

Rosemount™ 2140 and 2140:SIS Level Detectors

Vibrating Fork



1 Product certifications

Rev 6.17

1.1 European directive information

A copy of the EU Declaration of Conformity can be found at the end of the document. The most recent revision of the EU Declaration of Conformity can be found at [Emerson.com/Rosemount](https://www.emerson.com/Rosemount).

1.2 Safety Integrity Level (SIL) certification

SIL 3 Capable: IEC 61508 certified for use in safety instrumented systems up to SIL 3 (Minimum requirement of single use (1oo1) for SIL 2 and redundant use (1oo2) for SIL 3).

1.3 Ordinary location certification

As standard, the device has been examined and tested to determine that the design meets the basic electrical, mechanical, and fire protection requirements by a nationally recognized test laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

1.4 Installing equipment in North America

The US National Electrical Code® (NEC) and the Canadian Electrical Code (CEC) permit the use of Division marked equipment in Zones and Zone marked equipment in Divisions. The markings must be suitable for the area classification, gas, and temperature class. This information is clearly defined in the respective codes.

1.5 U.S.A.

1.5.1 G5 USA Ordinary Location

Certificate	80140960
Standards	UL 61010-1 3rd ed, ANSI/ISA-12.27-01:2011
Markings	Type 4X, Single Seal

To be supplied by a Class 2 or Limited Energy Source in accordance with CSA 61010-1-12

1.5.2 I5 USA Intrinsically Safe and Nonincendive

Certificate	80140960
Standards	FM Class 3600:2011; FM Class 3610:2015; FM Class 3611:2004
Markings	Class I, Groups A, B, C, and D, T5...T2 Class I, Division 2, Groups A, B, C, and D Class I, Zone 0, AEx ia IIC T5...T2 Ga When installed per Control Drawing 71097/1387 Type 4X, Single Seal

Safety parameter	
Voltage U_i	30 V
Current I_i	100 mA
Power P_i	0.9 W
Capacitance C_i	12 nF
Inductance L_i	0 mH

The applicable temperature class, ambient temperature range and process temperature range of the equipment is as follows:

Table 1-1: Temperature Code for 2140**E* Version**

Temperature class	Ambient temperature range (T_a)	Process temperature range (T_p)
T2	$-60\text{ °C} \leq T_a \leq 60\text{ °C}$	$< 260\text{ °C}$
T3	$-60\text{ °C} \leq T_a \leq 63.4\text{ °C}$	$< 195\text{ °C}$
T4	$-60\text{ °C} \leq T_a \leq 66.8\text{ °C}$	$< 130\text{ °C}$
T4	$-60\text{ °C} \leq T_a \leq 70\text{ °C}$	$< 70\text{ °C}$
T5	$-60\text{ °C} \leq T_a \leq 40\text{ °C}$	$< 95\text{ °C}$

Table 1-2: Temperature Code for 2140**M* Version**

Temperature class	Ambient temperature range (T_a)	Process temperature range (T_p)
T3	$-60\text{ °C} \leq T_a \leq 53\text{ °C}$	$< 180\text{ °C}$
T4	$-60\text{ °C} \leq T_a \leq 60.7\text{ °C}$	$< 130\text{ °C}$
T4	$-60\text{ °C} \leq T_a \leq 70\text{ °C}$	$< 70\text{ °C}$
T5	$-60\text{ °C} \leq T_a \leq 40\text{ °C}$	$< 95\text{ °C}$

1.5.3 E5 USA Explosion-proof

Certificate	80140960
Standards	FM Class 3600:2011; FM 3615:2006; UL 61010-1 3rd ed
Markings	CL I, Div 1, GRPS B, C, and D, T6...T2 CL I, Div 2, GRPS A, B, C, and D CL I, Zone 1, AEx db IIC T6...T2 Gb Type 4X, Single Seal

The applicable temperature class, ambient temperature range and process temperature range of the equipment is as follows:

Table 1-3: Temperature Code for 2140**E* Version**

Temperature class	Ambient temperature range (Ta)	Process temperature range (Tp)
T2	$-40\text{ °C} \leq Ta \leq 70\text{ °C}$	$< 260\text{ °C}$
T3	$-40\text{ °C} \leq Ta \leq 73.5\text{ °C}$	$< 195\text{ °C}$
T4	$-40\text{ °C} \leq Ta \leq 77\text{ °C}$	$< 130\text{ °C}$
T5	$-40\text{ °C} \leq Ta \leq 79\text{ °C}$	$< 95\text{ °C}$
T6	$-40\text{ °C} \leq Ta \leq 65\text{ °C}$	$< 80\text{ °C}$

Table 1-4: Temperature Code for 2140**M* Version**

Temperature class	Ambient temperature range (Ta)	Process temperature range (Tp)
T3	$-40\text{ °C} \leq Ta \leq 60\text{ °C}$	$< 180\text{ °C}$
T4	$-40\text{ °C} \leq Ta \leq 70\text{ °C}$	$< 130\text{ °C}$
T5	$-40\text{ °C} \leq Ta \leq 77\text{ °C}$	$< 95\text{ °C}$
T6	$-40\text{ °C} \leq Ta \leq 65\text{ °C}$	$< 80\text{ °C}$

1.6 Canada

1.6.1 G6 Canada Ordinary Location

Certificate	80140960
Standards	CAN/CSA C22.2 No 61010-1-12; ANSI/ISA-12.27-01:2011
Markings	Type 4X, Single Seal

To be supplied by a Class 2 or Limited Energy Source in accordance with CSA 61010-1-12

1.6.2 I6 Canada Intrinsic Safety and Nonincendive

Certificate	80140960
Standards	CAN/CSA C22.2 No. 157-M1992 (R2012); CAN/CSA Std No. 60079-0-15, CAN/CSA Std. C22.2 No. 60079-11-14, ANSI/ISA 12.27.01:2011
Markings	Class I, Groups A, B, C, and D, T5...T2 Class I, Division 2, Groups A, B, C, and D Ex ia IIC T5...T2 Ga Type 4X, Single Seal When installed per Control Drawing 71097/1387

Safety parameter	
Voltage U_i	30 V
Current I_i	100 mA
Power P_i	0.9 W
Capacitance C_i	12 nF
Inductance L_i	0 mH

The applicable temperature class, ambient temperature range and process temperature range of the equipment is as follows:

