

# CERTIFICATE OF CONFORMITY



- HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**
- Certificate No:** FM19US0234X
- Equipment:** Protos Type 3400X and Protos II Type 4400X  
**(Type Reference and Name)** Modular Measuring System
- Name of Listing Company:** Knick Elektronische Messgeräte GmbH & Co. KG
- Address of Listing Company:** Beuckestrasse 22  
14163 Berlin  
Germany
- The examination and test results are recorded in confidential report number:  
  
3023762 dated 2<sup>nd</sup> March 2006
- FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:  
  
FM Class 3600:2022, FM Class 3610:2021, FM Class 3611:2021, FM Class 3810:2021, ANSI/UL 60079-0:2020, ANSI/UL 60079-7:2015, ANSI/UL 60079-11:2018, ANSI/UL 60079-18:2015, ANSI/NEMA 250:2014, ANSI/IEC 60529:2004, ANSI/UL 121201:2019, ANSI/UL 61010:2018
- If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
- This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

**Certificate issued by:**

J.E. Marquedant  
VP, Manager - Electrical Systems

26 January 2023

Date

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FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA  
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10. Equipment Ratings:

**Protos Type 3400X and Protos II Type 4400X:**

Ta = -20°C to 50°C; Enclosure Type 4X, IP65

Refer to control drawing 201.003-170 for entity / nonincendive field wiring parameters

**Modular Measuring System.**

Class I, Zone 1, AEx eb ib mb [ia Ga] IIC T4 Gb

Nonincendive, Class I, II, III, Division 2, Groups ABCDFG, T4 Ta = -20°C to +50°C;

Nonincendive, Class I, II, III, Division 2, Groups ABCDFG, T4 Ta = -20°C to +50°C; nonincendive field wiring;

**or with ZU1042**

Class I, Zone 2, AEx ec ib mb [ia Ga] IIC T4 Gc

Nonincendive, Class I, Division 2, Groups ABCDFG T4 Ta = -20°C to +50°C;

**Module Outputs**

Class I, Zone 1, AEx ib [ia Ga] IIC T4 Gb

or

Class I, Zone 1, AEx ib IIC T4 Gb

Intrinsically safe connections for Class I, II, III, Division 1, Groups ABCDEFG;

or

Nonincendive, Class I, II, III, Division 2, Groups ABCDFG, T4 Ta = -20°C to +50°C; nonincendive field wiring;

**The Protos Type 3400X and Protos II Type 4400X Modular Measuring System consists of the following modules:**

**BASE 3400Xa/b or BASE 4400Xa/b. Power Supply.**

Class I, Zone 1, AEx eb ib mb IIC T4 Gb

Nonincendive, Class I, II, III, Division 2, Groups ABCDFG, T4 Ta = -20°C to +50°C;

Nonincendive, Class I, II, III, Division 2, Groups ABCDFG, T4 Ta = -20°C to +50°C; nonincendive field wiring;

**or with ZU1042**

Class I, Zone 2, AEx ec ib mb IIC T4 Gc

Nonincendive, Class I, II, III, Division 2, Groups ABCDFG, T4 Ta = -20°C to +50°C;

**FRONT 3400Xa-015 or FRONT 4400Xa-015. Door.**

Class I, Zone 1, AEx eb ib IIC T4 Gb

Nonincendive, Class I, II, III, Division 2, Groups ABCDFG, T4 Ta = -20°C to +50°C; nonincendive field wiring;

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**Measuring Modules:**

- pH 3400X-03a. pH Module.
- CO2 3400X-130. Carbon Dioxide Module.
- COND 3400X-041. Conductivity Module.
- OXY 3400X-06a. Oxygen Module.
- FIU 3400X-140-2. Digital Module.
- PHU 3400X-110. pH Module.
- CONDI 3400X-051. Inductive Conductivity Module.
- COMPA 3400X-081. Interface Module.
- COMFF 3400X-085. Interface Module.
- MS 3400X-160. Digital Module.
- MS 4400X-160. Digital Module.
- MSU 4400X-18\*. Digital Module

Class I, Zone 1, AEx ib [ia Ga] IIC T4 Gb  
Intrinsically safe connections for Class I, II, III, Division 1, Groups ABCDEFG;  
Nonincendive, Class I, II, III, Division 2, Groups ABCDFG, T4 Ta = -20°C to +50°C; nonincendive field wiring;

**Communication Modules:**

- OUT 3400X-071. Output Module.
- PID 3400X-121. PID Controller Module.

