



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

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Certificate No.: **IECEx TUR 20.0010X** Page 1 of 4 [Certificate history:](#)
Status: **Current** Issue No: 0
Date of Issue: **2021-11-25**
Applicant: **Additel Corporation**
2900 Saturn Street #B
Brea, CA 92821
United States of America
Equipment: **Callibrator and Recorder, Model Additel226Ex, Additel227Ex, Additel227Ex-HART, Additel260Ex and Additel273Ex**
Optional accessory:
Type of Protection: **Equipment protection by intrinsic safety "ia"**
Marking: **Ex ia IIC T4 Ga**

Approved for issue on behalf of the IECEx
Certification Body:

Dipl. -Ing. Klauspeter Graffi

Position:

Head of Certification Body

Signature:
(for printed version)

Date:

Klauspeter Graffi
2021-11-25

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2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.



Certificate issued by:

TUV Rheinland Industrie Service GmbH
Am Grauen Stein
51105 Cologne
Germany





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Certificate No.: **IECEX TUR 20.0010X**

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Date of issue: **2021-11-25**

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Manufacturer: **Additel Corporation**
2900 Saturn Street #B
Brea, CA 92821
United States of America

Additional
manufacturing
locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "I"
Edition:6.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

DE/TUR/ExTR20.0010/00

Quality Assessment Report:

DE/TUR/QAR16.0017/01



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

Model Additel226Ex, Additel227Ex, Additel227Ex-HART, Additel260Ex and Additel273Ex are the multifunction documenting process calibrator and recorder provided by Additel. With the documenting test task inside, it can significantly improve the efficiency of the test and calibration in the explosive gas atmosphere field application. It combines plenty of functions in a single device, such as gauge measurement, signal source, loop power, pressure indicator, HART communicator and thermal calculator. Users can perform field calibration, troubleshooting and maintenance by carrying only one calibrator, so that greatly improved the efficiency of the field engineers.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. WARNING – DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT
2. WARNING – DO NOT CHARGE THE BATTERY IN HAZARDOUS LOCATION
3. WARNING – USE ONLY the approved BATTERIES, see Ex instruction
4. The Measuring instrument P15 needs to be protected from impacts with high impact energy.
5. Do not touch the non-metallic enclosure or touch with the insulating materials only.
6. The batteries used in the equipment with same manufacturer, same models and same electrochemical system.
7. The conformal coating is applied to PCB boards was declared meet the requirements of IEC 60664-1 and IEC 60664-3 by manufacturer.
8. Suitable ambient temperature to be applied depends on the different batteries used, see Ex instruction.
9. No additional input energy limitation are required for Type-C USB port and DC charging port when U_m does not exceed 250V (internal OVP/OCP are designed in line with IEC 60079-11).
10. USB port only to be used in Non-hazardous area.
11. PX connect with pressure measuring module CDPX-EX only, the connected cables and flexible hose used for the external pressure modules are made of insulation materials, so end user should consider the risk of electrostatic discharge during material selection and installation process.
12. Metallic parts (only fasteners) presented a maximum capacitance of total 110pF, end user should consider this risk for suitable application.
13. Do not remove the silicone rubber protective sleeve from the enclosure of equipment in Hazardous area.
14. IS parameters must be observed for different external measuring ports on the different models in accordance with Ex instruction strictly and completely.
15. Intrinsically safe electrical system between IS apparatus and field IS apparatus:

Item	Calibrator	External input to Calibrator	System
Equipment group	IIC	IIC	IIC
Level of protection	ia	ia	ia
Temperature class	T4	T4	
Ambient temperature	-10°C~+50°C	-10°C~+50°C	

Parameter connections

Voltage	U_o	$U_i(30V)$	
Current	I_o	$I_i(100mA)$	
Power	P_o	$P_i(0.75W)$	

Cable parameters

Capacitance	C_o	C_i	C_c
Inductance	L_o	L_i	L_c
L/R ratio	/	/	/
Earthing	Isolated	Isolated	Isolated