Table 1-5: Temperature Code for 2140**E* Version**

Temperature class	Ambient temperature range (Ta)	Process temperature range (Tp)
T2	-60 °C ≤ Ta ≤ 60 °C	< 260 °C
T3	-60 °C ≤ Ta ≤ 63.4 °C	< 195 °C
T4	-60 °C ≤ Ta ≤ 66.8 °C	< 130 °C
T4	-60 °C ≤ Ta ≤ 70 °C	< 70 °C
T5	-60 °C ≤ Ta ≤ 40 °C	< 95 °C

Table 1-6: Temperature Code for 2140**M* Version**

Temperature class	Ambient temperature range (Ta)	Process temperature range (Tp)
T3	-60 °C ≤ Ta ≤ 53 °C	< 180 °C
T4	-60 °C ≤ Ta ≤ 60.7 °C	< 130 °C
T4	-60 °C ≤ Ta ≤ 70 °C	< 70 °C
T5	-60 °C ≤ Ta ≤ 40 °C	< 95 °C

1.6.3 E6 Canada Explosion-proof

Certificate	80140960
Standards	CAN/CSA Std C22.2 No. 30 -M1986 (R2012); CAN/CSA C22.2 No. 60079-0-15; CAN/CSA C22.2 No. 60079-1-16; CAN/CSA No. 61010-1-12; CAN/CSA C22.2 No. 94-M91 (R2011); CAN/CSA C22.2 No. 213-2016; ANSI/ISA 12.27.01:2011
Markings	Class I, Groups B, C, and D, T6...T2 Class I, Division 2, Groups A, B, C, and D Ex db IIC T6...T2 Gb Type 4X, Single Seal

The applicable temperature class, ambient temperature range and process temperature range of the equipment is as follows:

Table 1-7: Temperature Code for 2140**E* Version**

Temperature class	Ambient temperature range (Ta)	Process temperature range (Tp)
T2	-40 °C ≤ Ta ≤ 70 °C	< 260 °C
T3	-40 °C ≤ Ta ≤ 73.5 °C	< 195 °C
T4	-40 °C ≤ Ta ≤ 77 °C	< 130 °C
T5	-40 °C ≤ Ta ≤ 79 °C	< 95 °C
T6	-40 °C ≤ Ta ≤ 65 °C	< 80 °C

Table 1-8: Temperature Code for 2140**M* Version**

Temperature class	Ambient temperature range (Ta)	Process temperature range (Tp)
T3	-40 °C ≤ Ta ≤ 60 °C	< 180 °C
T4	-40 °C ≤ Ta ≤ 70 °C	< 130 °C
T5	-40 °C ≤ Ta ≤ 77 °C	< 95 °C
T6	-40 °C ≤ Ta ≤ 65 °C	< 80 °C

1.7 Europe

1.7.1 I1 ATEX Intrinsic Safety, Dust

Certificate	Baseefa 16ATEX0136X; Baseefa 16ATEX0137X
Standards	EN IEC 60079-0:2018; EN 60079-11:2012; EN 60079-26:2015, EN 60079-31:2014
Markings	<p>⊕ II 1 G Ex ia IIC T5...T2 Ga</p> <p>⊕ II 1 D Ex ta IIIC T92 °C...T272°C, T₂₀₀100°C...T₂₀₀280°C Da (-20°C ≤ Ta ≤ +80°C)</p>

Safety parameter	
Voltage U _i	30 V
Current I _i	108 mA
Power P _i	0.9 W
Capacitance C _i	12 nF
Inductance L _i	0 mH

The applicable temperature class, ambient temperature range and process temperature range of the equipment is as follows:

Table 1-9: Temperature Code for 2140**E* Version**

Temperature class	Ambient temperature range (Ta)	Process temperature range (Tp)
T2	$-60\text{ °C} \leq Ta \leq 60\text{ °C}$	$-70\text{ °C} \leq Tp \leq 260\text{ °C}$
T3	$-60\text{ °C} \leq Ta \leq 63\text{ °C}$	$-70\text{ °C} \leq Tp \leq 195\text{ °C}$
T4	$-60\text{ °C} \leq Ta \leq 66\text{ °C}$	$-70\text{ °C} \leq Tp \leq 130\text{ °C}$
T5	$-60\text{ °C} \leq Ta \leq 40\text{ °C}$	$-70\text{ °C} \leq Tp \leq 95\text{ °C}$

Table 1-10: Temperature Code for 2140**M* Version**

Temperature class	Ambient temperature range (Ta)	Process temperature range (Tp)
T3	$-60\text{ °C} \leq Ta \leq 53\text{ °C}$	$-40\text{ °C} \leq Tp \leq 180\text{ °C}$
T4	$-60\text{ °C} \leq Ta \leq 60\text{ °C}$	$-40\text{ °C} \leq Tp \leq 130\text{ °C}$
T5	$-60\text{ °C} \leq Ta \leq 40\text{ °C}$	$-40\text{ °C} \leq Tp \leq 95\text{ °C}$

Specific Conditions of Use (X):

Intrinsic safety

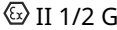
1. The equipment, when fitted with the transient suppression terminal block, is not capable of withstanding the 500 volt insulation test. This must be taken into account when installing the equipment.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish. However, care should be taken to protect it from impact or abrasion if located in Zone 0.
3. The enclosure may be given a non-standard paint finish which may constitute a potential electrostatic ignition risk. Care should be taken to protect it from external conditions conducive to the build-up of electrostatic charge on such surfaces. The enclosure must not be rubbed or cleaned with a dry cloth.

Protection by enclosure, Ex t

1. Cable entries must maintain the ingress protection rating of the enclosure to at least IP66.
2. Unused cable entries must be filled with suitable blanking plugs which maintain the ingress protection of the enclosure to at least IP66.

3. Cable entries and blanking plugs must be suitable for the ambient temperature range of the equipment and be capable of withstanding a 7J impact test.
4. The enclosure may be given a non-standard paint finish which may constitute a potential electrostatic ignition risk. Care should be taken to protect it from external conditions conducive to the build-up of electrostatic charge on such surfaces. The enclosure must not be rubbed or cleaned with a dry cloth.

