij. Level Switch
DIP-AIS/II,III/1/EFG/T4A -50 ºC ≤ Ta ≤ +70 ºC; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
NI/I/2/ABCD/T4A -50 ºC ≤ Ta ≤ +70 ºC; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
S/II,III/2/EFG/T4A -50 ºC ≤ Ta ≤ +70 ºC; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
a = Certificate: D.
b = Process connection: any dual combinations of letter or numbers.
c = Material/Surface Refinement: A, B, C, 2, 5, 7 or 9.
d = Overall length, Bulk Density: L, M, P, Q, S, T, U, V or Y.
e = Electronic insert: 1, 2, 4 or 5.
f = Probe type: A, D, E, G, H or Y.
g = Enclosure: H*, Y (color option for F13, F17 or T13), 3, 5*, 6* or 7.
h = Cable entry: 2, 3, 4 or 7.
i = Additional options 1: A, G, R (SIL not evaluated by FM), S (SIL not evaluated by FM) or Y (switch delay).
j = Additional options 2: A, C, D, E, F, H, J, K or Y (NACE material certificate (not evaluated by FM); high temperature; temperature spacing).

Special Conditions of Use:
*1. *Enclosure Type 6P and IP68 is available only for Enclosure option type "H", "5" or "6".*

Soliphant M, FTM52-abcdefghij. Level Switch
DIP-AIS/II,III/1/EFG/T4A -50 ºC ≤ Ta ≤ +70 ºC; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
NI/I/2/ABCD/T4A -50 ºC ≤ Ta ≤ +70 ºC; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
S/II,III/2/EFG/T4A -50 ºC ≤ Ta ≤ +70 ºC; Type 4X/6P*, IP66/IP67/IP68*; Single Seal
a = Certificate: D.
b = Process connection: any dual combinations of letter or numbers.
c = Material/Surface Refinement: A, 2, 5 or 9.
d = Overall length, Bulk Density: B, C, F, G or Y.
e = Electronic insert: 1, 2, 4 or 5.
f = Probe type: A, D, E, G, H or Y.
g = Enclosure: H*, Y (color option for F13, F17 or T13), 3, 5*, 6* or 7.
h = Cable entry: 2, 3, 4 or 7.
i = Additional options 1: A, G, R (SIL not evaluated by FM), S (SIL not evaluated by FM) or Y (switch delay).
j = Additional options 2: A, C or Y (NACE material certificate (not evaluated by FM); high temperature; temperature spacing).

Special Conditions of Use:
*1. *Enclosure Type 6P and IP68 is available only for Enclosure option type "H", "5" or "6".*

Equipment Ratings:

I. Intrinsically Safe, with Entity Parameters, for use in Class I, II & III, Division 1, Groups A, B, C, D, E, F & G, in accordance with manufacturer's Control Drawing No. 960007248; Nonincendive, with Nonincendive Field Wiring Parameters, for use in Class I, Division 2, Groups A, B, C & D, in accordance with manufacturer's Control Drawing No. 960007248; Suitable for Class II & III, Division 2, Groups E, F & G, in accordance with manufacturer's Control Drawing No. 960007248, Hazardous (Classified) indoor/outdoor (Type 4X/6P & IP66/IP67/IP68) Locations; Single Seal.

II. Explosionproof, with an intrinsically safe sensor connection, for use in Class I, Division 1, Groups A, B, C & D; Dust-Ignitionproof, with an intrinsically safe sensor connection, for use in Class II & III, Division 1, Groups E, F & G; Nonincendive for use in Class I, Division 2, Groups A, B, C & D; Suitable for Class II & III, Division 2, Groups E, F & G Hazardous (Classified) indoor/outdoor (Type 4X/6P & IP66/IP67/IP68) Locations; Single Seal.

III. Dust-Ignitionproof, with an intrinsically safe sensor connection, for use in Class II & III, Division 1, Groups E, F & G; Nonincendive for use in Class I, Division 2, Groups A, B, C & D; Suitable for Class II & III, Division 2, Groups E, F & G Hazardous (Classified) indoor/outdoor (Type 4X/6P & IP66/IP67/IP68) Locations; Single Seal.

FM Approved for:

Endress+Hauser GmbH+Co. KG
Maulburg, Germany

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

Class 3600	2011
Class 3610	2010
Class 3611	2004
Class 3615	2006
Class 3810	2005
ANSI/IEC 60529	2004
ANSI/ISA-12.27.01	2003
ANSI/NEMA 250	1991

Original Project ID: 3023722 Approval Granted: April 25, 2006

Subsequent Revision Reports / Date Approval Amended

Report Number	Date	Report Number	Date
060529	July 7, 2006		
3027934	January 22, 2007		
3027680	March 26, 2007		
3030025	June 19, 2007		
3045912	February 20, 2013		

FM Approvals LLC

J. E. Marquedant
Group Manager, Electrical

20 February 2013
Date