$U_o \leq U_i, I_o \leq I_i, P_o \leq P_i$

$C_o \geq C_i + C_c$

$L_o \geq L_i + L_c$

Annex:



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IECEX TUR 20.0010 X
Revision 0

Attachment to Certificate IECEx TUR 20.0010 X

Device: **Calibrator and Recorder**
 Model name: Additel226Ex, Additel227Ex, Additel227Ex-HART, Additel260Ex
 Additel273Ex

Manufacturer: **Additel Corporation.**

Address: **2900 Saturn Street #B Brea, CA 92821, USA**

General product information:

Subject and type

Calibrator and Recorder

Model name: Additel226Ex, Additel227Ex, Additel227Ex-HART, Additel260Ex and Additel273Ex

Detailed naming for different models:

Multifunction Documenting Process Calibrator (Model Additel227Ex and Additel227Ex-HART)

Multifunction Process Calibrator (Model Additel226Ex)

Handheld Pressure Calibrator (Model Additel273Ex)

Handheld Multichannel Reference Recorder (Model Additel260Ex)

Note:

Model Additel226Ex, Additel227Ex-HART and Additel227Ex has total same hardware design but software.

General Description:

The calibrator and recorder are designed and constructed with type of protection "ia", and intended use in the explosive gas atmosphere of group IIC.

There are several fasteners used to fix the plastic enclosure, these fasteners are protected silicone rubber protective shell completely, no any chances access to them. There is a hook rack on the surface of plastic enclosure, which is used to fix the flexible rope.

01-Main Housing:

The enclosure of equipment is made from non-metallic material TPU-E70S, RTP 2500 (lower shell) and Cycloy FR Resins C6600 (Face cover which is protected by TPU-E70S completely), and these materials with a surface resistance lower than $1\text{G}\Omega$.

02-Marking Plate:

The labels of Nameplate, Battery, Warning, Lower casing and Measuring units are made of PC PW-SC11AS with a surface resistance less than $1\text{G}\Omega$.

The Logo paster is made of material Acrylic (PMMA) which a thickness of 1mm.



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Revision 0

Model Designation:

Model Additel226Ex, Additel227Ex, Additel227Ex-HART, Additel260Ex and Additel273E are named according to different measuring modules are selected for final assembly as listed in Table 2 as below. No differences on circuit design and mechanical construction between these models (Only software differences on model Additel226Ex, Additel227Ex-HART and Additel227Ex).

Electrical Circuits:

The electrical parts of calibrator are comprised of following modules,

- 01- BAT-Li-Connect;
- 02- BAT-Li-Protect(1*Rechargeable secondary battery);
- 03- BAT-3AA(3*AA size primary batteries);
- 04- Main board;
- 05- EM module;
- 06- ES module;
- 07- TM module;
- 08- DRTD module;
- 10- CDPX module;
- 11- Key&LCD module;
- 12- ATM-PCB(BMP388);
- 13- INTCDP-FPC;
- 14- DC&USB-FPC;
- 15- EXPLUG;
- 16- MODULE-CONNECT;
- 17- TC(TM Module)-FPC;
- 20- MAIN-TO-KEY-FPC;
- 21- HC-TO-CDPX;
- 22- CDPX-TO-SENSOR;
- 23- ATM-FPC;
- 26- CDPX-TO-Senstronics 85 89 NPI-15C SENSOR;
- 27- CDPX-TO-86 87 13 17 SENSOR;
- 28- CDPX-TO-ALL SENSOR;
- 30- USB-EX Cable;
- 31- Adapter-EX Cable;

Note:

Module 09, 18, 19, 24 and 25 only used on Non-Ex calibrator and recorder.

Power Sources:

The equipment is powered by one secondary Lithium-ion battery or three AA size primary batteries connected in series as specified in the Table as below.

