Urząd Dozoru Technicznego
UDT-CERT

CERTIFICATE

No. 939/CW/001

Office of Technical Inspection
Product Certification Body UDT-CERT

certifies that

pressure transmitters
APC-2000ALW Safety ID 0001 0004 0002 XXXX XXXX XXXX XXXX XX[1)]
differential pressure transmitters
APR-2000ALW Safety ID: 0002 0004 0002 XXXX XXXX XXXX XXXX XX[1)]

[1)] X manufacturer's designation in the ID code, not related to the certificate

manufactured by

APLISENS S.A.
ul. Morelowa 7
03-192 Warszawa

satisfy the requirements of the standards

PN-EN 61508:2010 parts 1 ÷ 7
PN-EN 61511-1:2017 + PN-EN 61511-1:2017/A1:2018-03
PN-EN 62061:2008 + PN-EN 62061:2008/A1:2013-06 + PN-EN 62061:2008/A2:2016-01

for safety integrity level

up to and including SIL 3, with a tolerance of hardware faults HFT = 1 according to Route 1_H
up to and including SIL 2, with a tolerance of hardware faults HFT = 0 according to Route 1_H

and satisfy the requirements of systematic integrity

up to and including SC3 according to Route 1_S

Products	λ_{total} FIT	λ_{NE} FIT	λ_{SD} FIT	λ_{SU} FIT	λ_{DD} FIT	λ_{DU} FIT	SFF %
APC-2000ALW Safety	905,321	265,723	0	138,208	451,857	49,533	92,256
APR-2000ALW Safety	919,621	265,723	0	138,208	453,387	62,303	90,472

The products can be used in safety-related systems that meet the requirements up to and including SIL3. SIL verification of a security-related system is the responsibility of the system integrator.

The conditions for issue and validity of the Certificate are specified in the Annex.

Date of issue: **06.06.2019**

Director of Certification and Conformity Assessment Department

Jacek Niemczyk

Office of Technical Inspection

Product Certification Body UDT-CERT

Annex, edition I dated 06.06.2019

to the Certificate No. 939/CW/001

1. Information on the certified product:

1.1. Category, type, brand or trade name:

pressure transmitters
APC-2000ALW Safety ID 0001 0004 0002 XXXX XXXX XXXX XXXX XX
differential pressure transmitters
APR-2000ALW Safety ID: 0002 0004 0002 XXXX XXXX XXXX XXXX XX

1.2. Basic technical data:

Power supply	11,5 V DC ÷ 36,0 V DC	
Ambient temperature	-40°C ÷ 85°C (min; max)	
Alerts	internal diagnostic	low (LO) < 3,6mA
	critical	low (LO) << 3,6mA

1.3. Intended use of the product:

Pressure transmitters or differential pressure transmitters APC-2000ALW Safety, APR-2000ALW Safety, are devices used to measure pressures and differential pressures, flows and levels of aggressive and non-aggressive gases or liquids in systems related to functional safety.

2. Technical documentation according to which the tested products were produced:

No.	Name	Modification date
1	001.001.001_APC(R)_2000ALW_Safety_Concept.pdf	2019.03.07 15:16
2	002.001.002_APC(R)_2000ALW_Safety_Overall scope definition.pdf	2019.05.24 08:52
3	003.001.002_APC(R)_2000ALW_Safety_Hazard and risk analysis.pdf	2019.05.24 08:52
4	004.001.001_APC(R)_2000ALW_Safety_.Overall safety requirements.pdf	2019.03.07 15:23
5	005.001.001_APC(R)_2000ALW_Safety_Overall safety requirements allocation.pdf	2019.03.07 15:23
6	006.001.002_APC(R)_2000ALW_Safety_Overall operation and maintenance planning.pdf	2019.05.24 08:53
7	007.001.001_APC(R)_2000ALW_Safety_Overall safety validation planning.pdf	2019.03.07 15:24
8	008.001.001_APC(R)_2000ALW_Safety_Overall installation and commissioning planning.pdf	2019.03.07 15:25
9	009.001.001_APC(R)_2000ALW_Safety_.Specification of E/E/PE system safety requirements.pdf	2019.03.07 15:30
10	010.000.003_APC(R)_2000ALW_Safety_Guide to documentation.pdf	2019.03.08 10:35
11	010.001.004_APC(R)_2000ALW_Safety_E/E/PE safety related system realisation.pdf	2019.03.08 10:35

