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 TUR 17.0039X**	Page 1 of 4	Certificate history:
Status:	**Current**	Issue No: 1	Issue 0 (2018-03-05)
Date of Issue:	2020-11-18		
Applicant:	**PROGNOST Systems GmbH** Daimlerstr. 10 48432 Rheine **Germany**		
Equipment:	**PROGNOST SILver, 2nd generation**		
Optional accessory:			
Type of Protection:	**ec, nC, ia**		
Marking:	Ex ec nC [ia Ga] IIC T4 Gc system marking or [Ex ia Da] IIIC		

Approved for issue on behalf of the IECEx Certification Body: **Christian Mehrhoff**

Position: **Assigned certifier**

Signature: (for printed version)

Date: 2020-11-18

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Certificate issued by:

TUV Rheinland Industrie Service GmbH
Am Grauen Stein
51105 Cologne
Germany

TÜVRheinland

IECEx Certificate of Conformity

Certificate No.: **IECEx TUR 17.0039X**

Issue No: 1

Date of issue: 2020-11-18

Manufacturer: **PROGNOST Systems GmbH**
Daimlerstr. 10
48432 Rheine
Germany

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 Edition:7.0	Explosive atmospheres - Part 0: Equipment - General requirements
IEC 60079-11:2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-15:2017 Edition:5.0	Explosive atmospheres - Part 15: Equipment protection by type of protection "n"
IEC 60079-7:2017 Edition:5.1	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"

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/ExTR17.0039/01

Quality Assessment Report:

DE/BVS/QAR09.0007/05

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

Description
PROGNOST SILver offers continuous high-speed data analysis and protection for rotating machinery. It includes safe outputs for machine shutdown to minimize consequential damages in all critical conditions.
PROGNOST SILver consists of a 19" rack with several equipping options of the available cards. Some of the cards are used as an associated apparatus for sensors which can be used in hazardous areas of up to zone 0. If installed in a suitable enclosure, the PROGNOST SILver can be used in hazardous areas of zone 2.
All cards are hot swappable and can be exchanged only when no explosive atmosphere is present.
The peripheral equipment meaning intrinsically safe sensors installed at the machines, PC, as well as the process control or ESD system are not part of this assessment.
The system provides safe limited voltage supplies of U_m = 30V and U_m = 6.5V for the supply and digital communication signals for up to 17 certified Plug-In sensor modules PROGNOST SILver Type TI1 – Trigger, AI1 – ICP, AI2 - 4...20mA, AI3 - Eddy Current, AI4 – Voltage, AI5 - Eddy Current and AI6-2 - Temperature.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. The PROGNOST SILver remote I/O system shall be supplied with a SELV or PELV supply only.
2. The equipment shall only be used in an area of not more than pollution degree 2, as defined in IEC 60664-1.
3. If used in zone 2, the equipment shall be installed in an enclosure that provides a degree of protection not less than IP 54 in accordance with IEC 60079-0 or IEC 60079-7. If not used in an explosive atmosphere, the equipment shall be placed inside a cabinet of IP20 or higher.
4. The enclosure in use must be able to safely dissipate the generated heat and the temperature inside the enclosure must not exceed 65°C.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

- Standard update of IEC 60079-0, IEC 60079-15 and IEC 60079-7
- Change of the marking nA to ec
- Adding of AI6-2 temperature card

Annex:

IECEx TUR 17.0039X_attachment rev01_1.pdf

TÜVRheinland®
Precisely Right.

