FM Approvals
Member of the FM Global Group

FM Approvals
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CERTIFICATE OF COMPLIANCE

HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

VF70 0abcdefghijklmnopqrs or VF70 4abcdefghijklmnopqrs or SF70 9abcdefghijklmnopqrs. Optiwave 7300 C Radar Level Transmitter

XP-IS / I / 1 / ABCD / T* – F08.209505.19, -40°C ≤ Ta ≤ +80°C;
I / 0 / AEx d [ia] IIC T* – F08.209505.19, -40°C ≤ Ta ≤ +80°C;
DIP / II, III / 1 / EFG / T* – F08.209505.19, -40°C ≤ Ta ≤ +80°C;
IS / I, II, III / 1 / ABCDEFG / T* – F08.209505.18, -40°C ≤ Ta ≤ +80°C;
I / 0 / AEx ia IIC T* – F08.209505.18, Entity, -40°C ≤ Ta ≤ +80°C;
NI / I / 2 / ABCD / T* – F08.209505.19, -40°C ≤ Ta ≤ +80°C;
I / 2 / AEx nA [ia] IIC T* – F08.209505.19, -40°C ≤ Ta ≤ +80°C;
S / II, III / 2 / FG;
Type 4X (enclosure) and 6P (antenna); IP 66; Dual Seal.

T* - T-Code Table

Temperature class	Maximum ambient temperature		Maximum process temperature
	Antenna without distance piece	Antenna with distance piece	
T6	57°C 47°C	57°C 51°C	60°C 85°C
T5	72°C 62°C	72°C 66°C	75°C 100°C
T4	80°C 70°C 60°C	80°C 74°C 68°C	85°C 110°C 135°C
T3, T2, T1	54°C Not allowed Not allowed	64°C 57°C 52°C	150°C 180°C 200°C

Entity Parameters:
Ui = 30Vdc, Ii = 300mA, Pi = 1 W, Ci = 30 nF, Li = 200µH

a = Approvals Options 6 or 7.
b = Material Process Connection Options 0, 1, 2 or 3.
c = Antenna Options 3, 4, 5, 6, 7, 8, F, G, P, or S.

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d = Antenna Extension Options 0, 1, 2, 3, 4, 5, 6, 7, 8, A, B, P, R, S or T.
e = Feedthrough /Temperature/Sealing Options 0, 1, 2, 3, 4, 5, F, G, H or K.
f = Process Connection EN Options 0.
g = Process Connection ASME Options 0, 3, 5, 6, 7, 8, A, B, C, D, E, F, G, N, P, R, S, U, V, W or X.
h = Process Connection Other Options 0, 5, 6, 7, 8 or A.
i = Output Options 0 or 2.
j = Housing/ Cable Entry / Cable gland Options 0, 1, 3, or 4.
k = Housing Options 0 or 2.
l = HMI Options 0, 1, 2, 3, 4, 5, 6, 7, 8 or A.
m = Version Options 0, 5 or 8.
n = Special Option 0 or A.
o = Material Certificate Options (one digit, not safety relevant).
p = Pressure Test Certificate Options (one digit, not safety relevant).
q = Calibration Certificate Options (one digit, not safety relevant).
r = Miscellaneous Certificate Options (one digit, not safety relevant).
s = Drawing / TAG Number Options (one digit, not safety relevant).

VF71 0abcdefghijklmnopqrs or VF71 4abcdefghijklmnopqrs or SF71 9abcdefghijklmnopqrs. Optiflex 1300 C Guided Radar Level Transmitter.

XP-IS / I / 1 / ABCD / T* – F08.209505.17, -40°C ≤ Ta ≤ +80°C;
I / 0 / AEx d [ia] IIC T* – F08.209505.17, -40°C ≤ Ta ≤ +80°C;
DIP / II, III / 1 / EFG / T* – F08.209505.17, -40°C ≤ Ta ≤ +80°C;
IS / I, II, III / 1 / ABCDEFG / T* – F08209505.16, -40°C ≤ Ta ≤ +80°C;
I / 0 / AEx ia IIC T* – F08.209505.16, -40°C ≤ Ta ≤ +80°C;
NI / I / 2 / ABCD / T* – F08.209505.17, -40°C ≤ Ta ≤ +80°C;
I / 2 / AEx nA [ia] IIC T* – F08.209505.17, -40°C ≤ Ta ≤ +80°C;
S / II, III / 2 / FG;
Type 4X (enclosure) and 6P (probe); IP 66; Dual Seal.