1.7.2 I8 ATEX Intrinsic Safety (ib)

Certificate	Baseefa 16ATEX0136X
Standards	EN IEC 60079-0:2018; EN 60079-11:2012; EN 60079-26:2015
Markings	 II 1/2 G Ex ib IIC T5...T2 Ga/Gb

Safety parameter	
Voltage U_i	30 V
Current I_i	108 mA
Power P_i	0.9 W
Capacitance C_i	12 nF
Inductance L_i	0 mH

The applicable temperature class, ambient temperature range and process temperature range of the equipment is as follows:

Table 1-11: Temperature Code for 2140**E* Version**

Temperature class	Ambient temperature range (T_a)	Process temperature range (T_p)
T2	$-60\text{ °C} \leq T_a \leq 60\text{ °C}$	$-70\text{ °C} \leq T_p \leq 260\text{ °C}$
T3	$-60\text{ °C} \leq T_a \leq 63\text{ °C}$	$-70\text{ °C} \leq T_p \leq 195\text{ °C}$
T4	$-60\text{ °C} \leq T_a \leq 66\text{ °C}$	$-70\text{ °C} \leq T_p \leq 130\text{ °C}$
T5	$-60\text{ °C} \leq T_a \leq 40\text{ °C}$	$-70\text{ °C} \leq T_p \leq 95\text{ °C}$


Table 1-12: Temperature Code for 2140**M* Version**

Temperature class	Ambient temperature range (Ta)	Process temperature range (Tp)
T3	-60 °C ≤ Ta ≤ 53 °C	-40 °C ≤ Tp ≤ 180 °C
T4	-60 °C ≤ Ta ≤ 60 °C	-40 °C ≤ Tp ≤ 130 °C
T5	-60 °C ≤ Ta ≤ 40 °C	-40 °C ≤ Tp ≤ 95 °C

Specific Conditions of Use (X):

1. The equipment, when fitted with the transient suppression terminal block, is not capable of withstanding the 500 volt insulation test. This must be taken into account when installing the equipment.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish. However, care should be taken to protect it from impact or abrasion if located in Zone 0.
3. The enclosure may be given a non-standard paint finish which may constitute a potential electrostatic ignition risk. Care should be taken to protect it from external conditions conducive to the build-up of electrostatic charge on such surfaces. The enclosure must not be rubbed or cleaned with a dry cloth.

1.7.3 E1 ATEX Flameproof

Certificate	Dekra 16ATEX0082X
Standards	EN IEC 60079-0:2018; EN 60079-1:2014; EN 60079-26:2015
Markings	 II 1/2 G Ex db IIC T6...T2 Ga/Gb

The applicable temperature class, ambient temperature range and process temperature range of the equipment is as follows:

Table 1-13: Temperature Code for 2140**E* Version**

Temperature class	Ambient temperature range (Ta)	Process temperature range (Tp)
T2	-40 °C ≤ Ta ≤ 74 °C	-70 °C ≤ Tp ≤ 260 °C
T3	-40 °C ≤ Ta ≤ 77 °C	-70 °C ≤ Tp ≤ 195 °C
T4	-40 °C ≤ Ta ≤ 79 °C	-70 °C ≤ Tp ≤ 130 °C
T5	-40 °C ≤ Ta ≤ 80 °C	-70 °C ≤ Tp ≤ 95 °C
T6	-40 °C ≤ Ta ≤ 65 °C	-40 °C ≤ Tp ≤ 80 °C


Table 1-14: Temperature Code for 2140**M* Version**

Temperature class	Ambient temperature range (Ta)	Process temperature range (Tp)
T3	-40 °C ≤ Ta ≤ 60 °C	-40 °C ≤ Tp ≤ 180 °C
T4	-40 °C ≤ Ta ≤ 70 °C	-40 °C ≤ Tp ≤ 130 °C
T5	-40 °C ≤ Ta ≤ 77 °C	-40 °C ≤ Tp ≤ 95 °C
T6	-40 °C ≤ Ta ≤ 65 °C	-40 °C ≤ Tp ≤ 80 °C

Specific Conditions of Use (X):

1. The user is to ensure the probe assembly is installed in such a way to prevent any damage due to impact or ignition source due to friction.
2. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up of painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.
3. Flameproof joints are not intended for repair.

1.7.4 ND ATEX Dust

Certificate	Baseefa 16ATEX0137X
Standards	EN IEC 60079-0:2018; EN 60079-31:2014
Markings	 II 1 D Ex ta IIIC T92 °C...T272°C, T ₂₀₀ 100°C...T ₂₀₀ 280°C Da (-20°C ≤ Ta ≤ +80°C)

Specific Conditions of Use (X):

1. Cable entries must maintain the ingress protection rating of the enclosure to at least IP66.
2. Unused cable entries must be filled with suitable blanking plugs which maintain the ingress protection of the enclosure to at least IP66.
3. Cable entries and blanking plugs must be suitable for the ambient temperature of the equipment and be capable of withstanding a 7J impact test.
4. The enclosure may be given a non-standard paint finish which may constitute a potential electrostatic ignition risk. Care should be taken to protect it from external conditions conducive to the build-up of electrostatic charge on such surfaces. The enclosure must not be rubbed or cleaned with a dry cloth.

1.8 International

1.8.1 I7 IECEx Intrinsic Safety

Certificate	IECEX BAS 16.0105X
Standards	IEC 60079-0:2017; IEC 60079-11:2011
Markings	Ex ia IIC T5...T2 Ga

Safety parameter	
Voltage U_i	30 V
Current I_i	108 mA
Power P_i	0.9 W
Capacitance C_i	12 nF
Inductance L_i	0 mH

The applicable temperature class, ambient temperature range and process temperature range of the equipment is as follows:

Table 1-15: Temperature Code for 2140**E* Version**

Temperature class	Ambient temperature range (Ta)	Process temperature range (Tp)
T2	-60 °C ≤ Ta ≤ 60 °C	-70 °C ≤ Tp ≤ 260 °C
T3	-60 °C ≤ Ta ≤ 63 °C	-70 °C ≤ Tp ≤ 195 °C
T4	-60 °C ≤ Ta ≤ 66 °C	-70 °C ≤ Tp ≤ 130 °C
T5	-60 °C ≤ Ta ≤ 40 °C	-70 °C ≤ Tp ≤ 95 °C

Table 1-16: Temperature Code for 2140**M* Version**

Temperature class	Ambient temperature range (Ta)	Process temperature range (Tp)
T3	-60 °C ≤ Ta ≤ 53 °C	-40 °C ≤ Tp ≤ 180 °C
T4	-60 °C ≤ Ta ≤ 60 °C	-40 °C ≤ Tp ≤ 130 °C
T5	-60 °C ≤ Ta ≤ 40 °C	-40 °C ≤ Tp ≤ 95 °C

Specific Conditions of Use (X):

1. The equipment, when fitted with the transient suppression terminal block, is not capable of withstanding the 500 volt insulation test. This must be taken into account when installing the equipment.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish. However, care should be taken to protect it from impact or abrasion if located in Zone 0.
3. The enclosure may be given a non-standard paint finish which may constitute a potential electrostatic ignition risk. Care should be taken to protect it from external conditions conducive to the build-up of electrostatic charge on such surfaces. The enclosure must not be rubbed or cleaned with a dry cloth.

