IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	**IECEx TUN 21.0016X**	Page 1 of 4	Certificate history:
Status:	**Current**	Issue No: 1	Issue 0 (2021-12-07)
Date of Issue:	2023-04-18		
Applicant:	**ARCA-REGLER GmbH** Kempener Straße 18 47918 Tönisvorst **Germany**		
Equipment:	**Electropneumatic positioner ARCAPRO 827A.ab-cde-fgh-i-j**		
Optional accessory:			
Type of Protection:	**Intrinsic safety "i"**		
Marking:	Ex ia IIC T6…T4 Gb Ex ic IIC T6…T4 Gc		

Approved for issue on behalf of the IECEx Certification Body: **Andreas Meyer**

Position: **Deputy Head of the IECEx Certification Body**

Signature: (for printed version)

TÜVNORD Digital unterschrieben von Meyer Andreas Datum: 2023.04.18 18:26:39 +02'00'

Date: (for printed version)

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Certificate issued by:

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Hanover Office
Am TÜV 1, 30519 Hannover
Germany

TÜV NORD

IECEx Certificate of Conformity

Certificate No.: **IECEx TUN 21.0016X**

Date of issue: 2023-04-18 Issue No: 1

Manufacturer: **ARCA-REGLER GmbH**
Kempener Straße 18
47918 Tönisvorst
Germany

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/TUN/ExTR21.0018/01

Quality Assessment Report:

DE/TUN/QAR21.0001/00

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

Electropneumatic positioner ARCAPRO 827A.ab-cde-fgh-i-j with options (for details see attachment)

SPECIFIC CONDITIONS OF USE: YES as shown below:
1. The connecting and disconnecting of not energy limited circuits to the terminals and the plugging respectively unplugging of the M12 connector and of the internal plug- and socket connectors under voltage is permitted only if the presence of hazardous atmosphere can be excluded.

2. The capacitance of the labels exceeds the allowed value of 3 pF.
Operating instructions must be observed.

3. The electro-pneumatic positioner ARCAPRO 827A with type code
(827A. X*-***-***-*) can also be operated with clean, dry, natural gas in locations where pressurized air is not readily available.

As a requirement for operation with natural gas all inserted electronics of the ARCAPRO 827A, including optional modules, must comply with the available safety requirements protection type “Ex ia” and an electric connection with protection level “ia".

Sufficient ventilation for this operating condition must be ensured to avoid a Zone 0 atmosphere around the device.

Operating instructions must be adhered to.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
1. New non-contacting sensor and NCS-on Board.

2. Alternative sealing materials.

3. Option Module OPOS Interface is omitted.

4. Technical and formal modifications due to product maintenance measures

- Optionally attached booster assembly to single / double acting drives.
- Coating on PCBA's and operation with natural gas.
- Alternative inductance slot sensor and the optional limit switches.
- Remove the shrink tubing between base plate and the potentiometer.
- Additional label material on enclosures.
- Modification of Isolation Board, C73451-A430-C19-*-6.
- Marking of the temperature class.
- Minor Modification on PCB Analog Module 6DR4004-6J.

Annex:

Attachment to IECEx TUN 21.0016X Issue No. 1.pdf

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General product information:

The electropneumatic positioners ARCAPRO type 827A.ab-cde-fgh-i-j are used to control valves resp. flap positions of pneumatic actuators in hazardous locations.

The electropneumatic positioners ARCAPRO type 827A.ab-cde-fgh-i-j can be equipped with the following options:

Binary Module	6DR4004-6A
Slot-type Initiator Module	6DR4004-6G
Contact Module	6DR4004-6K
Analog Module	6DR4004-6J
EMC Module	6DR4004-6F
Internal NCS Module	6DR4004-5LE

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827A.	E	2	-	A	0	H	-	M	1	0	-	G	-	LT
[1]	[2]	[3]	-	[4]	[5]	[6]	-	[7]	[8]	[9]	-	[10]	-	[11]