Class I, Zone I, AEx ib IIC T4 Gb  
Nonincendive, Class I, II, III, Division 2, Groups ABCDFG, T4 Ta = -20°C to +50°C; nonincendive field wiring;

11. The marking of the equipment shall include:

**Protos Type 3400X and Protos II Type 4400X:**

**Modular Measuring System.**

- Class I, Zone 1, AEx eb ib mb [ia Ga] IIC T4 Gb
- Class I, II, III, Division 2, Groups ABCDFG, T4 Ta = -20°C to +50°C;
- Class I, II, III, Division 2, Groups ABCDFG, T4 Ta = -20°C to +50°C; nonincendive field wiring;

**or with ZU1042**

- Class I, Zone 2, AEx ec ib mb [ia Ga] IIC T4 Gc
- Class I, II, III, Division 2, Groups ABCDFG, T4 Ta = -20°C to +50°C;

**Module Outputs**

- Class I, Zone 1, AEx ib [ia Ga] IIC T4 Gb
- or
- Class I, Zone 1, AEx ib IIC T4 Gb

Intrinsically safe connections for Class I, II, III, Division 1, Groups ABCDEFG;  
or  
Nonincendive, Class I, II, III, Division 2, Groups ABCDFG, T4 Ta = -20°C to +50°C; nonincendive field wiring;

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**The Protos Type 3400X and Protos II Type 4400X Modular Measuring System consists of the following modules:**

**BASE 3400Xa/b or BASE 4400Xa/b. Power Supply.**

Class I, Zone 1, AEx eb ib mb IIC T4 Gb

Class I, II, III, Division 2, Groups ABCDFG, T4 Ta = -20°C to +50°C;

Class I, II, III, Division 2, Groups ABCDFG, T4 Ta = -20°C to +50°C; nonincendive field wiring;

**or with ZU1042**

Class I, Zone 2, AEx ec ib mb IIC T4 Gc

Class I, II, III, Division 2, Groups ABCDFG, T4 Ta = -20°C to +50°C;

**FRONT 3400Xa-015 or FRONT 4400Xa-015. Door.**

Class I, Zone 1, AEx eb ib IIC T4 Gb

Class I, II, III, Division 2, Groups ABCDFG, T4 Ta = -20°C to +50°C; nonincendive field wiring;

**Measuring Modules:**

pH 3400X-03a. pH Module.

CO2 3400X-130. Carbon Dioxide Module.

COND 3400X-041. Conductivity Module.

OXY 3400X-06a. Oxygen Module.

FIU 3400X-140-2. Digital Module.

PHU 3400X-110. pH Module.

CONDI 3400X-051. Inductive Conductivity Module.

COMPA 3400X-081. Interface Module.

COMFF 3400X-085. Interface Module.

MS 3400X-160. Digital Module.

MS 4400X-160. Digital Module.

MSU 4400X-18\*. Digital Module

Class I, Zone 1, AEx ib [ia Ga] IIC T4 Gb

Intrinsically safe connections for Class I, II, III, Division 1, Groups ABCDEFG;

Class I, II, III, Division 2, Groups ABCDFG, T4 Ta = -20°C to +50°C; nonincendive field wiring;

**Communication Modules:**

OUT 3400X-071. Output Module.

PID 3400X-121. PID Controller Module.

Class I, Zone I, AEx ib IIC T4 Gb

Class I, II, III, Division 2, Groups ABCDFG, T4 Ta = -20°C to +50°C; nonincendive field wiring;

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## 12. Description of Equipment:

**General** – The Protos Type 3400X and Protos II Type 4400X modular process analysis system is intended to measure and process electrochemical quantities in liquids. It has a modular design and consists of the BASE power supply unit, the FRONT door and different measuring and communication modules.

**Construction** – Enclosures are of stainless steel with a rating of Type 4X and IP65.

**Ratings** - The equipment operates from a supply voltage of 100 to 230 V ac and dissipates 15 VA. The manufacturer specifies an ambient temperature range of -20 °C to 50 °C.