T* - T-Code Table

Temperature class	Maximum ambient temperature			Maximum process temperature
	2mm probe	2mm probe + HT extension	Other probes	
T6	57°C 49°C	57°C 53°C	57°C 52°C	60°C 85°C
T5	72°C 64°C	72°C 68°C	72°C 67°C	75°C 100°C
T4	80°C 72°C 65°C	80°C 75°C 72°C	80°C 75°C 70°C	85°C 110°C 135°C
T3	60°C Not allowed Not allowed	70°C 66°C 64°C	65°C 60°C 55°C	150°C 180°C 200°C
T2, T1	Not allowed Not allowed	57°C 50°C	Not allowed Not allowed	250°C 300°C

Entity Parameters:
Ui = 30Vdc, Ii = 300mA, Pi = 1 W, Ci = 30 nF, Li = 200µH

a = Approvals Options 6 or 7.
b = Material Process Connection Options 0, 1, 2, 3, 4 or 5.
c = Probe Options 0, 1, 2, 3, 4, 5, 6, 7, A, B, C, D, E, M or S.
d = Probe End Type Options 0, 1, 2, 3, 4, 5, A, B, C, D or E.
e = Feedthrough /Temperature/Sealing Options 0, 1, 2, 3, 4, 5, 6 or 7.
f = Process Connection EN Option 0.

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g = Process Connection ASME Options 0, 1, 2, 3, 4, 5, 6, 7, 8, A, B, C, D, E, F, G, H, M, N, P, R, S, T, U, V, W, X or Y.
h = Process Connection Other Options 0, 5, 6, 7, 8 or A.
i = Output Options 0, 1, 2 or 3.
j = Housing / Cable Entry / Cable Gland Options 0, 1, 3, or 4
k = Housing Options 0, 2, 3, 4, 5, 6, A, B, C or D.
l = HMI Options 0, 1, 2, 3, 4, 5, 6, 7, 8 or A.
m = Version Options 0.
n = Special Options 0 or 2.
o = Material Certificate Options (one digit, not safety relevant).
p = Pressure Test Certificate Options (one digit, not safety relevant).
q = Calibration Certificate Options (one digit, not safety relevant).
r = Miscellaneous Certificate Options (one digit, not safety relevant).
s = Drawing / TAG Number Options (one digit, not safety relevant).

VF63 0abcdefghijklmnopqrs or VF63 4abcdefghijklmnopqrs or SF63 9abcdefghijklmnopqrs. Optiwave 6300 C Radar Level Transmitter

XP-IS / I / 1 / ABCD / T* – F08.209505.19, -40°C ≤ Ta ≤ +80°C;
I / 0 / AEx d [ia] IIC T* – F08.209505.19, -40°C ≤ Ta ≤ +80°C;
DIP / II, III / 1 / EFG / T* – F08.209505.19, -40°C ≤ Ta ≤ +80°C;
IS / I, II, III / 1 / ABCDEFG / T* – F08.209505.18, -40°C ≤ Ta ≤ +80°C;
I / 0 / AEx ia IIC T* – F08.209505.18, Entity, -40°C ≤ Ta ≤ +80°C;
NI / I / 2 / ABCD / T* – F08.209505.19, -40°C ≤ Ta ≤ +80°C;
I / 2 / AEx nA [ia] IIC T* – F08.209505.19, -40°C ≤ Ta ≤ +80°C;
S / II, III / 2 / FG;
Type 4X (enclosure) and 6P (antenna); IP 66; Dual Seal.

T* - T-Code Table

Temperature class	Maximum ambient temperature		Maximum process temperature
	Antenna without distance piece	Antenna with distance piece	
T6	57°C 47°C	57°C 51°C	60°C 85°C
T5	72°C 62°C	72°C 66°C	75°C 100°C
T4	80°C 70°C 60°C	80°C 74°C 68°C	85°C 110°C 135°C
T3, T2, T1	54°C Not allowed Not allowed	64°C 57°C 52°C	150°C 180°C 200°C

Entity Parameters:
Ui = 30Vdc, Ii = 300mA, Pi = 1 W, Ci = 30 nF, Li = 200µH

a = Approvals Options 6 or 7.
b = Material Process Connection Options 0.
c = Antenna / Temperature Options 6, G, K, P, S or T.
d = Antenna Extension Options 0, 1, 2, 3, 4, 5, 6, 7, 8, A, B, P, R, S or T.
e = Feedthrough /Temperature/Sealing Options 0, 1, 2, 3, 4, 5, F, G, H or K.
f = Process Connection EN Options 0.
g = Process Connection ASME Options 0, 3, A, B, C, D, E or F.
h = Process Connection Other Options 0, 7, 8 or A.
i = Output Options 0 or 2.
j = Housing/ Cable Entry / Cable gland Options 0, 1, 3 or 4.

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k = Housing Options 0 or 2.
l = HMI Options 0, 1, 2, 3, 4, 5, 6, 7, 8 or A.
m = Version Options 0, 5 or 8.
n = Special Options 0 or 1.
o = Material Certificate Options (one digit, not safety relevant).
p = Pressure Test Certificate Options (one digit, not safety relevant).
q = Calibration Certificate Options (one digit, not safety relevant).
r = Miscellaneous Certificate Options (one digit, not safety relevant).
s = Drawing / TAG Number Options (one digit, not safety relevant).