No.	Name	Modification date
12	010.002.001_APC(R)_2000ALW_Safety_ Description of the degree of digital to analog signal processing.pdf	2019.03.08 10:35
13	010.003.001_APC(R)_2000ALW_Safety_ Description of the watchdog degree SIL.pdf	2019.03.08 10:35
14	010.004.001_APC(R)_2000ALW_Safety_ The description of the voltage converter degree.pdf	2019.03.08 10:35
15	010.005.001_APC(R)_2000ALW_Safety_ Description of the HART modem degree.pdf	2019.03.08 10:35
16	010.006.001_APC(R)_2000ALW_Safety_ Description of the power supply degree of the main microcontroller U9.	2019.03.08 10:36
17	010.007.001_APC(R)_2000ALW_Safety_ Description of the U9 main microcontroller and LCD display.pdf	2019.03.08 10:36
18	010.008.001_APC(R)_2000ALW_Safety_ Description of the degree of optoelectronic barrier, Master U1 and Slave U4 microcontroller. pdf	2019.03.08 10:36
19	010.009.001_APC(R)_2000ALW_Safety_ Description of the filter degree and electrical connection.pdf	2019.03.08 10:36
20	010.010.001_APC(R)_2000ALW_Safety_ Description of ADC converter degree.pdf	2019.03.08 10:37
21	010.011.001_APC(R)_2000ALW_Safety_ Analysis of the electrical load of elements.pdf	2019.03.08 10:37
22	010.012.003_APC(R)_2000ALW_Safety_Assumptions and notes regarding the FIT test.pdf	2019.03.08 10:37
23	010.013.005_APC(R)_2000ALW_Safety_Template of FIT test. xlsx	2019.05.23 14:18
24	010.014.002_Annex 3 FMEDA MPC5 rev 2_1_2.xlsx	2019.03.08 10:37
25	010.015.003_ Analysis FMEDA SIL of transmitters APC(R)-2000ALW (N, Exi, Exd) SAFETY.pdf	2019.03.08 10:38
26	010.016.005_APC(R)_2000ALW_Safety_Results of FIT test.xlsx	2019.03.08 10:38
27	010.017.001_APC(R)_2000ALW_Safety_ Testing of the influence of supply voltage.Test.pdf	2019.03.08 10:38
28	010.018.001_APC(R)_2000ALW_Safety_ Testing of the influence of supply voltage .Calculation.xlsx	2019.03.08 10:38
29	010.019.002_APC(R)_2000ALW_Safety_Testing_Black_Box. pdf	2019.03.08 10:38
30	010.020.001_APC(R)_2000ALW_Safety_Prototype testing_MPC5-rev2.1 MODEL.pdf	2019.03.08 10:39
31	010.022.001_APC(R)_2000ALW_Safety_Tests of built-in Software.pdf	2019.03.08 10:39
32	010.024.003_APC(R)_2000ALW_Safety_Assumptions to the product identification code.pdf	2019.03.08 10:39
33	010.025.001_APC(R)_2000ALW_Safety_ Technical Documentation.pdf	2019.03.08 10:39
34	Annex 1.Pressure head (GC).xlsx	2019.05.23 14:17
35	Annex 2. Differential pressure head (GRC).xlsx	2019.03.08 10:40
36	010 021_1 001 List of functions MPC5-rev2 1 2.xlsx	2019.03.08 09:43
37	010 021_12 001_APC(R)_2000ALW_Safety_ Overview of the software code.pdf	2019.03.08 09:43
38	010.023.001_APC(R)_2000ALW_Safety_Software.Guide.pdf	2019.03.08 09:45
39	MPC5-SIS-CPU_2_2_0.hex	2019.03.08 10:25
40	MPC5-SIS-CPU_2_2_0.hex_File_Checksum.log	2019.03.08 10:25
41	MPC5_MASTER_108.hex	2019.03.08 10:19
42	MPC5_SLAVE_110.hex	2019.03.08 10:19
43	MPC5_SLAVE_110.hex_File_Checksum.log	2019.03.08 10:19
44	Master.FlowChart.pdf	2019.03.08 09:49
45	Slave.FlowChart.pdf	2019.03.08 09:49
46	Testy Master-Slave.pdf	2019.03.08 09:49
47	Master.FlowChart.pdf	2019.03.08 10:26
48	Slave.FlowChart.pdf	2019.03.08 10:27

