

CERTIFICATE OF COMPLIANCE

Certificate Number E516634
Report Reference E516634-20200930
Date 2020-October-15

Issued to: ANALOG DEVICES INC
804 WOBURN ST
WILMINGTON MA, 01887-3494 US

**This is to certify that
representative samples of**

EQUIPMENT AND SYSTEMS FOR USE IN HAZARDOUS
LOCATIONS – COMPONENT; INTRINSICALLY SAFE
EQUIPMENT AND SYSTEMS FOR USE IN ZONE
CLASSIFIED HAZARDOUS LOCATIONS - COMPONENT
See Addendum Page for Product Designation(s).

Have been investigated by UL in accordance with the
component requirements in the Standard(s) indicated on
this Certificate. UL Recognized components are incomplete
in certain constructional features or restricted in
performance capabilities and are intended for installation in
complete equipment submitted for investigation to UL LLC.

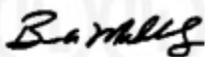
Standard(s) for Safety: See Addendum Page for Standards for Safety.

Additional Information: See the UL Online Certifications Directory at
<https://iq.ulprospector.com> for additional information

This *Certificate of Compliance* does not provide authorization to apply the UL Recognized Component Mark.
Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Recognized Component Mark should be considered as being UL Certified
and covered under UL's Follow-Up Services.

Look for the UL Recognized Component Mark on the product.



Bruce Mahrenholz, Director North American Certification Program

UL LLC

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contact a local UL Customer Service Representative at <http://ul.com/aboutul/locations/>



CERTIFICATE OF COMPLIANCE

Certificate Number E516634
Report Reference E516634-20200930
Date 2020-October-15

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements

USR, CNR – Digital Isolator, Intrinsically Safe Component for use in Class I, Division 1, Groups A, B, C, and D

USR – Digital Isolator, Intrinsically Safe Component for use in Class I, Zone 0, AEx ia IIC, Hazardous Locations

CSR – Digital Isolator, Intrinsically Safe Component for use in Class I, Zone 0, Ex ia IIC, Hazardous Locations

Models: ADuM1440ARQZ

ADuM1441ARQZ

ADuM1442ARQZ

ADuM1445ARQZ

ADuM1446ARQZ

ADuM1447ARQZ

ADuM1440ARSZ

ADuM1441ARSZ

ADuM1442ARSZ

ADuM1445ARSZ

ADuM1446ARSZ

ADuM1447ARSZ

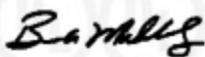
AD71217ARSZ

Standard(s) for Safety:

UL913, Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations.

UL 60079-0 and CSA 60079-0, Explosive atmospheres – Part 0: Equipment – General requirements.

UL 60079-11 and CSA 60079-11, Explosive Atmospheres – Part 11: Equipment Protection by Intrinsic Safety “i”.



Bruce Mahrenholz, Director North American Certification Program

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File E516634
Project 4789491519

September 30, 2020

REPORT

on

COMPONENT - Equipment and Systems for Use in Hazardous Locations - Component

(OERX2, OERX8)

* * * * *

Complementary Product Category

COMPONENT - Intrinsically Safe Equipment and Systems for Use in Zone
Classified Hazardous Locations - Component

(OEVX2, OEVX8)

Recognized Company:

ANALOG DEVICES INC
WILMINGTON, MA

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DESCRIPTION

PRODUCT COVERED:

USR, CNR - Digital Isolator, Intrinsically Safe Component for use in Class I, Division 1, Groups A, B, C, and D

USR - Digital Isolator, Intrinsically Safe Component for use in Class I, Zone 0, AEx ia IIC, Hazardous Locations

CSR - Digital Isolator, Intrinsically Safe Component for use in Class I, Zone 0, Ex ia IIC, Hazardous Locations

Models: ADuM1440ARQZ
ADuM1441ARQZ
ADuM1442ARQZ
ADuM1445ARQZ
ADuM1446ARQZ
ADuM1447ARQZ
ADuM1440ARSZ
ADuM1441ARSZ
ADuM1442ARSZ
ADuM1445ARSZ
ADuM1446ARSZ
ADuM1447ARSZ
AD71217ARSZ

GENERAL:

These devices are non-optical isolators consisting of an encoder and decoder. The encoder and decoder are separated by a transformer. Internal "chips" are connected to lead frames that are molded into the enclosure.