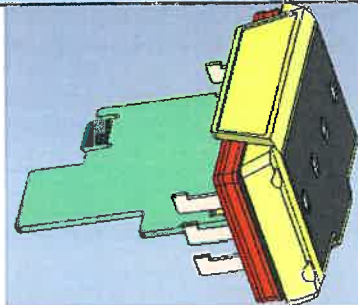
Brand	Model	Description	Max.Uov*	Max Isc*	Tmax	Ex Approval
Secondary Battery:						

SAFT	MP 174565	Rechargeable Li-ion cell, 3.65V,4.0Ah, Ta: -40°C~85°C	4.18V	291.8A	114°C@ Ta=60°C No electrolyte leakage	Test report no. INERIS 154516/15 -DM30145 (2016.06.16~2015.06. 17)-IEC 60079-11: 2011 Cell safety approval: UL1642 and IEC 62133 Ed.2 Type of battery: Hermetically sealed with pressure relief device
Primary Batteries:						
ENERGIZER	E91(LR 6)	Non- rechargeable 1.5V Alkaline Zinc- Manganese(Zn/ MnO2), Ta: -18°C~55°C	1.65V	Not used	112.8°C @Ta=50 °C No electrolyte leakage	Safety approval: IEC 60086-1/-2-5 ANSI C18.4 Type of battery:Gas tight
MAXELL	LR6	Non- rechargeable 1.5V Mercury Free Alkaline Manganese Battery,2.1Ah Ta: -20°C~60°C	1.65V	Not used	128°C@ Ta=50°C No electrolyte leakage	Safety approval: IEC 60086-1 and IEC 60086-2 Type of battery:Gas tight
Panasonic	LR6	Non- rechargeable 1.5V Potassium Hydroxide battery, Ta: -20°C~54°C	1.65V	Not used	119.1°C@ Ta=50°C No electrolyte leakage	Safety approval: IEC 60086-1/-2-5 Type of battery:Gas tight

Table 1

Two different battery container used for both SAFT rechargeable Li-ion battery and 3*AA size primary batteries respectively. IP20 enclosure for calibrator and recorder are totally same whatever which kind of batteries used.

Model Designation and Equipment Configuration:

Equipment Name	Optional Module Name						Silkscreen on the Top view of Equipment and Module Configuration
	EM	ES	TM	DRTD	CDPX (Internal)	CDPX (External)	
Model Additel273Ex	•	X	X	X	•	•	

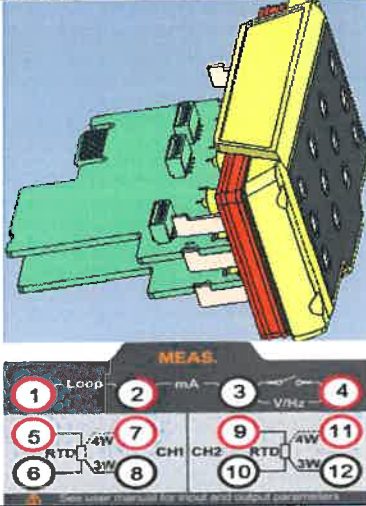
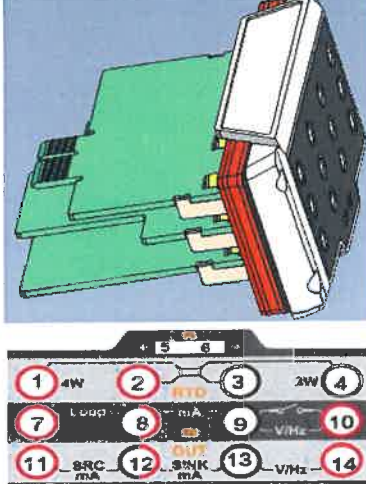
							
Model Additel260Ex	•	X	X	•	•	•	
Model Additel227Ex- HART & Additel227Ex and Additel226Ex	•	•	•	X	X	•	

Table 2

Technical parameters:

Electrical data

Table 3.1- Additel273Ex

Terminal	Function	U _i /V	I _i /mA	P _i /mW	C _i /nF	L _i /mH
J1 and J3	HART(External Power and Resistance)	30	100	750	10	0
J2 and J3	Current Measuring	30	100	750	1	0
J4 and J3	Voltage, Frequency and Switch Measuring	30	100	750	1	0
J1 and J2	Loop Circuit Transmitter Current Measuring HART(Internal Power and Resistance)	30	100	750	10	0