1. Series	
827A.	

2. Explosion protection	
E	without
X	Ex i (IS)

3. Basic device connection	
2	2-wire
4	2/3/4-wire

4. Analogue output	
0	without analogue output
A	analog module

5. Binary output	
0	without binary output
B	Binary module
S	Slot-type initiator module
K	Contact module

6. Communication	
0	without communication
H	HART
P	PROFIBUS PA
F	Foundation Fieldbus

7. Housing material	
M	Aluminium (single-acting only)
E	Stainless steel

8. Pneumatics	
1	single-acting
2	double-acting

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9. Position detection	
0	Standard (mechanical actuator)
1	internal NCS module
2	without (EMC module)

10. Connecting thread electrical/pneumatic	
G	M20x1.5 / G 1/4
N	½" NPT / ¼" NPT
M	M20x1.5 / ¼" NPT
P	½" NPT / G ¼
R	M12 plug for input signal / G 1/4
S	M12 plug for input signal / 1/4"-18 NPT

11. Options Z	
FIP	Fail In Place
LT	- 40 °C
SA	M12 plug for analogue module
SB	M12 plug for binary module
SS	M12 plug for slot-type initiator module
SW	M12 plug for external displacement sensor
NG	operation with natural gas

Details of change:

1. New non-contacting sensor and NCS-on Board.
2. Alternative sealing materials.
3. Option Module OPOS Interface is omitted.
4. Technical and formal modifications due to product maintenance measures.
    - Optionally attached booster assembly to single / double acting drives.
    - Coating on PCBA's and operation with natural gas.
    - Alternative inductance slot sensor and the optional limit switches.
    - Remove the shrink tubing between base plate and the potentiometer.
    - Additional label material on enclosures
    - Modification of Isolation Board, C73451-A430-C19-*-6.
    - Marking of the temperature class.
    - Minor Modification on PCB Analog Module 6DR4004-6J.

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Maximum permissible electrical ratings:

Basic electronics, 827A.X2…
2-wire, 4…20 mA, without HART communication
Marking on the PCBA: C73451-A430-L250 or A5E49830025

Auxiliary power supply / control current 4…20 mA
- Terminals 6(+) and 7/8(-) if PCBA C73451-A430-L250
- Terminals 6(+) and 7(-) if PCBA A5E49830025

Type of protection: Ex ia
only for the connection to certified intrinsically safe circuits
maximum values

U_i	I_i	P_i	C_i	L_i
30 V	100 mA	1 W	11 nF	209 µH

Type of protection: Ex ic
only for the connection to intrinsically safe circuits
maximum values

U_i	I_i		C_i	L_i
30 V	100 mA		11 nF	209 µH

Digital input
- Terminals 9(+) and 10(-)
- Jumpered or connected to switch contact
- Galvanically connected to auxiliary power supply / control current

Basic electronic 827A.X2-H…**
2-wire, 4…20 mA, HART communication
Marking on PCBA: A5E50576243

Auxiliary power supply / control current 4…20 mA
- Terminals 6(+) and 7

Type of protection: Ex ia
only for the connection to certified intrinsically safe circuits
maximum values

U_i	I_i	P_i	C_i	L_i
30 V	100 mA	1 W	11 nF	209 µH

Type of protection: Ex ic
only for the connection to intrinsically safe circuits
maximum values

U_i	I_i		C_i	L_i
30 V	100 mA		11 nF	209 µH

Digital input
- Terminals 9(+) and 10(-)
- Jumpered or connected to switch contact
- Galvanically connected to auxiliary power supply / control current

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Basic electronic 827A.X4-H…**
2- / 3- / 4- wire, 4…20 mA, HART communication
Marking on PCBA No. C73451-A430-L200

Auxiliary power supply / control current 4…20 mA
- Jumper between terminal 6 and 4/5
- Control current connection terminals 3(+) and 7/8(-)

3/4-wire basic device with HART
- Auxiliary power supply 18…30 V
- Terminals 2(+) and 4/5(-)

Control current 4…20 mA
- Terminals 6(+) and 7/8(-)
- 4-wire: auxiliary power supply and control current electrical isolated
- 3-wire: common base point terminals 4/5 and 7/8

Type of protection: Ex ia
only for the connection to certified intrinsically safe circuits
maximum values

U_i	I_i	P_i	C_i	L_i
30 V	100 mA	1 W	11 nF	312 µH

Type of protection: Ex ic
only for the connection to intrinsically safe circuits
maximum values