**Model types** – The specific model types addressed by this certificate are as follows:

**Protos Type 3400X and Protos II Type 4400X Modular Measuring System, available with ZU1042.**

**The Protos Type 3400X and Protos II Type 4400X Modular Measuring System consists of the following modules:**

**BASE 3400Xa/b or BASE 4400Xa/b. Power Supply.**

a = Enclosure material C or S;

b = Power supply option 24V or VPW

**FRONT 3400Xa-015 or FRONT 4400Xa-015. Door.**

a = Enclosure finish C or S.

**Measuring Modules:**

**pH 3400X-03a. pH Module.**

a = pH measurement option 2, 3, 5 or 6

**CO2 3400X-130. Carbon Dioxide Module.**

**COND 3400X-041. Conductivity Module.**

**OXY 3400X-06a. Oxygen Module.**

a = Application option 2, 3, 5, 6 or 7

**FIU 3400X-140-2. Digital Module.**

**PHU 3400X-110. pH Module.**

**CONDI 3400X-051. Inductive Conductivity Module.**

**COMPA 3400X-081. Interface Module.**

**COMFF 3400X-085. Interface Module.**

**MS 3400X-160. Digital Module.**

**MS 4400X-160. Digital Module.**

**MSU 4400X-18\*. Digital Module**

**Communication Modules:**

**OUT 3400X-071. Output Module.**

**PID 3400X-121. PID Controller Module.**

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## 13. Specific Conditions of Use:

1. The Protos Type 3400X and Protos II Type 4400X system may only be configured with the modules identified above.
2. Only the modules identified above shall be used with the Protos Type 3400X and Protos II Type 4400X system.
3. The OXY 3400X Oxygen Module shall not be used in oxygen enriched environments with oxygen concentrations greater than 21% by volume.

## 14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

## 15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

## 16. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
2 <sup>nd</sup> March 2006	Original Issue.
7 <sup>th</sup> July 2006	<u>Supplement 1:</u> Report Reference: 3026396 dated 7 <sup>th</sup> July 2006. Description of the Change: Addition of modules as defined in referenced report
19 <sup>th</sup> June 2009	<u>Supplement 2:</u> Report Reference: 3023762rev080423 dated 19 <sup>th</sup> June 2009. Description of the Change: Addition of modules OXY 3400X-067 and FIU 3400-14*
23 <sup>rd</sup> December 2010	<u>Supplement 3:</u> Report Reference: 3023762rev100802 dated 23 <sup>rd</sup> December 2010. Description of the Change: Addition of module type FIU 3400X-140-2
3 <sup>rd</sup> May 2011	<u>Supplement 4:</u> Report Reference: 3041828 dated 3 <sup>rd</sup> May 2011. Description of the Change: Re-examination to FM Class 3610:2010
1 <sup>st</sup> December 2020	<u>Supplement 5:</u> Report Reference: PR455159 dated 1 <sup>st</sup> December 2020. Description of the Change: Addition of module types BASE 4400 X*/***, FRONT 4400 X*-01*, MS *400X-160, and memory card type ZU1080-P-X. Remove discontinued Digital Module FIU 3400-140 from scope of Approval. Replacement of protection type AEx nA with AEx ec. Update standards. Re-issue certificate in updated format.

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16 <sup>th</sup> November 2021	<b>Supplement 6:</b> Report Reference: RR229264 dated 16 <sup>th</sup> November 2021. Description of the Change: Add MS 4400X-160 module. Update the FM 3610, FM3611 and FM3810 standards to the 2021 editions.
26 <sup>th</sup> January 2023	<b>Supplement 7:</b> Report Reference: PR463749 dated 26 <sup>th</sup> January 2023. Description of the Change: <ol style="list-style-type: none"><li>1) Addition of MSU4400X-18* Digital Measuring Module</li><li>2) FM3600 updated to the latest edition (2022)</li><li>3) ANSI/UL 60079-0:2019 updated to ANSI/UL 60079-0:2020</li><li>4) ANSI/UL 60079-11:2014 updated to ANSI/UL 60079-11:2018</li><li>5) ANSI/UL 121201:2019 added to Standards List</li><li>6) ANSI/UL 61010-1:2012 updated to ANSI/UL 61010-1:2018</li><li>7) Equipment Ratings (Section 10) and Equipment markings (Section 11) have been updated</li></ol>

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