These products shall comply with all elements of ordinary locations File E214100, issued date 2014-08-09, Non-optical Isolating Device, covering for this Applicant and with the following description. Should the above mentioned Procedure File be withdrawn, labeling under this Procedure must be discontinued until authorization to resume is received.

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

USR indicates investigation to United States Standards:

- UL 913 Standard For Intrinsically Safe Apparatus and Associated Apparatus For Use in Class I, II, III, Division 1, Hazardous (Classified) Locations- Edition 8 - Revision Date 2018/12/10
- UL60079-0, Explosive Atmospheres - Part 0: Equipment - General Requirements, Edition 7, Revision Date 04/15/2020
- UL 60079-11 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"- Edition 6 - Revision Date 2018/09/14

CNR indicates investigation to Canadian National Standards:

- CSA C22.2 No. 60079-0, Electrical Apparatus for Explosive Gas Atmospheres - Part 0: General Requirements, Edition 4, Issue Date 02/2019
- CSA C22.2 NO. 60079-11:14 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"- Edition 2 - Issue Date 2014/02/01

The models ADuM144XARYZ are intended for use in an ambient temperature of -40°C to 85°C.

The model AD71217ARSZ is intended for use in an ambient temperature of -55°C to 85°C.

CONDITIONS OF ACCEPTABILITY -

1. The components being certified comply with UL 60079-11:2014. When one of these components will be used in an equipment, the component is to be fitted on a PCB inside a suitable enclosure and re-certified as equipment. The operating temperature range of these components is -55°C to 85 °C.
2. 2 This assembly is an isolating component between separate intrinsically safe circuits. The assembly should be connected to suitably certified intrinsically safe circuits considering following entity parameters:

Terminal Encoder

Parameter	Ui	Ii	Pi	Li	Ci
All Pins	42V	275mA	1.3W	0uH	4pF

Terminal Decoder

Parameter	Ui	Ii	Pi	Li	Ci
All Pins	42V	275mA	1.3W	0uH	4pF

3. The components (i.e. Digital Isolators) being certified will have the following safety ratings. The temperature class will be determined based on the following table:

Package Type	Temperature Coefficient	Maximum Permissible Temperature
QSOP-16	40.4°C/W	189.8°C
SSOP-20	51.2°C	218.0°C

*

- * 4. The capability of the device to control a load has not been investigated.
- * 5. These devices should be installed in a suitable end product enclosure.
- * 6. If the maximum operating (ambient) temperature exceeds the rating noted in the ratings table, additional means should be used to determine if the maximum junction temperature of the device is exceeded.
- * 7. For single protection devices, the insulation to the case has not been evaluated. For double protection devices, the insulation to the case has been evaluated to the isolation voltage specified in the ratings table.

CONSTRUCTION DRAWING:

- * **The** construction drawing **is** shown in ILL. 1.

MARKING:

- * **The** marking drawing **is** shown in ILL. 2.

MODEL NOMENCLATURE:

The Model number designates the following:

ADuM144XARYZ:

X - Number 0, 1, 2, 5, 6, 7 - Determines numbers of inputs on encoder or decoder side.

- 0- Encoder 4 inputs, Decoder 0 inputs
- 1- Encoder 3 inputs, Decoder 1 inputs
- 2- Encoder 2 inputs, Decoder 2 inputs
- 5- Encoder 4 inputs, Decoder 0 inputs
- 6- Encoder 3 inputs, Decoder 1 inputs
- 7- Encoder 2 inputs, Decoder 2 inputs

Y - Q or S - Determines package size.

- Q- RQ-16, QSOP-16 package
- S- RS-20, SSOP-20 package

AD71217ARSZ:

3 encoder inputs, 1 decoder input, RS-20, SSOP-20 package size, and a low ambient of -55°C.

CONSTRUCTION DETAILS:

General - The devices are constructed in accordance with the following figures, illustrations and descriptive pages. Dimensions are approximate unless specifically indicated otherwise.

[X] Spacings - Where affecting intrinsic safety, spacings have been evaluated and found to be in accordance with Table 5 of UL 60079-11, Sixth Edition and CSA C22.2 No. 60079-11:14.