1.8.2 E7 IECEx Flameproof and Dust

Certificate	IECEx DEK 16.0040X and IECEx BAS 16.0106X
Standards	IEC 60079-0:2017; IEC 60079-1:2014; IEC 60079-26:2014; IEC 60079-31:2013
Markings	Ex db IIC T6...T2 Ga/Gb Ex ta IIIC T92 °C...T272°C, (T ₂₀₀ 100°C...T ₂₀₀ 280°C) Da (-20 °C ≤ Ta ≤ +80 °C)

The applicable temperature class, ambient temperature range and process temperature range of the equipment (flameproof) is as follows:

Table 1-17: Temperature Code for 2140**E* Version**

Temperature class	Ambient temperature range (Ta)	Process temperature range (Tp)
T2	$-40\text{ °C} \leq Ta \leq 74\text{ °C}$	$-70\text{ °C} \leq Tp \leq 260\text{ °C}$
T3	$-40\text{ °C} \leq Ta \leq 77\text{ °C}$	$-70\text{ °C} \leq Tp \leq 195\text{ °C}$
T4	$-40\text{ °C} \leq Ta \leq 79\text{ °C}$	$-70\text{ °C} \leq Tp \leq 130\text{ °C}$
T5	$-40\text{ °C} \leq Ta \leq 80\text{ °C}$	$-70\text{ °C} \leq Tp \leq 95\text{ °C}$
T6	$-40\text{ °C} \leq Ta \leq 65\text{ °C}$	$-40\text{ °C} \leq Tp \leq 80\text{ °C}$

Table 1-18: Temperature Code for 2140**M* Version**

Temperature class	Ambient temperature range (Ta)	Process temperature range (Tp)
T3	$-40\text{ °C} \leq Ta \leq 60\text{ °C}$	$-40\text{ °C} \leq Tp \leq 180\text{ °C}$
T4	$-40\text{ °C} \leq Ta \leq 70\text{ °C}$	$-40\text{ °C} \leq Tp \leq 130\text{ °C}$
T5	$-40\text{ °C} \leq Ta \leq 77\text{ °C}$	$-40\text{ °C} \leq Tp \leq 95\text{ °C}$
T6	$-40\text{ °C} \leq Ta \leq 65\text{ °C}$	$-40\text{ °C} \leq Tp \leq 80\text{ °C}$

Specific Conditions of Use (X):

Flameproof

1. The user is to ensure the probe assembly is installed in such a way to prevent any damage due to impact or ignition source due to friction.
2. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up of painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.
3. Flameproof joints are not intended for repair.

Protection by enclosure, Ex t

1. Cable entries must maintain the ingress protection rating of the enclosure to at least IP66.

2. Unused cable entries must be filled with suitable blanking plugs which maintain the ingress protection of the enclosure to at least IP66.
3. Cable entries and blanking plugs must be suitable for the ambient temperature of the equipment and be capable of withstanding a 7J impact test.
4. The enclosure may be given a non-standard paint finish which may constitute a potential electrostatic ignition risk. Care should be taken to protect it from external conditions conducive to the build-up of electrostatic charge on such surfaces. The enclosure must not be rubbed or cleaned with a dry cloth.

1.8.3 NK IECEx Dust

Certificate	IECEx BAS 16.0106X
Standards	IEC 60079-0:2017; IEC 60079-31:2013
Markings	Ex ta IIIC T92°C...T272°C, T ₂₀₀ 100 °C...T ₂₀₀ 280 °C , Da (-20 °C ≤ Ta ≤ +80 °C)

Specific Conditions of Use (X):

1. Cable entries must maintain the ingress protection rating of the enclosure to at least IP66.
2. Unused cable entries must be filled with suitable blanking plugs which maintain the ingress protection of the enclosure to at least IP66.
3. Cable entries and blanking plugs must be suitable for the ambient temperature of the equipment and be capable of withstanding a 7J impact test.
4. The enclosure may be given a non-standard paint finish which may constitute a potential electrostatic ignition risk. Care should be taken to protect it from external conditions conducive to the build-up of electrostatic charge on such surfaces. The enclosure must not be rubbed or cleaned with a dry cloth.

1.9 Brazil

1.9.1 I2 Brazil Intrinsic Safety

Certificate	UL-BR 17.0837X (Sweden) UL-BR 23.0984X (USA)
Standards	ABNT NBR IEC 60079-0:2020 ABNT NBR IEC 60079-11:2013
Markings	Ex ia IIC T5...T2 Ga

Specific Conditions of use (X):

See certificate.

1.9.2 E2 Brazil Flameproof

Certificate	UL-BR 17.0843X (Sweden) UL-BR 23.0985X (USA)
Standards	ABNT NBR IEC 60079-0:2020 ABNT NBR IEC 60079-1:2016 ABNT NBR IEC 60079-26:2016
Markings	Ex db IIC T6...T2 Ga/Gb

Specific Conditions of Use (X):

See certificate.

1.10 China

1.10.1 I3 China Intrinsic Safety

Certificate GYJ20.1385X (CCC)

Markings Ex ia IIC T5~T2 Ga

Specific Conditions of Use (X):

See certificate.

1.10.2 E3 China Flameproof and Dust

Certificate GYJ20.1386X (CCC)

Markings Ex db IIC T6~T2 Ga/Gb

Ex ta IIIC T92°C~T272°C T₂₀₀100°C...T₂₀₀280°C Da

Specific Conditions of Use (X):

See certificate.

1.11 Technical Regulations Customs Union (TR-CU)



TR CU 020/2011 "Electromagnetic Compatibility of Technical Products"

TR CU 004/2011 "On safety of low-voltage equipment"

TR TC 032/2013 "On the safety equipment of high pressure"

Certificate EAЭC KZ 7500525.01.01.01708



TR CU 012/2011 "On safety of equipment intended for use in explosive atmospheres"

1.11.1 IM Technical Regulations Customs Union (EAC) Intrinsic Safety

Certificate EAЭC KZ 7500525.01.01.01906

Markings 0Ex ia IIC T5...T2 Ga X

Specific Conditions of Use (X):

See certificate.

1.11.2 EM Technical Regulations Customs Union (EAC) Flameproof and Dust

Certificate EAЭC KZ 7500525.01.01.01906

Markings 0/1Ex db IIC T6...T2 Ga/Gb X

Ex ta IIIC T92°C...T272°C

T₂₀₀100°C...T₂₀₀280°C Da X

Specific Conditions of Use (X):

See certificate.