U_i	I_i		C_i	L_i
30 V	100 mA		11 nF	312 µH

Digital input
- Terminals 9(+) and 10(-)
- Jumpered or connected to switch contact
- Galvanically connected to auxiliary power supply / control current

Basic electronics
Profibus (PA) communication, 827A.-**P…**
Marking on PCBA No. A5E00095037
Foundation Fieldbus (FF) communication, 827A.-**F…**
Marking on PCBA No. A5E00164801

PA/FF bus circuit
- Terminals 6(+) and 7(-)

Type of protection: Ex ia
only for supply with a certified FISCO power supply
maximum values

U_i	I_i	P_i	C_i	L_i
17.5 V	380 mA	5.32 W	(*1	8 µH

Type of protection: Ex ia
only for supply with a certified barrier
maximum values

U_i	I_i	P_i	C_i	L_i
24 V	250 mA	1.2 W	(*1	8 µH

Type of protection: Ex ic
only for supply with a FISCO power supply
maximum values

U_i	I_i		C_i	L_i
17.5 V	570 mA		(*1	8 µH

Type of protection: Ex ic
only for supply with a barrier
maximum values

U_i		C_i	L_i
32 V		(*1	8 µH

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Safe input • Terminals 81(+) and 82(-) • Galvanically safe isolated from PA/FF bus circuit and digital input	**Type of protection: Ex ia** only for the connection to certified intrinsically safe circuits maximum values				
	U_i	I_i	P_i	C_i	L_i
	30 V	100 mA	1 W	(*1	(*1
	Type of protection: Ex ic only for the connection to intrinsically safe circuits maximum values				
	U_i	I_i		C_i	L_i
	30 V	100 mA		(*1	(*1
Digital input • Terminals 9(+) and 10(-) • Jumpered or connected to switch contact • Galvanically connected to auxiliary power supply / control current					

(*1 : values negligibly small

Binary Module Type 6DR4004-6A, build in ARCAPRO 827A.-*B…**					
Digital output circuits • Terminals 31(+) and 32(-) 41(+) and 42(-) 51(+) and 52(-) • Galvanically safe isolated from all other circuits	**Type of protection: Ex ia** only for the connection to certified intrinsically safe circuits maximum values				
	U_i	I_i	P_i	C_i	L_i
	15 V	25 mA	64 mW	5.2 nF	(*1
	Type of protection: Ex ic only for the connection to intrinsically safe circuits maximum values				
	U_i	I_i		C_i	L_i
	15 V	25 mA		5.2 nF	(*1
Digital input circuits • Terminals 11(+) and 12(-) • Galvanically safe isolated from all other circuits • Terminals 21(+) and 22(-) • Jumpered, galvanically not isolated from basic device	**Type of protection : Ex ia** only for the connection to certified intrinsically safe circuits maximum values or **Type of protection: Ex ic** only for the connection to intrinsically safe circuits maximum values				
	U_i			C_i	L_i
	25.2 V			(*1	(*1

(*1 : values negligibly small

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Slot-type Initiator Module Type 6DR4004-6G, build in ARCAPRO 827A.-*S…**					
Digital output (fault signal) • Terminals 31(+) and 32(-)	**Type of protection: Ex ia** only for the connection to certified intrinsically safe circuits maximum values				
	U_i	I_i	P_i	C_i	L_i
	15 V	25 mA	64 mW	5.2 nF	(*1
	Type of protection: Ex ic only for the connection to intrinsically safe circuits maximum values				
	U_i	I_i		C_i	L_i
	15 V	25 mA		5.2 nF	(*1
Digital outputs (slot initiators) • Terminals 41(+) and 42(-) 51(+) and 52(-)	**Type of protection : Ex ia** only for the connection to certified intrinsically safe circuits maximum values or **Type of protection: Ex ic** only for the connection to intrinsically safe circuits maximum values				
	U_i	I_i	P_i	C_i	L_i
	15 V	25 mA	64 mW	161 nF	120 µH

