



FM Approvals  
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# CERTIFICATE OF COMPLIANCE

## HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

**N4590-Sbcdefghijk. Tank Side Monitor.**

XP-AIS / I / 1 / ABCD / T6 Ta = 70 °C — 960522-6050, Entity; Type 4X;  
 DIP-AIS / II, III / 1 / EFG / T6 Ta = 70 °C — 960522-6050, Entity; Type 4X;  
 [I / 0] AEx [ja] IIC — 960522-6050, Entity; Type 4X;  
 NI-ANI / I / 2 / ABCD / T5 Ta = 70 °C — 960522-6050, Entity; Type 4X;  
 S-ANI / II, III / 2 / FG / T5 Ta = 70 °C — 960522-6050, Entity; Type 4X;

Entity Parameters:

Tank Side Monitor N4590-S□□□□□0□□□□ without IS-4-20 mA Input or  
 Tank Side Monitor N4590-S□□□□□1□□□□ with IS-Option Modul (4-20 mA Input):

Terminals	Circuit				Group A / B (IIC)		Group C (IIA / IIB)	
		V <sub>OC</sub> in V	I <sub>sc</sub> in mA	P <sub>O</sub> in mW	C <sub>a</sub> in μF	L <sub>a</sub> in mH	C <sub>a</sub> in μF	L <sub>a</sub> in mH
16, 17, 18, 19	SPOT temp. A	7.5	99.6	187.0	1.200	2.000	5.70	5.0
20, 21	IS Option4-20mA B1	7.5	7.0	13.2	1.300	5.000	6.90	5.0
22, 23	IS Option Power B2	29.8	95.0	707.3	0.068	0.062	0.39	0.5
24 and 25 or 26 and 27 or 28 and 29	HART BUS C	29.8	95.0	707.0	0.068	0.062	0.39	0.5
30 and 31	RADAR PWR D	29.8	95.0	707.3	0.068	0.062	0.39	0.5
Service Port	SERVICE PORT E	7.5	62.4	117.0	1.300	2.000	6.20	5.0

Tank Side Monitor N4590-S□□□□□2□□□□ with integrated IS-4-20 mA Input):

Terminals	Circuit				Group A / B (IIC)		Group C (IIA / IIB)	
		V <sub>OC</sub> in V	I <sub>SC</sub> in mA	P <sub>O</sub> in mW	C <sub>a</sub> in μF	L <sub>a</sub> in mH	C <sub>a</sub> in μF	L <sub>a</sub> in mH
16, 17, 18, 19	SPOT temp. A	5.1	31.3	30.3	3.100	2.000	14.00	5.0
20*	Digital Input 1 B3	5.1	1.0	1.2	3.700	1.000	20.00	1.0
21*	IS Option 4-20mA B1	5.1	1.0	1.2	3.700	1.000	20.00	1.0
22*	Digital Input 2 B4	5.1	1.0	1.2	3.700	1.000	20.00	1.0
23*	IS Option Power B2	29.8	95.0	707.3	0.068	0.062	0.39	0.5
24 and 25 or 26 and 27 or 28 and 29	HART BUS C	29.8	95.0	707.0	0.068	0.062	0.39	0.5
30 and 31	RADAR PWR D	29.8	95.0	707.3	0.068	0.062	0.39	0.5
Service Port	SERVICE PORT E	5.1	31.2	30.2	3.100	2.000	14.00	5.0

\* used in combination with IS 0V reference potential on terminals 19, 25, 27, 29, 31

b = Non-IS field communication protocol (not relevant for safety): any single letter or number.

c = Power supply: A (18-55 V DC), B (55-253 V AC).

d = Spot RTD option: 0 without RTD temperature input, 1 input for RTD temperature probe (IS).

e = Digital I/O Module 1 (not relevant for safety): any single letter or number.

f = Digital I/O Module 2 (not relevant for safety): any single letter or number.

g = IS option module: 0 without IS option module or 1 with 4-20 mA IS option module.

h = Cable entry (non-IS): B (2 Ex d cable entries M20 × 1.5), C (2 Ex d cable entries G 1/2"), D (2 Ex d cable entries 1/2" NPT), E (2 Ex d cable entries 3/4" NPT), F (2 cable entries G 1/2"), G (2 cable entries G 3/4"), H (3 Ex d cable entries M20 × 1.5), K (3 Ex d cable entries G 1/2"), L (3 Ex d cable entries 1/2" NPT), M (2 Ex d cable entries G 3/4"), x (special version, any single letter or number).

i = Cable entry (IS compartment, not relevant for safety): any single letter or number.

j = Custody transfer approvals (not relevant for safety): Any single letter of number.

k = Additional options (not relevant for safety): Any single letter of number.



**N753x A-abcdefg. Radar Tank Gauge.**

IS / I,II,III /1 /ABCDEFG / T6 Tmed = 55°C Ta =55°C; I /0 /IIC /T6Tmed = 55°C Ta =55°C —  
960397-6045; Entity;

Supply Circuit:

Vmax =30 V dc, Imax = 300 mA, Pi = 1.0 W, Ci =16 nF, Li = 40 µH.

Signal Circuit:

Vmax = 30 V dc, Imax = 300 mA, Pi = 1.0 W, Ci =13 nF, Li =0.

DIP / II,III /1 /EFG /T6Tmed = 55°C Ta =55°C

NI /I /2 /ABCD / T6 Tmed = 55°C Ta =55°C; Enclosure Type 4X; Antenna Type 6P

x = Type of antenna 0 (horn antenna), 1 (rod antenna), 2 (planar antenna) or 3 (parabolic antenna).

a = Certificate S or X.

b = Size of antenna/gasket material; any single letter or number.

c = Process connection; any three letter/number combination representing standard industrial process connections.

d = Output and operation; A (4-20 mA HART with/without display VU331).

e = Enclosure C (Aluminum T12 housing).

f = Cable entry 1 (pg13.5), 2 (M20×1.5), 3 (G 1 .2") or 4 (NPT 1 .2").

g = Additional options/certificates not safety related: any single letter or number.

## Equipment Ratings:

Explosionproof Class I, Division 1, Groups A, B, C, & D with Intrinsically Safe connections to Class I, Division 1, Groups A, B, C, & D; Dust-Ignitionproof Class II & III, Division 1, Groups E, F, & G with Intrinsically Safe connections to Class I, Division 1, Groups A, B, C, D, E, F, & G and connections to Class I, Zone 0, IIC; in accordance with control drawing 960522-6050; also as Nonincendive Class I, Division 2, Groups A, B, C, & D and Special protection Class II & III, Division 2, Groups F & G with nonincendive field wiring parameters; indoor/ outdoor hazardous (classified ) locations, utilizing Type 4X enclosure.

Intrinsically Safe for use in Class I, Division 1, Groups A, B, C, & D and Class I, Zone 0, Group IIC in accordance with control drawing 960397-6045; Dust-Ignitionproof Class II & III, Division 1, Groups E, F, & G; also as Nonincendive for use in Class I, Division 2, Groups A, B, C, & D; indoor/ outdoor hazardous (classified ) locations utilizing Type 4X enclosure.

## Approved for:

Varec, Inc  
5834 Peachtree Corners East,  
Norcross, GA 30092



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

Class 3600	1998
Class 3810	1989
Class 3611	1999
Class 3610	1999
Class 3615	1989

Original Project ID: 3019190

FM Approval Granted: February 19, 2004

Subsequent Revision Reports / Date FM Approval Amended

Report Number	Date	Report Number	Date
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FM Global Technologies LLC

David W. Styracula  
Technical Team Manager

2/25/04  
Date