Device: PROGNOST SILver
Type: 2nd generation

Manufacturer: PROGNOST Systems GmbH

Address: Daimlerstr. 10,
48432 Rheine, Germany

Subject and type

PROGNOST SILver

Type	Card Name	Ex Marking	Assembly
DC1-2	Data Control	Ex ec IIC T4 Gc	Data Control Board + DC/MP1-2 Power Board + DC1-2 Frontplate
MP1-2	Machine Protection	Ex ec IIC T4 Gc	Machine Protection Board + DC/MP1-2 Power Board + MP1-2 Frontplate
DIO1-2	Input / Relay	Ex ec nC IIC T4 Gc	Input / Relay Board + 3HU Mainboard + DIO1-2 Frontplate
PS1-2	Power Supply	Ex ec IIC T4 Gc	Power Supply Board + PS1-2 Frontplate
CWF1-2	Casing	Ex ec IIC T4 Gc	Wallmount Casing + Backplane + Backplane Memory
CRF1-2	Casing	Ex ec IIC T4 Gc	Rackmount Casing + Backplane + Backplane Memory
MI1-2	Monitoring Interface	Ex ec IIC T4 Gc	Interface Casing + Monitoring Interface Board + MI1-2 Frontplate
CA1-2	Card Adapter	Ex ec [ia Ga] IIC T4 Gc	required to use TI1, AI1-5
AI6-2	Temperature	Ex ec [ia Ga] IIC T4 Gc [Ex ia Da] IIIC	AI6-2 Main Board+Sub Board+ Frontplate + System Cable + System Board

Electrical data

External power supply

Rated voltage		18....32V DC
Maximum voltage	Um	60 V DC(SELV/ PELV)

DIO 1-2 (Input/Relay):

Rated Voltage	0....32V DC
Maximum voltage (U_m)	≤ 375V

MI 1-2 (Monitoring Interface)

Ethernet Network	Fibre Optic, GBit

Signal Acquisition Cards:

The sensor circuits of the signal acquisition cards are allocated to the I/O slots (1-17) of the PROGNOST SILver system casing.

AI6-2 Temperature card:

It is recomended to connect the temperature sensors via the AI6-2 system cable and board. For this assembly the following values are valid:

Max. output voltage $U_o \leq 7.2V$

Max. output current $I_o \leq 12$ mA

Max. output Power $P_o \leq 21mW$

Max. external inductance L_o for Group IIC ≤ 5mH

Max. external capacity C_o for Group IIC ≤ 10µF

Signal acquisition cards, that are to be used in conjunction with card adapter CA1-2

For electrical data of the sensor acquisition circuits AI1-5 and TI1 see data below.

The card adapter CA1-2 provides the terminal interface for the wiring of sensors and signals. Wiring can be done directly via a connector or via system cable plus system board.

The PROGNOST SILver system can acquire intrinsically safe and non-safe signals, but they must not mixed on one card adapter CA1-2.

External Sensor Interfaces of signal acquisition cards:
TI1, Trigger

Characteristic Curve			Linear			
Max. output voltage U_o			10.8 V			
Max. output current I_o			11.1 mA			
Max. output power P_o			34 mW			
Explosion group			IIA	IIB	IIC	
Max. external induction L_o			2308 mH	1154 mH	288 mH	
Max. external capacity C_o			66 µF	15 µF	2.1 µF	
Group IIC, if concentrated inductances or capacities are connected						
L_o(mH)	0,5	1	2	3	4	5
C_o(nF)	1	0.9	0.8	0.75	0.7	0.68
Group IIB/IIIC, if concentrated inductances or capacities are connected						
L_o(mH)	0.5	1	2	3	4	5
C_o(µF)	5.6	4.9	4.2	3.9	3.7	3.4

AI1, ICP

Characteristic Curve			Linear			
Max. output voltage U_o			27.5 V			
Max. output current I_o			91 mA			
Max. output power P_o			630 mW			
Explosion group			IIA	IIB	IIC	
Max. external induction L			34.0 mH	16.9 mH	4.0 mH	
Max. external capacity C			2.2 µF	671 nF	85 nF	
Group IIC, if concentrated inductances or capacities are connected						
L_o(mH)	0.15	0.25	0.5	0.75	1	2
C_o(nF)	79	70	62	54	48	42
Group IIB/IIIC, if concentrated inductances or capacities are connected						
L_o(mH)	0.15	0.5	1	2	3	5
C_o(µF)	510	410	345	300	280	250

