

CERTIFICATE OF CONFORMITY



- HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**
- Certificate No:** FM16US0214X
- Equipment:** Models 961-50, 962-50, 961-2, 962-2, 961-7, 962-7 and 960-58 Echotel Ultrasonic Switches
(Type Reference and Name)
- Name of Listing Company:** Magnetrol International
- Address of Listing Company:** 705 Enterprise Street
Aurora, IL 60504
USA
- The examination and test results are recorded in confidential report number:

3024356 dated 6th February 2006
- FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

FM Class 3600:2018, FM Class 3610:2010, FM Class 3611:2018, FM Class 3615:2018,
FM Class 3810:2018, ANSI/ISA 61010-1:2012, ANSI/UL 121201:2017,
ANSI/NEMA 250:1991, ANSI/IEC 60529:2004
- If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
- This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.
- Equipment Ratings:

96a-50bc-d3e / 9fg-hij-k, 96a-2Dbc-d3e / 9fg-hij-k or and 96a-7Dbc-d3e / 9fg-hij-k Ingetral and Remote Echotel Ultrasonic Switches with Echotel Ultrasonic Probe: Explosionproof for Class I, Division 1, Groups B, C and D, T6; Dust-ignitionproof for Class II, Division 1, Groups E, F and G, T6; Class III, Division 1, T6; Nonincendive for Class I, II, III, Division 2, Groups A, B, C, D, E, F and G, T4 hazardous (classified) locations;

Certificate issued by:

J.E. Marquedant
VP, Manager - Electrical Systems

4 August 2020

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

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FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
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US Certificate Of Conformity No: FM16US0214X

indoor/outdoor (Type 4X, IP66) with an ambient temperature rating of -40°C to +70°C.

96a-50bc-def / 9gh-ijk-I Integral and Remote Echotel Ultrasonic Switches with Echotel Ultrasonic Probe: Intrinsically safe for Class I, II, III Division 1, Groups A, B, C, D, E, F and G, T4 when connected as per control drawing 99-5065; hazardous (classified) locations; indoor/outdoor (Type 4X, IP66) with an ambient temperature rating of -40°C to +70°C.

96a-50bc-def / 9gh-ijk-I Integral and Remote Echotel Ultrasonic Switches with Echotel Ultrasonic Probe: Nonincendive for Class I, II, III, Division 2, Groups A, B, C, D, E, F and G, T4; hazardous (classified) locations; indoor/outdoor (Type 4X, IP66) with an ambient temperature rating of -40°C to +70°C.

96a-2Dbc-d7e / 9fg-hij-k and 96a-7Dbc-d7e / 9fg-hij-k Integral and Remote Echotel Ultrasonic Switches with Echotel Ultrasonic Probe: Nonincendive for Class I, II, III, Division 2, Groups A, B, C, D, F and G, T4 hazardous (classified) locations; indoor/outdoor (Type 4X, IP66) with an ambient temperature rating of -25°C to +70°C.

11. The marking of the equipment shall include:

96a-50bc-d3e / 9fg-hij-k, 96a-2Dbc-d3e / 9fg-hij-k and 96a-7Dbc-d3e / 9fg-hij-k Integral and Remote Echotel Ultrasonic Switches with Echotel Ultrasonic Probe:

Class I Division 1, Groups B, C, D; T6 Ta = -40°C to +70°C; Type 4X, IP66

Class II, III Division 1, Groups E, F, G; T6 Ta = -40°C to +70°C; Type 4X, IP66

Class I, II, III Division 2, Groups A, B, C, D, E, F, G; T4 Ta = -40°C to +70°C; Type 4X, IP66

96a-50bc-def / 9gh-ijk-I Integral and Remote Echotel Ultrasonic Switches with Echotel Ultrasonic Probe: IS, Class I, II, III, Division 1, Groups A, B, C, D, E, F and G; T4 Ta = -40°C to +70°C; Type 4X, IP66 when connected as per control drawing 99-5065

96a-50bc-def / 9gh-ijk-I Integral and Remote Echotel Ultrasonic Switches with Echotel Ultrasonic Probe: Class I, II, III, Division 2, Groups A, B, C, D, E, F, G; T4 Ta = -40°C to +70°C; Type 4X, IP66

96a-2Dbc-d7e / 9fg-hij-k and 96a-7Dbc-d7e / 9fg-hij-k Integral Echotel Ultrasonic Switch with Echotel Ultrasonic Probe:

Class I, II, III Division 2, Groups A, B, C, D, F, G; T4 Ta = -25°C to +70°C; Type 4X, IP66

12. **Description of Equipment:**

General - The 961 and 962 Ultrasonic Level Switches are compact integral units that utilize pulsed signal technology to perform high or low level measurements in a wide variety of Liquid applications. These switches feature a 316 stainless steel, Monel, Hasteloy, Kynar and CPVC tip-sensitive fork style transducer that is offered in a variety of NPT, flanged and sanitary process connections. The electrical pulses generated by the microprocessor-based electronics are transmitted through the analog processor to the ultrasonic sensor. The sensor converts these into ultrasonic pulses and directs them to the measuring surface. The sensor detects the returning echo. The microprocessor-based electronics amplifies and converts the signal into a digital representation of the level, flow, or volume measurement. The transmitter system consists of an electronics enclosure with remote located probe or integral probe.

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Construction - The Models 961 and 962 consists of a single compartment electronics housing with thread-on window cover and a threaded (potted) adapter/probe inserted into the housing base. The enclosure is constructed of aluminium or stainless steel and can be provided with either two (2) ¼ inch NPT , two (2) ½ inch NPT or two (2) M20 openings. The Models 961 and 962 can be provided as an integral or remote assembly.

Ratings – The product ratings are as follows:

Entity Parameters: $V_{Max} = 28.4\text{ V}$, $I_{Max} = 94\text{ mA}$, $P_{Max} = 0.67\text{ W}$, $C_i = 10.4\text{ nF}$, $L_i = 3\text{ }\mu\text{H}$.

Model 961: Input 12-28.4Vdc, 1 Watts, 4-20mA, or 100-265Vac 50/60Hz. 3 Watts, Output 4 to 20mA or two relay 1 amp, 250 Vac 50/60Hz. or 30 Vdc relay outputs.

Model 962: Input 12-28.4Vdc, 1 Watts, 4-20mA, or 100-265Vac 50/60Hz. 3 Watts, Output 4 to 20mA or three 1 amp, 250 Vac 50/60Hz. or 30 Vdc relay outputs.

96a-50bc-d3e / 9fg-hij-k, 96a-2Dbc-d3e / 9fg-hij-k or and 96a-7Dbc-d3e / 9fg-hij-k Integral and Remote Echotel Ultrasonic Switches with Echotel Ultrasonic Probe.

a = 1 single point or 2 dual point.

b = Self Test A or N.

c = Accessories 0 or 1.

d = Mounting 0 or 1.

e = Housing and conduit connection 0, 1, 2 or 3.

f = English or metric A or M.

g = Single Point 1 or Dual Point 2.

h = Material of construction A, S, B, C, R, P, N, or K.

i = Process connections 11, 21-25, 33-35, 43-45, 53-55, 63-65, 2P, 3T, 4T, BS, CS, DS, BN, DN, VN, VV, BA, BB, BC, CA, CB, CC, DA, DB, DD, DE.

j = Transducer options A, B, C, D, H.

k = Actuation length 001-130 e = "A" or 003-330 e = "M".

96a-50bc-def / 9gh-ijk-l Integral and Remote Echotel Ultrasonic Switches with Echotel Ultrasonic Probe.

Entity Parameters:

$V_{Max} = 28.4\text{ V}$, $I_{Max} = 94\text{ mA}$, $P_{Max} = 0.67\text{ W}$, $C_i = 10.4\text{ nF}$, $L_i = 3\text{ }\mu\text{H}$.

a = 1 single point or 2 dual point.

b = Self Test A or N.

c = Accessories 0 or 1.

d = Mounting 0 or 1.

e = Agency Approval 1 or 7.

f = Housing and conduit connection 0, 1, 2, 3, 4 or 5.

g = English or metric A or M.

h = Single Point 1 or Dual Point 2.

i = Material of construction A, S, B, C, R, P, N, or K.

j = Process connections 11, 21-25, 33-35, 43-45, 53-55, 63-65, 2P, 3T, 4T, BS, CS, DS, BN, DN, VN, VV, BA, BB, BC, CA, CB, CC, DA, DB, DD, DE.

k = Transducer options A, C, D, H.

l = Actuation length 001-130 d = "A" or 003-330 d = "M".

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96a-50bc-def / 9gh-ijk-l Integral and Remote Echotel Ultrasonic Switches with Echotel Ultrasonic Probe.