No.	Name	Modification date
49	Testy Master-Slave.pdf	2019.03.08 10:27
50	011.001.001_APC(R)_2000ALW_Safety_Other risk reduction measures.pdf	2019.03.07 15:40
51	012.001.001_APC(R)_2000ALW_Safety_Overall installation and commissioning.pdf	2019.03.07 15:41
52	013.001.001_APC(R)_2000ALW_Safety_Overall safety validation.pdf	2019.03.07 15:41
53	IB APC-APR-2000ALW Safety.pdf	2019.05.28 13:04
54	IO.APC.APR.ALW.2.SFT.pdf	2019.05.24 08:51
55	015.001.001_APC(R)_2000ALW_Safety_Overall modification and retrofit.pdf	2019.03.07 15:43
56	016.001.001_APC(R)_2000ALW_Safety_Decommissioning or disposal.pdf	2019.03.07 15:43
57	APC-2000ALW -M-Safety 01 05 2018.pdf	2019.03.07 15:44
58	APC-2000ALW IP test of enclosure.pdf	2019.03.07 15:44
59	APC-2000ALW mechanical 968.pdf	2019.03.07 15:44
60	APC-2000ALW SS mechanical 822.pdf	2019.03.07 15:44
61	APR-2000ALW mechanical 968.pdf	2019.03.07 15:44
62	RB 14 19. Differential pressure transmitter. Mechanical. Aplisens. pdf	2019.05.24 08:54
63	RB.66.18.Pressure transmitter. Mechanical.Aplisens.pdf	2019.03.07 15:44
64	RB.67.18. Pressure transmitter. Mechanical. Aplisens.pdf	2019.03.07 15:45
65	RB.68.18. Differential pressure transmitter. Mechanical. Aplisens. pdf	2019.03.07 15:45

3. The certification process of the above mentioned products within range of conformity with the requirements of reference documents specified by the manufacturer has been performed according to the Products conformity certification scheme SIL - type of scheme 5 according to the PN-EN ISO/IEC 17067.

4. The results of the certification process have been recorded in the following documents:

   - Report of assessment to the application No. 939/CW/2018-001 dated 28.05.2019
   - Report of verification of the technical documentation of the product to the application No. 939/CW/2018-001 dated 28.05.2019
   - Report on checking manufacturer's organizational and technical conditions and functional safety management system to the application No. 939/CW/2018-001 dated 28.05.20198
   - Review of the documentation collected during the certification process and certification decision to the application No. 939/CW/2018-001 dated 04.06.2019.

5. The provisions concerning the supervision of the issued certificate are contained in the Agreement No. 67890/CW/2018 of 19.04.2018 on the certification products.

6. The Certificate became invalid when the commitments contained in the Agreement No. 67890/CW/2018 of 19.04.2018 on the certification products are not fulfilled.

7. The manufacturer has the right to mark certified products with conformity mark "UDT-CERT SIL". The pattern of the conformity mark and the rules of using the conformity mark are attached to this certificate.

8. The manufacturer receives the Certificate and labelled documentation necessary for identification of the certified product.

Director of Certification and Conformity Assessment Department

Jacek Niemczyk