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Table 3.2- Additel273Ex

Terminal	Function	Uo/V	Io/mA	Po/mW	Co/nF	Lo/mH
J1 and J3	HART(External Power and Resistance)	25.2	79.16	499	107	9
J2 and J3	Current Measuring	5.0	0.85	1.1	87	100
J4 and J3	Voltage,Frequency and Switch Measuring	5.0	0.85	1.1	87	100
J1and J2	Loop Circuit Transmitter Current Measuring HART(Internal Power and Resistance)	25.2	79.16	499	107	9

Table 3.3- Additel260Ex

Terminal	Function	Ui/V	Ii/mA	Pi/mW	Ci/nF	Li/mH
J1 and J3	HART(External Power and Resistance)	30	100	750	10	0
J2 and J3	Current Measuring	30	100	750	1	0
J4 and J3	Voltage,Frequency and Switch Measuring	30	100	750	1	0
J1 and J2	Loop Circuit Transmitter Current Measuring HART(Internal Power and Resistance)	30	100	750	10	0
J5 and J8 J9 and J12	Resistor Measuring	30	100	750	20	0

Table 3.4- Additel260Ex

Terminal	Function	Uo/V	Io/mA	Po/mW	Co/nF	Lo/mH
J1 and J3	HART(External Power and Resistance)	25.2	79.16	499	107	9
J2 and J3	Current Measuring	5.0	0.85	1.1	87	100
J4 and J3	Voltage,Frequency and Switch Measuring	5.0	0.85	1.1	87	100
J1 and J2	Loop Circuit Transmitter Current Measuring HART(Internal Power and Resistance)	25.2	79.16	499	107	9
J5 and J8 J9 and J12	Resistor Measuring	5.0	21	26.3	85	30

Table 3.5- Additel227Ex-HART,Additel227Ex and Additel226Ex

Terminal	Function	Ui/V	Ii/mA	Pi/mW	Ci/nF	Li/mH
J1~J4	Thermal Resistance Measuring,Thermal Couple and Analog Output	30	100	750	23	0
J5~J6	Thermocouple Measuring and Analog Output	30	100	750	23	0
J7 and J9	HART(External Power and Resistance)	30	100	750	10	0
J8 and J9	Current Measuring	30	100	750	1	0
J10 and J9	Voltage,Frequency and Switch Measuring	30	100	750	1	0
J7 and J8	Loop Circuit Transmitter Current Measuring HART(Internal Power and Resistance)	30	100	750	10	0
J11 and J12	Current Source Output	30	100	750	30	0
J12 and J13	Current Sink Output	30	100	750	30	0
J14 and J13	Voltage and Frequency Output	30	100	750	30	0



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Table 3.6- Additel227Ex-HART,Additel227Ex and Additel226Ex

Terminal	Function	Uo/V	Io/mA	Po/mW	Co/nF	Lo/mH
J1~J4	Thermal Resistance Measuring,Thermal Couple and Analog Output	5.0	10.1	13	82	300
J5~J6	Thermocouple Measuring and Analog Output	5.0	10	13	82	300
J7 and J9	HART(External Power and Resistance)	25.2	79.16	499	107	9
J8 and J9	Current Measuring	5.0	0.85	1.1	87	100
J10 and J9	Voltage,Frequency and Switch Measuring	5.0	0.85	1.1	87	100
J7 and J8	Loop Circuit Transmitter Current Measuring HART(Internal Power and Resistance)	25.2	79.16	499	107	9
J11 and J12	Current Source Output	21	55	289	165	30
J12 and J13	Current Sink Output	21	55	289	165	30
J14 and J13	Voltage and Frequency Output	21	55	289	165	30

Environmental data

Optional ambient temperature:

Battery brand	Battery model	Tamb
SAFT	MP 174565	-20°C~50°C
ENERGIZER	E91(LR6)	-18°C~45°C
MAXELL	LR6(GD)	-20°C~50°C
Panasonic	LR6XWA	-20°C~45°C

IP Rating:IP20