1.12 India

1.12.1 IW Intrinsic Safety

Certificate PESO P483624

Markings Ex ia IIC T5...T2 Ga

Specific Conditions of Use (X):

See certificate.

1.12.2 EW Flameproof

Certificate	PESO P480713
Markings	Ex db IIC T6...T2 Ga/Gb

Specific Conditions of Use (X):

See certificate.

1.13 United Arab Emirates

1.13.1 Flameproof

Certificate	23-11-22694/Q23-11-048838/NB0002, 23-11-22710/Q23-11-048839/NB0002
Markings	Same as IECEx (I7)

Specific Conditions of Use (X):

Same as IECEx (I7)

1.13.2 Intrinsic Safety

Certificate	23-11-22694/Q23-11-048838/NB0002, 23-11-22710/Q23-11-048839/NB0002
Markings	Same as IECEx (I7)

Specific Conditions of Use (X):

Same as IECEx (I7)

1.14 Functional safety

1.14.1 QT Safety-certified to IEC 61508:2010 with certificate of FMEDA data

Certificate	exida MOB 15-08-012 C001
--------------------	--------------------------

1.15 NAMUR compliance

1.15.1 Suitable for intended use

Compliant with NAMUR NE 95:2013, "Basic Principles of Homologation"

1.16 Overfill prevention

1.16.1 U1 Germany WHG

Certificate	Z-65.11-570
Application	TÜV tested and approved by DIBt for overfill prevention according to the German WHG regulations.

1.16.2 Belgium - Vlarem

Certificate	VIL/35/P017110041/NL/002
Standards	Vlarem II Chapter 5.17 Vlarem II Annex 5.17.7

1.17 Pressure approvals

1.17.1 Canadian Registration Number (CRN)

Certificate	0F04227.2C
--------------------	------------


The requirements of CRN are met when a Rosemount 2140 CSA-approved vibrating fork level detector model is configured with 316/316L stainless steel (1.4401/1.4404) process-wetted parts and either NPT threaded or 2-in. to 8-in. ASME B16.5 flanged process connections.

1.18 Combinations of approvals

K1	Combines I1 and E1
K5	Combines I5 and E5
KB	Combines I5, I6, E5, and E6
KZ	Combines G5 and G6
E8	Combines E1 and ND

1.19 Control drawing

Figure 1-1: 71097/1387 – USA and Canada Control Drawing


 EMERSON					APPROVAL		
TITLE	APPR.DRG. I.S. & NONINCENDIVE CONTROL DRAWING FOR ROSEMOUNT 2140				DOCUMENT NUMBER: -		
					71097/1387		
					Page 1 of 5		
AB	24/01/17	MBY-05601	GP		DRAWN	JPA	19/10/16
REVISION	DATE	ECO No.	NAME		APPROVED	SEE ECO	
CERTIFIED PRODUCT: ALTERATIONS TO THIS DOCUMENT MUST BE APPROVED BEFORE IMPLEMENTATION.							

GENERAL NOTES:

1. ASSOCIATED APPARATUS MANUFACTURER'S INSTALLATION DRAWING MUST BE FOLLOWED WHEN INSTALLING THIS EQUIPMENT.
2. CONTROL EQUIPMENT CONNECTED TO BARRIER MUST NOT USE OR GENERATE MORE THAN 250 Vrms or Vdc,
3. RESISTANCE BETWEEN INTRINSICALLY SAFE GROUND AND EARTH GROUND MUST BE LESS THAN 1 OHM,
4. INSTALLATION SHOULD BE IN ACCORDANCE WITH APPLICABLE LAWS/REGULATIONS AND CODE OR PRACTICE. I.E. FOR CANADA, THE CANADIAN ELECTRICAL CODE (CSA C22.1); FOR AMERICA, THE NATIONAL ELECTRICAL CODE (ANSI/NFPA 70) AND ANSI/ISA-RP12.6 "INSTALLATION OF INTRINSICALLY SAFE SYSTEMS FOR HAZARDOUS (CLASSIFIED) LOCATIONS".
5. THE ASSOCIATED APPARATUS, BARRIER OR ISOLATOR MUST BE APPROVED FOR CANADA, TO CANADIAN STANDARDS BY AN NRTL ACCREDITED BY THE STANDARDS COUNCIL OF CANADA (SCC). FOR AMERICA, TO AMERICAN STANDARDS BY AN NRTL ACCREDITED BY THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).
6. WARNING -SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC AND NON-INCENDIVE SAFETY,
AVERTISSEMENT: LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SÉCURITÉ INTRINSÈQUE ET LA SÉCURITÉ NON INCENDIAIRES
7. ASSOCIATED APPARATUS MUST MEET THE FOLLOWING PARAMETERS:
 Uo or Voc or Vt LESS THAN or EQUAL TO Ui (Vmax)
 Io or Isc or It LESS THAN or EQUAL TO Ii (Imax)
 Po or Pmax LESS THAN or EQUAL TO Pi (Pmax)
 Ca IS GREATER THAN or EQUAL THE SUM OF ALL Ci's PLUS Ccable
 La IS GREATER THAN or EQUAL THE SUM OF ALL Li's PLUS Lcable
8. THE ASSOCIATED APPARATUS MUST BE A RESISTIVELY LIMITED SINGLE OR MULTIPLE CHANNEL APPROVED BARRIER HAVING PARAMETERS LESS THAN THOSE QUOTED, AND FOR WHICH THE OUTPUT AND THE COMBINATIONS OF OUTPUTS IS NON-IGNITION CAPABLE FOR THE CLASS, DIVISION AND GROUP OF USE,
9. FIELD WIRING SHOULD BE RATED TO 70°C MINIMUM,

© ROSEMOUNT MEASUREMENT LIMITED 2017
 THE REPRODUCTION, DISTRIBUTION, & UTILISATION OF THIS DOCUMENT AS WELL AS THE COMMUNICATION OF ITS CONTENTS TO OTHERS WITHOUT EXPRESS AUTHORISATION IS PROHIBITED. OFFENDERS WILL BE HELD LIABLE FOR PAYMENT OF DAMAGES. ALL RIGHTS RESERVED IN THE EVENT OF PATENT, UTILITY MODEL OR DESIGN.