(*1 : values negligibly small

Contact Module Type 6DR4004-6K, build in ARCAPRO 827A.-*K…**					
Digital output (fault signal) • Terminals 31(+) and 32(-)	**Type of protection: Ex ia** only for the connection to certified intrinsically safe circuits maximum values				
	U_i	I_i	P_i	C_i	L_i
	15 V	25 mA	64 mW	5.2 nF	(*1
	Type of protection: Ex ic only for the connection to intrinsically safe circuits maximum values				
	U_i	I_i		C_i	L_i
	15 V	25 mA		5.2 nF	(*1
Digital outputs • Terminals 41(+) and 42(-) 51(+) and 52(-)	**Type of protection: Ex ia** only for the connection to certified intrinsically safe circuits maximum values				
	U_i	I_i	P_i	C_i	L_i
	30 V	100 mA	750 mW	(*1	(*1
	Type of protection: Ex ic only for the connection to intrinsically safe circuits maximum values				
	U_i	I_i		C_i	L_i
	30 V	100 mA		(*1	(*1

(*1 : values negligibly small

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Analog Module Type 6DR4004-6J, build in ARCAPRO 827A.-A…**					
	Type of protection: Ex ia only for the connection to certified intrinsically safe circuits maximum values				
	U_i	I_i	P_i	C_i	L_i
Current output • Terminals 61(+) and 62(-) • Galvanically safe isolated from other circuits	30 V	100 mA	1 W	11 nF	(*1
	Type of protection: Ex ic only for the connection to intrinsically safe circuits maximum values				
	U_i	I_i		C_i	L_i
	30 V	100 mA		11 nF	(*1

(*1 : values negligibly small

EMC Module Type 6DR4004-6F, build in ARCAPRO 827A.-***-**2…**					
	Type of protection: Ex ia or Ex ic Supplied via basic device with Profibus PA (6DR55) and Foundation Fieldbus FF (6DR56)				
Connection module with filter elements intent to use for connection of:	U_o	I_o	P_o	C_o	L_o
Position Transmitter: 6DR4004-1ES or 6DR4004-2ES or 6DR4004-3ES or 6DR4004-4ES or	5 V	static: 75 mA short-time: 160 mA	120 mW	1 µF	1 mH
	Type of protection: Ex ia or Ex ic for supply via the other basic devices (6DR50/1/2/3)				
Non-Contacting Sensor (NCS) 6DR4004-6N	U_o	I_o	P_o	C_o	L_o
	5 V	100 mA	33 mW	1 µF	1 mH

Maximum permissible ambient temperature ranges :

Electropneumatic Positioner ARCAPRO type 827A.ab-cde-fgh-i-j with types of protection Ex ia/ic		
	Temperature class T4	**Temperature class T6**
with the data (c ≠ 0)	-30 °C ≤ T_a ≤ +80 °C	-30 °C ≤ T_a ≤ +50 °C
with the data (c ≠ 0) and (j = LT)	-40 °C ≤ Ta ≤ +80 °C	-40 °C ≤ Ta ≤ +50 °C
with the data (c = 0) and (h = 2) and T6: (h ≠ 1)	-30 °C ≤ T_a ≤ +80 °C	-30 °C ≤ T_a ≤ +60 °C
with the data (e ≠ P, F) and (c = 0) and (h = 2) and (j = LT) and T6: (h ≠ 1)	-40 °C ≤ T_a ≤ +80 °C	-40 °C ≤ T_a ≤ +60 °C

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"Specific Conditions of Use" / "Schedule of Limitations":

1. The connecting and disconnecting of not energy limited circuits to the terminals and the plugging respectively unplugging of the M12 connector and of the internal plug- and socket connectors under voltage is permitted only if the presence of hazardous atmosphere can be excluded.

2. The capacitance of the labels exceeds the allowed value of 3 pF.

   Operating instructions must be observed.

3. The electro-pneumatic positioner ARCAPRO 827A with type code (827A. X*-***-***-*) can also be operated with clean, dry, natural gas in locations where pressurized air is not readily available.

   As a requirement for operation with natural gas all inserted electronics of the ARCAPRO 827A, including optional modules, must comply with the available safety requirements protection type "Ex ia" and an electric connection with protection level "ia".

   Sufficient ventilation for this operating condition must be ensured to avoid a Zone 0 atmosphere around the device.

   Operating instructions must be adhered to.