Equipment Ratings:

The VF70 and SF70 is rated as Explosionproof-Intrinsically Safe for Class I, Division 1, Groups A, B, C and D; Temperature Class T* -40°C ≤ Ta ≤ 80°C; Dust-ignitionproof for Class II, III, Division 1, Groups E, F and G; Flameproof-Intrinsically Safe for use in Class I, Zone 0, AEx d[ia] IIC T* -40°C ≤ Ta ≤ 80°C; Intrinsically Safe (Entity) for use in Class I, II and III, Division 1, Groups A, B, C, D, E, F and G; Temperature Class T* -40°C ≤ Ta ≤ 80°C in accordance with Control Drawing No. F08209505.19; Intrinsically safe (Entity) for use in Class I, Zone 0, AEx ia IIC T* -40°C ≤ Ta ≤ 80°C; in accordance with Control Drawing No.F08209505.18; Nonincendive for use in Class I, Division 2, Groups A, B, C, and D; Temperature Class T* -40°C ≤ Ta ≤ 80°C; and for use in Class I, Zone 2, AEx nA [ia] IIC T* -40°C ≤ Ta ≤ 80°C; Suitable for use in Class II and III, Division 2, Groups F and G; Temperature Class T* -40°C ≤ Ta ≤ 80°C; Hazardous (Classified) Locations, indoor/outdoor Type 4X and 6P, IP66, Dual Seal.

The VF71 and SF71 is rated as Explosionproof-Intrinsically Safe for Class I, Division 1, Groups A, B, C and D; Temperature Class T* -40°C ≤ Ta ≤ 80°C; Dust-ignitionproof for Class II, III, Division 1, Groups E, F and G; Flameproof-Intrinsically Safe for use in Class I, Zone 0, AEx d[ia] IIC T* -40°C ≤ Ta ≤ 80°C; Intrinsically Safe (Entity) for use in Class I, II and III, Division 1, Groups A, B, C, D, E, F and G; Temperature Class T* -40°C ≤ Ta ≤ 80°C in accordance with Control Drawing No. F08209505.16; Intrinsically safe (Entity) for use in Class I, Zone 0, AEx ia IIC T* -40°C ≤ Ta ≤ 80°C; in accordance with Control Drawing No.F08209505.17; Nonincendive for use in Class I, Division 2, Groups A, B, C, and D; Temperature Class T* -40°C ≤ Ta ≤ 80°C; and for use in Class I, Zone 2, AEx nA [ia] IIC T* -40°C ≤ Ta ≤ 80°C; Suitable for use in Class II and III, Division 2, Groups F and G; Temperature Class T* -40°C ≤ Ta ≤ 80°C; Hazardous (Classified) Locations, indoor/outdoor Type 4X and 6P, IP66, Dual Seal.

The VF63 and SF63 is rated as Explosionproof-Intrinsically Safe for Class I, Division 1, Groups A, B, C and D; Temperature Class T* -40°C ≤ Ta ≤ 80°C; Dust-ignitionproof for Class II, III, Division 1, Groups E, F and G; Flameproof-Intrinsically Safe for use in Class I, Zone 0, AEx d[ia] IIC T* -40°C ≤ Ta ≤ 80°C; Intrinsically Safe (Entity) for use in Class I, II and III, Division 1, Groups A, B, C, D, E, F and G; Temperature Class T* -40°C ≤ Ta ≤ 80°C in accordance with Control Drawing No. F08209505.19; Intrinsically safe (Entity) for use in Class I, Zone 0, AEx ia IIC T* -40°C ≤ Ta ≤ 80°C; in accordance with Control Drawing No.F08209505.18; Nonincendive for use in Class I, Division 2, Groups A, B, C, and D; Temperature Class T* -40°C ≤ Ta ≤ 80°C; and for use in Class I, Zone 2, AEx nA [ia] IIC T* -40°C ≤ Ta ≤ 80°C; Suitable for use in Class II and III, Division 2, Groups F and G; Temperature Class T* -40°C ≤ Ta ≤ 80°C; Hazardous (Classified) Locations, indoor/outdoor Type 4X and 6P, IP66, Dual Seal

FM Approved for:

Krohne S.A.S.
Romans Cedex (Drome), 26103, France

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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/NEMA 250	1991
ANSI/ISA 12.22.01	2002
ANSI/ISA 12.00.01	2002
IEC 60529	2004
ANSI/ISA 12.27.01	2003
ANSI/ISA-60079-0	2009
ANSI/ISA-60079-11	2009

Original Project ID: 3018833 Approval Granted: March 3, 2005

Subsequent Revision Reports / Date Approval Amended

Report Number	Date	Report Number	Date
053105	July 6, 2005		
050718	August 12, 2005		
050926	October 5, 2005		
051129	December 21, 2005		
060321	April 13, 2006		
060502	June 3, 2006		
060616	September 13, 2006		
061205	December 21, 2006		
072507	January 15, 2007		
3033278	August 20, 2008		
3034277	December 1, 2008		
081202	December 4, 2008		
3036880	January 11, 2010		
100325	June 4, 2010		
3042241	August 30, 2011		
3047683	February 25, 2013		
130124	February 4, 2014		

FM Approvals LLC

J.E. Marquedant
Manager, Electrical Systems

4 February 2014
Date

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