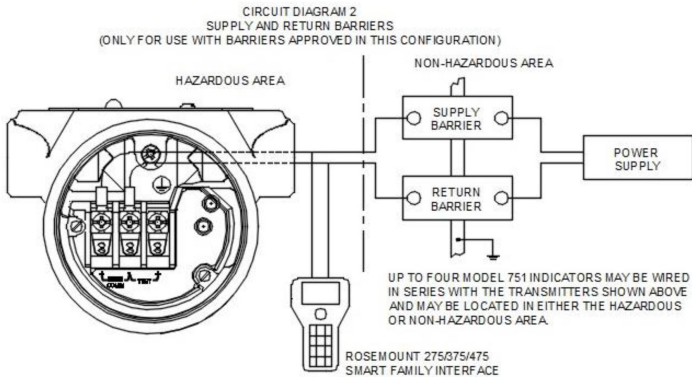
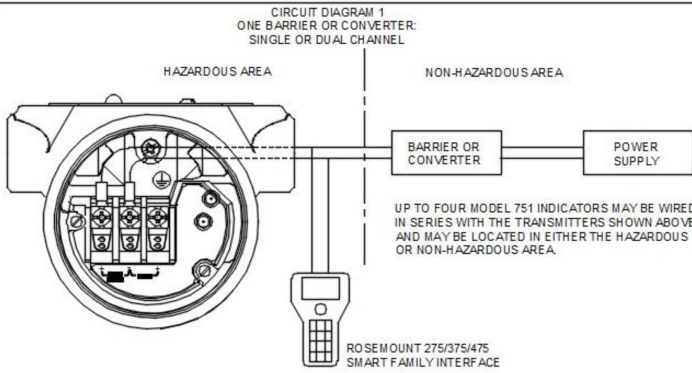
L2073 Iss. AA

 EMERSON APPR.DRG. I.S. & NONINCENDIVE CONTROL DRAWING FOR ROSEMOUNT 2140				APPROVAL DOCUMENT NUMBER: - 71097/1387 Page 2 of 5			
TITLE				DRAWN	JPA	19/10/16	
AB	24/01/17	MBY-05601	GP	APPROVED	SEE ECO		
REVISION	DATE	ECO No.	NAME				
CERTIFIED PRODUCT: ALTERATIONS TO THIS DOCUMENT MUST BE APPROVED BEFORE IMPLEMENTATION.							

DIV 1 INSTALLATION OPTIONS


THE ROSEMOUNT TRANSMITTER IS APPROVED AS INTRINSICALLY SAFE WHEN USED IN CIRCUIT WITH APPROVED BARRIERS WHICH MEET THE ENTITY PARAMETERS LISTED IN THE CLASS I, DIVISION 1 GROUPS INDICATED. ADDITIONALLY, THE ROSEMOUNT 751 FIELD SIGNAL INDICATOR IS APPROVED AS INTRINSICALLY SAFE WHEN CONNECTED IN CIRCUIT WITH ROSEMOUNT TRANSMITTERS AND APPROVED BARRIERS WHICH MEET THE ENTITY PARAMETERS LISTED FOR CLASS I, DIVISION 1, GROUPS INDICATED.

TO ASSURE AN INTRINSICALLY SAFE SYSTEM, THE TRANSMITTER AND BARRIER MUST BE WIRED IN ACCORDANCE WITH THE BARRIER MANUFACTURER'S FIELD WIRING INSTRUCTIONS AND THE APPLICABLE CIRCUIT DIAGRAM.



© ROSEMOUNT MEASUREMENT LIMITED 2017
 THE REPRODUCTION, DISTRIBUTION, & UTILISATION OF THIS DOCUMENT AS WELL AS THE COMMUNICATION OF ITS CONTENTS TO OTHERS WITHOUT EXPRESS AUTHORISATION IS PROHIBITED. OFFENDERS WILL BE HELD LIABLE FOR PAYMENT OF DAMAGES. ALL RIGHTS RESERVED IN THE EVENT OF PATENT, UTILITY MODEL OR DESIGN.

L2073 Iss. AA

 EMERSON				APPROVAL			
TITLE APPR.DRG. I.S. & NONINCENDIVE CONTROL DRAWING FOR ROSEMOUNT 2140				DOCUMENT NUMBER: -			
				71097/1387			
				Page 3 of 5			
AB	24/01/17	MBY-05601	GP		DRAWN	JPA	19/10/16
REVISION	DATE	ECO No.	NAME		APPROVED	SEE ECO	
CERTIFIED PRODUCT: ALTERATIONS TO THIS DOCUMENT MUST BE APPROVED BEFORE IMPLEMENTATION.							

ENTITY CONCEPT APPROVALS

THE ENTITY CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS TO ASSOCIATED APPARATUS NOT SPECIFICALLY EXAMINED IN COMBINATION AS A SYSTEM. THE APPROVED VALUES OF MAX. OPEN CIRCUIT VOLTAGE (Voc OR Vt) AND MAX. SHORT CIRCUIT CURRENT (Isc OR It) AND MAX.POWER (Voc X Isc/4) OR (Vt X It/4), FOR THE ASSOCIATED APPARATUS MUST BE LESS THAN OR EQUAL TO THE MAXIMUM SAFE INPUT VOLTAGE (Vmax), MAXIMUM SAFE INPUT CURRENT (Imax), AND MAXIMUM SAFE INPUT POWER (Pmax) OF THE INTRINSICALLY SAFE APPARATUS. IN ADDITION, THE APPROVED MAX. ALLOWABLE CONNECTED CAPACITANCE (Ca) OF THE ASSOCIATED APPARATUS MUST BE GREATER THAN THE SUM OF THE INTERCONNECTING CABLE CAPACITANCE AND THE UNPROTECTED INTERNAL CAPACITANCE (Ci) OF THE INTRINSICALLY SAFE APPARATUS, AND THE APPROVED MAX. ALLOWABLE CONNECTED INDUCTANCE (La) OF THE ASSOCIATED APPARATUS MUST BE GREATER THAN THE SUM OF THE INTERCONNECTING CABLE INDUCTANCE AND THE UNPROTECTED INTERNAL INDUCTANCE (Li) OF THE INTRINSICALLY SAFE APPARATUS.

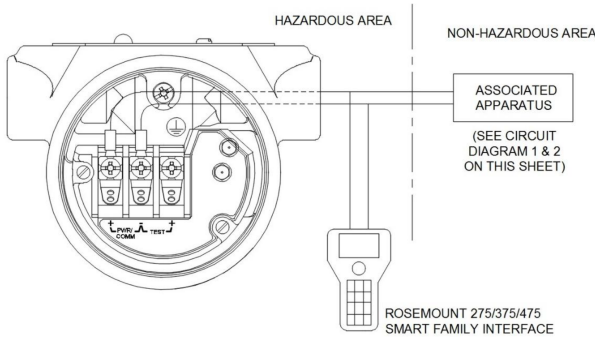
NOTE: ENTITY PARAMETERS LISTED APPLY ONLY TO ASSOCIATED APPARATUS WITH LINEAR OUTPUT.