- a = 1 single point or 2 dual point.
- b = Self Test A or N.
- c = Accessories 0 or 1.
- d = Mounting 0 or 1.
- e = Agency Approval 1 or 7.
- f = Housing and conduit connection 0, 1, 2, 3, 4 or 5.
- g = English or metric A or M.
- h = Single Point 1 or Dual Point 2.
- i = Material of construction A, S, B, C, R, P, N, or K.
- j = Process connections 11, 21-25, 33-35, 43-45, 53-55, 63-65, 2P, 3T, 4T, BS, CS, DS, BN, DN, VN, VV, BA, BB, BC, CA, CB, CC, DA, DB, DD, DE.
- k = Transducer options A, C, D, H.
- l = Actuation length 001-130 d = "A" or 003-330 d = "M".

96a-2Dbc-d7e / 9fg-hij-k and 96a-7Dbc-d7e / 9fg-hij-k Integral Echotel Ultrasonic Switch with Echotel Ultrasonic Probe.

- a = 1 single point or 2 dual point.
- b = Self Test A or N.
- c = Accessories 0 or 1.
- d = Mounting 0 or 1.
- e = Housing and conduit connection 4 or 5.
- f = English or metric A or M.
- g = Single Point 1 or Dual Point 2.
- h = Material of construction A, S, B, C, R, P, N or K.
- i = Process connections 11, 21-25, 33-35, 43-45, 53, 54, 55, 63, 64, 65, 2P, 3T, 4T, BS, CS, DS, BN, DN, VN, VV, BA, BB, BC, CA, CB, CC, DA, DB, DD, DE.
- j = Transducer options A, C, D, H.
- k = Actuation length 001-130 e = "A" or 003-330 e = "M".

13. Specific Conditions of Use:

96a-50bc-d3e / 9fg-hij-k, 96a-2Dbc-d3e / 9fg-hij-k or and 96a-7Dbc-d3e / 9fg-hij-k Integral and Remote Echotel Ultrasonic Switches with Echotel Ultrasonic Probe.

1. The enclosure contains aluminum and is considered to present a potential risk of ignition by impact or friction. Care must be taken during installation and use to prevent impact or friction.
2. To maintain the T6 and T4 temperature code care shall be taken to ensure the "Enclosure Temperature" does not exceed 70°C.
3. The risk of electrostatic discharge shall be minimized at installation, following the direction given in the instructions.
4. Contact the original manufacturer for information in the dimensions of flameproof joints.
5. For Installation with ambient temperature of 70°C, refer to the manufacturer's instructions for guidance on proper selection of conductors.
6. The Ultrasonic Probe is only for use with the Echotel Ultrasonic Switch.

96a-50bc-def / 9gh-ijk-l Integral and Remote Echotel Ultrasonic Switches with Echotel Ultrasonic Probe.

96a-2Dbc-d7e / 9fg-hij-k and 96a-7Dbc-d7e / 9fg-hij-k Integral Echotel Ultrasonic Switch with

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Echotel Ultrasonic Probe.

1. The enclosure contains aluminum and is considered to present a potential risk of ignition by impact or friction. Care must be taken during installation and use to prevent impact or friction.
2. To maintain the T4 temperature code care shall be taken to ensure the "Enclosure Temperature" does not exceed 70°C.
3. The risk of electrostatic discharge shall be minimized at installation, following the direction given in the instructions.
4. For Installation with ambient temperature of 70°C, refer to the manufacturer's instructions for guidance on proper selection of conductors.
5. The Ultrasonic Probe is only for use with the Echotel Ultrasonic Switch.

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

16. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
6 th February 2006	Original Issue.
26 th July 2016	<u>Supplement 4:</u> Report Reference: – RR205874 dated 26 th July 2016. Description of the Change: Addition of ANSI Flange options 53, 54, 55, 63, 64 and 65 under Process connection indicator in 961, 962 product model code. Removal of Model 960-58 from US FM Approval.
18 th December 2019	<u>Supplement 5:</u> Report Reference: – PR452105 dated 18 th December 2019. Description of the Change: Addition of epoxy material options used in the construction for the feed-through assembly.
19 th February 2020	<u>Supplement 6:</u> Report Reference: – RR222446 dated 19 th February 2020. Description of the Change: Correction to a misspelling of the street name and city name on certificate.
4 th August 2020	<u>Supplement 7:</u> Report Reference: – PR452811 dated 4 th August 2020. Description of the Change: New model code configuration due to the addition of ATEX and IEC certification. 940 Series moved to FM20US0074X certificate.

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