AI2, 4..20mA

Characteristic Curve			Linear			
Max. output voltage U_o			27.5 V			
Max. output current I_o			96 mA			
Max. output power P_o			652 mW			
Explosion group			IIA	IIB	IIC	
Max. external induction L_O			30.6 mH	15.2 mH	3.6 mH	
Max. external capacity C_O			2.2 µF	671 nF	85 nF	
Group IIC, if concentrated inductances or capacities are connected						
L_o(mH)	0.15	0.25	0.35	0.5	0.75	1.6
C_o(nF)	78	67	65	60	54	42
Group IIB/IIIC, if concentrated inductances or capacities are connected						
L_o(mH)	0.15	0.5	1	2	3	5
C_o(µF)	500	400	340	300	280	250
The maximum input parameters are:						
Max. value voltage U_I			30 V			
Max. value current I_I			100 mA			
Max. value power P_I			1 W			
Max. effective internal inductance L_i			0.25 mH			
Max. effective internal capacitance C_i			0.85 nF			

AI3, Eddy Current

Characteristic Curve			Linear			
Max. output voltage U_o			27.5 V			
Max. output current I_o			112 mA			
Max. output power P_o			765 mW			
Explosion group			IIA	IIB	IIC	
Max. external induction L_O			22.2 mH	10.9 mH	2.4 mH	
Max. external capacity C_O			2.2 µF	670 nF	85 nF	
Group IIC, if concentrated inductances or capacities are connected						
L_O(mH)	0.2	0.3	0.5	0.7	0.9	1
C_O(nF)	63	58	54	50	46	42
Group IIB/IIIC, if concentrated inductances or capacities are connected						
L_O(mH)	0.6		1.6		4.6	
C_O(µF)	370		280		230	
The maximum input parameters are:						
Max. value voltage U_I			30 V			
Max. value current I_I			100 mA			
Max. value power P_I			1 W			
Max. effective internal inductance L_i			0.42 mH			
Max. effective internal capacitance C_i			0.85 nF			

AI4, Voltage

Characteristic			Linear			
Max. output voltage U_O			6.6 V			
Max. output current I_O			0.5 mA			
Max. output power P_O			0.5 mW			
Max. external induction L_O			142 H			
Max. external capacity C_O			22 µF			
Group IIC, if concentrated inductances or capacities are connected						
L_O(mH)	1	2	5	10	20	50
C_O(nF)	2.2	2	1.7	1.6	1.5	1.4
The maximum input parameters are:						
Max. value voltage U_I			30 V			
Max. value current I_I			100 mA			
Max. value power P_I			1 W			
Max. effective internal inductance L_i			0.3 mH			
Max. effective internal capacitance C_i			1.35 nF			

AI5, Eddy Current

Characteristic Curve			Linear			
Max. output voltage U_o			27.5 V			
Max. output current I_o			104 mA			
Max. output power P_o			711 mW			
Explosion group			IIA	IIA	IIA	
Max. external induction L_O			22.2 mH	22.2 mH	22.2 mH	
Max. external capacity C_O			2.2 µF	2.2 µF	2.2 µF	
Group IIC, if concentrated inductances or capacities are connected						
L_O(mH)	0.4	0.5	0.7	0.9	1.1	1.2
C_O(nF)	63	58	54	50	46	42
Group IIB/IIIC, if concentrated inductances or capacities are connected						
L_O(mH)	0.6		1.6		4.6	
C_O(µF)	380		290		240	
The maximum input parameters are:						
Max. value voltage U_I			30 V			
Max. value current I_I			100 mA			
Max. value power P_I			1 W			
Max. effective internal inductance L_i			0.42 mH			
Max. effective internal capacitance C_i			0.85 nF			