CLASS I, DIV 1, GROUPS A AND B

Vmax = 30V	Vt OR Voc IS LESS THAN OR EQUAL TO 30V
Imax = 100mA	It OR Isc IS LESS THAN OR EQUAL TO 100mA
Pmax = 0.9 WATT	($\frac{Vt \times It}{4}$) OR ($\frac{Voc \times Isc}{4}$) IS LESS THAN OR EQUAL TO 0.9 WATT
Ci = 0.012µF	Ca IS GREATER THAN 0.012µF
Li = 0mH	La IS GREATER THAN 0mH

CLASS I, DIV 1, GROUPS C AND D


Vmax = 30V	Vt OR Voc IS LESS THAN OR EQUAL TO 30V
Imax = 100mA	It OR Isc IS LESS THAN OR EQUAL TO 100mA
Pmax = 0.9 WATT	($\frac{Vt \times It}{4}$) OR ($\frac{Voc \times Isc}{4}$) IS LESS THAN OR EQUAL TO 0.9 WATT
Ci = 0.012µF	Ca IS GREATER THAN 0.012µF
Li = 0mH	La IS GREATER THAN 0mH



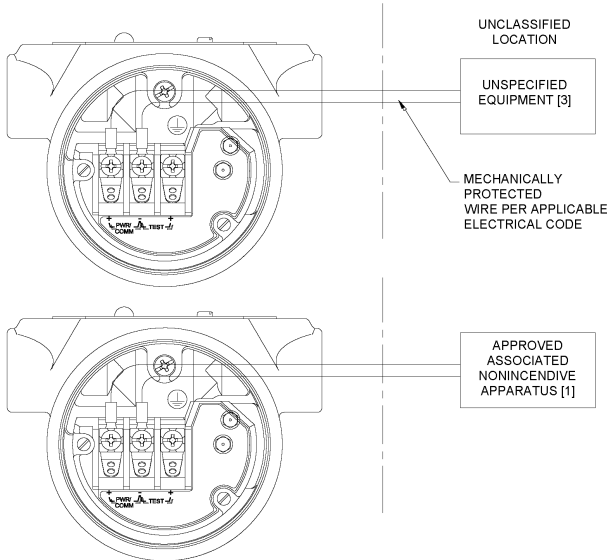
DIV 2 INSTALLATION OPTIONS

© ROSEMOUNT MEASUREMENT LIMITED 2017
THE REPRODUCTION, DISTRIBUTION, & UTILISATION OF THIS DOCUMENT AS WELL AS THE COMMUNICATION OF ITS CONTENTS TO OTHERS WITHOUT EXPRESS AUTHORIZATION IS PROHIBITED. OFFENDERS WILL BE HELD LIABLE FOR PAYMENT OF DAMAGES. ALL RIGHTS RESERVED IN THE EVENT OF PATENT, UTILITY MODEL, OR DESIGN.

L2073 Iss. AA

 EMERSON				APPROVAL			
TITLE	APPR.DRG. I.S. & NONINCENDIVE CONTROL DRAWING FOR ROSEMOUNT 2140			DOCUMENT NUMBER: -			
				71097/1387			
				Page 4 of 5			
AB	24/01/17	MBY-05601	GP	DRAWN	JPA	19/10/16	
REVISION	DATE	ECO No.	NAME	APPROVED	SEE ECO		
CERTIFIED PRODUCT: ALTERATIONS TO THIS DOCUMENT MUST BE APPROVED BEFORE IMPLEMENTATION.							

CLASS 1, DIV.2 HAZARDOUS (CLASSIFIED) LOCATION




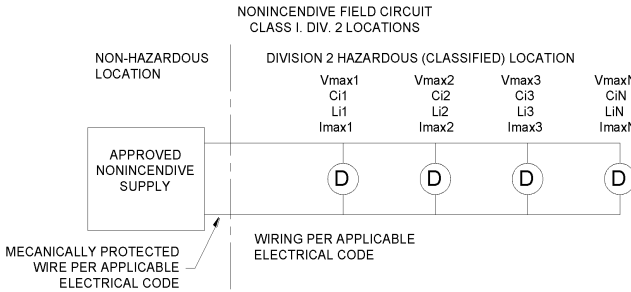
NOTES:

- [1] ASSOCIATED NON-INCENDIVE APPARATUS PARAMETERS SHALL BE THE SAME AS THOSE SHOWN ON PAGE 3
- [2] MUST BE INSTALLED IN ACCORDANCE WITH THE APPLICABLE ELECTRIC CODE FOR WIRING IN DIVISION 2 HAZARDOUS (CLASSIFIED) LOCATIONS.
- [3] SUPPLIED BY A CLASS 2 OR LIMITED ENERGY SOURCE IN ACCORDANCE WITH CAN/CSA-C22.2 No. 61010-1-12

© ROSEMOUNT MEASUREMENT LIMITED 2017
 THE REPRODUCTION, DISTRIBUTION, & UTILISATION OF THIS DOCUMENT AS WELL AS THE COMMUNICATION OF ITS CONTENTS TO OTHERS WITHOUT EXPRESS AUTHORISATION IS PROHIBITED. OFFENDERS WILL BE HELD LIABLE FOR PAYMENT OF DAMAGES. ALL RIGHTS RESERVED IN THE EVENT OF PATENT, UTILITY MODEL OR DESIGN.

L2073 Iss. AA

 EMERSON				APPROVAL				
TITLE	APPR.DRG. I.S. & NONINCENDIVE CONTROL DRAWING FOR ROSEMOUNT 2140			DOCUMENT NUMBER: -				
				71097/1387				
				Page 5 of 5				
AB	24/01/17	MBY-05601	GP			DRAWN	JPA	19/10/16
REVISION	DATE	ECO No.	NAME			APPROVED	SEE ECO	
CERTIFIED PRODUCT: ALTERATIONS TO THIS DOCUMENT MUST BE APPROVED BEFORE IMPLEMENTATION.								



**IN NORMAL OPERATION
DEVICES CONTROL THROUGH-CURRENT**

PARAMETERS	DEVICE	4-20mA/HART
$V_{oc} =$	Minimum of $(V_{max1}, V_{max2}, \dots, V_{maxN})$	V_{max} 42.4V
$I_{max1} \geq$	$I_{q1} + I_{signal1}$	Maximum normal operating current 23.5mA
$I_{max2} \geq$	$I_{q2} + I_{signal2}$	C_a 0.012μF
⋮	⋮	L_a 0μH
$I_{maxN} \geq$	$I_{qN} + I_{signalN}$	

$C_a \leq C_{i1} + C_{i2} + \dots + C_{iN} + C_{cable}$
 $L_a \leq L_{i1} + L_{i2} + \dots + L_{iN} + L_{cable}$

I_{max} for an individual device = $I_{q} + I_{signal}$
 I_{q} = Quiescent current through device
 (Maximum quiescent current for the device)
 I_{signal} = Signaling current through device
 (Protocol may limit signaling to one device at a time)

Operating $I_{max} = I_{q1} + I_{q2} + \dots + I_{qN} + I_{signal\ max}$
 $I_{signal\ max} = \text{Max. of } (I_{signal1}, I_{signal2}, \dots, I_{signalN})$

ROSEMOUNT 2140 TRANSMITTERS ARE CURRENT CONTROLLERS ON INDIVIDUAL PARALLEL BRANCHES WITH RESPECT TO THE POWER SUPPLY. IN NONINCENDIVE INSTALLATIONS THE I_{max} FOR EACH TRANSMITTER IS NOT RELATED TO THE MAXIMUM CURRENT OF THE POWER SUPPLY (I_{sc}) IN THE SAME MANNER AS FOR TRANSMITTER INSTALLED PER I.S. REQUIREMENTS. BECAUSE NONINCENDIVE REQUIREMENTS INCLUDE ONLY NORMAL OPERATING CONDITIONS, IT SHALL BE SUPPLIED BY A CLASS 2 OR LIMITED ENERGY SOURCE IN ACCORDANCE WITH CAN/CSA22.2 No. 61010-1-12


© ROSEMOUNT MEASUREMENT LIMITED 2017
 THE REPRODUCTION, DISTRIBUTION, & UTILISATION OF THIS DOCUMENT AS WELL AS THE COMMUNICATION OF ITS CONTENTS TO OTHERS WITHOUT EXPRESS AUTHORIZATION IS PROHIBITED. OFFENDERS WILL BE HELD LIABLE FOR PAYMENT OF DAMAGES. ALL RIGHTS RESERVED IN THE EVENT OF PATENT, UTILITY MODEL, OR DESIGN.

L2073 Iss. AA


1.20 EU Declaration of Conformity

Figure 1-2: EU Declaration of Conformity

Rev. #3



Declaration of Conformity



We,

Rosemount Tank Radar AB
Layoutvägen 1
S-435 33 MÖLNLYCKE
Sweden

declare under our sole responsibility that the product,


Rosemount™ 2140 Vibrating Fork Liquid Level Detector

manufactured by,

Rosemount Tank Radar AB
Layoutvägen 1
S-435 33 MÖLNLYCKE
Sweden

to which this declaration relates, is in conformity with the provisions of the European Union Directives, including the latest amendments, as shown in the attached schedule.

Assumption of conformity is based on the application of the harmonized standards and, when applicable or required, a European Union notified body certification, as shown in the attached schedule.



(signature)

Dajana Prastalo
(name)

Sr. Manager Product Approvals

(function)

19-Oct-23; Mölnlycke
(date of issue & place)

Page 1 of 3



Declaration of Conformity



EMC Directive (2014/30/EU)

Harmonized Standards: EN 61326-1:2013, EN 61326-2-3 :2013
 Other Standards Used: EN 61326-3-1:2008; IEC 61326-1:2020

ATEX Directive (2014/34/EU)

Dekra 16ATEX0082X – (Flameproof)

Equipment Group II Category 1/2 G
 Ex db IIC T6...T2 Ga/Gb
 Harmonized Standards: EN IEC 60079-0:2018, EN 60079-1:2014, EN 60079-26:2015

Baseefa 16ATEX0136X – (Intrinsic safety)

Equipment Group II Category 1G
 Ex ia IIC T5...T2 Ga
 Equipment Group II Category 1/2 G
 Ex ib IIC T5...T2 Ga/Gb
 Harmonized Standards: EN IEC 60079-0:2018, EN 60079-11:2012, EN 60079-26:2015

Baseefa 16ATEX0137X – (Dust Protection by Enclosure)

Equipment Group II Category 1 D
 Ex ta IIIC (T92°C... T272°C) (T₂₀₀100°C... T₂₀₀280°C) Da
 Harmonized Standards: EN IEC 60079-0:2018, EN 60079-31:2014

RoHS Directive (2011/65/EU)

The Model 2140 is in conformity with Directive 2011/65/EU of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment.



Declaration of Conformity

ATEX Directive Notified Body

SGS Fimko Oy [Notified Body Number: 0580]
Takomotie 8
FI-00380, Helsinki
Finland

DEKRA Certification B.V. [Notified Body Number: 0344]
Meander 1051
6825 MJ, Arnhem
Netherlands

ATEX Notified body for Quality Assurance

DNV Product Assurance AS [Notified Body Number: 2460]
Veritasveien 3
1363 Høvik
Norway

1.21 China RoHS

含有China RoHS 管控物质超过最大浓度限值的部件型号列表 Rosemount 2140
List of Rosemount 2140 Parts with China RoHS Concentration above MCVs

部件名称 Part Name	有害物质 / Hazardous Substances					
	铅 Lead (Pb)	汞 Mercury (Hg)	镉 Cadmium (Cd)	六价铬 Hexavalent Chromium (Cr +6)	多溴联苯 Polybrominated biphenyls (PBB)	多溴联苯醚 Polybrominated diphenyl ethers (PBDE)
电子组件 Electronics Assembly	O	O	O	O	O	O
壳体组件 Housing Assembly	O	O	O	O	O	O
传感器组件 Sensor Assembly	X	O	O	O	O	O

本表格系依据SJ/T11364的规定而制作。

This table is proposed in accordance with the provision of SJ/T11364.

O: 意为该部件的所有均质材料中该有害物质的含量均低于GB/T 26572所规定的限量要求。

O: Indicate that said hazardous substance in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.

X: 意为在该部件所使用的均质材料里，至少有一类均质材料中该有害物质的含量高于GB/T 26572所规定的限量要求。

X: Indicate that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572.



Product Certifications
00825-0200-4140, Rev. AL
December 2024

For more information: [Emerson.com/global](https://emerson.com/global)

©2024 Emerson. All rights reserved.

Emerson Terms and Conditions of Sale are available upon request. The Emerson logo is a trademark and service mark of Emerson Electric Co. Rosemount is a mark of one of the Emerson family of companies. All other marks are the property of their respective owners.

ROSEMOUNT™

