CERTIFICATE OF CONFORMITY



1. HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS

2. **Certificate No:** FM19US0234X

3. **Equipment:**

4.

(Type Reference and Name)

Protos Type 3400X and Protos II Type 4400X

Modular Measuring System

Name of Listing Company: Knick Elektronische Messgeräte GmbH & Co. KG

Address of Listing Company:

Beuckestrasse 22 D-14163 Berlin Germany

The examination and test results are recorded in confidential report number: 6.

3023762 dated 2nd 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 3600:2018, FM Class 3610:2021, FM Class 3611:2021, FM Class 3810:2021, ANSI/UL 60079-0:2019, ANSI/UL 60079-7:2015, ANSI/UL 60079-11:2014, ANSI/UL 60079-18:2015, ANSI/NEMA 250:2014, ANSI/IEC 60529:2004, ANSI/UL 61010:2012

- 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.
- 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

Certificate issued by:

E. Marguedant

VP, Manager - Electrical Systems

16 November 2021

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

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US Certificate Of Conformity No: FM19US0234X

Modular Measuring System.

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

Nonincendive, Class I, Division 2, Groups ABCD, T4 Ta = 50°C;

Nonincendive, Class II, III, Division 2, Groups EFG, T70°C Ta = 50°C;

Nonincendive, Class I, Division 2, Groups ABCD, T4 Ta = 50°C; nonincendive field wiring;

Nonincendive, Class II, III, Division 2, Groups EFG, T70°C Ta = 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 T4 Ta = 50°C;

Nonincendive, Class II, III, Division 2, Groups EFG, T70°C Ta = 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, Division 2, Groups ABCD, T4 Ta = 50°C; nonincendive field wiring;

Nonincendive, Class II, III, Division 2, Groups EFG, T70°C Ta = 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.

a = Enclosure material C or S;

b = Power supply option 24V or VPW

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

Nonincendive, Class I, Division 2, Groups ABCD, T4 Ta = 50°C;

Nonincendive, Class II, III, Division 2, Groups EFG, T70°C Ta = 50°C;

Nonincendive, Class I, Division 2, Groups ABCD, T4 Ta = 50°C; nonincendive field wiring;

Nonincendive, Class II, III, Division 2, Groups EFG, T70°C Ta = 50°C; nonincendive field wiring;

or with ZU1042

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

Nonincendive, Class I, Division 2, Groups ABCD, T4 Ta = 50°C;

Nonincendive, Class II, III, Division 2, Groups EFG, T70°C Ta = 50°C;

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

a = Enclosure finish C or S.

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

Nonincendive, Class I, Division 2, Groups ABCD, T4 Ta = 50°C; nonincendive field wiring;

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US Certificate Of Conformity No: FM19US0234X

Nonincendive, Class II, III, Division 2, Groups EFG, T70°C Ta = 50°C; nonincendive field wiring;

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.

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, Division 2, Groups ABCD, T4 Ta = 50°C; nonincendive field wiring; Nonincendive, Class II, III, Division 2, Groups EFG, T70°C Ta = 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, Division 2, Groups ABCD, T4 Ta = 50°C; nonincendive field wiring; Nonincendive, Class II, III, Division 2, Groups EFG, T70°C Ta = 50°C; nonincendive field wiring;

11. The marking of the equipment shall include:

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Member of the FM Global Group US Certificate Of Conformity No: FM19US0234X

BASE 3400X */VPW:



Protos[®]





Type 3400X */VPW

No. 1234567



Power 100 to 230 V AC / 15 VA, 48 to 62 Hz - 20 ≤ Tamb ≤ +50 °C



01







FM19US0234X FM19CA0127X

Class I, Zone 1, Ex/AEx eb ib mb [ia Ga] IIC T4 Gb ZU1042: Class I, Zone 1, Ex/AEx ec ib mb [ia Ga] IIC T4 Gc NI Class I, Division 2, Groups ABCD T4 NI Class II,III, Division 2, Groups EFG T70°C including nonincendive field wiring IS Class I,II,III, Division 1, Groups ABCDEFG associated apparatus / appareillage associé

Enclosure NEMA 4X, IP65

Control Drawing 201.003-170

BASE 3400X */24V:

Knick >

Protos® (





Type 3400X */24V

No. 1234567

Power 24 V AC/DC ~, <15 VA, 48 to 62 Hz, <10 W - 20 ≤ Tamb ≤ +50 °C



No. 12345/1234567 / JJWW

14163 Berlin 01 Made in Germany



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FM19US0234X FM19CA0127X

Class I, Zone 1, Ex/AEx eb ib mb [ia Ga] IIC T4 Gb ZU1042: Class I, Zone 1, Ex/AEx ec ib mb [ia Ga] IIC T4 Gc NI Class I, Division 2, Groups ABCD T4 NI Class II,III, Division 2, Groups EFG T70°C including nonincendive field wiring IS Class I, II, III, Division 1, Groups ABCDEFG associated apparatus / appareillage associé

Enclosure NEMA 4X. IP65

Control Drawing 201.003-170

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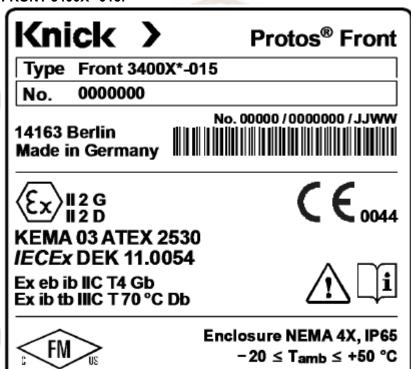
F 347 (Mar 16)



US Certificate Of Conformity No: FM19US0234X

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FRONT 3400X*-015:



APPROVED

FM19US0234X FMCA0127X Control drawing 201.003-170 Class I, Zone 1, Ex/AEx eb ib IIC T4 Gb NI Class I, Division 2, Groups ABCD T4 NI Class II, III, Division 2, Groups EFG T70°C

including nonincendive field wiring



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BASE 4400X*/VPW:







Type 4400X*/VPW

No.

1234567

Power 100 to 230 V AC / 15 VA, 48 to 62 Hz - 20 ≤ T_{amb} ≤ +50 °C





No. 00000 / 0000000 / JJWW

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FM19US0234X FM19CA0127X

Class I, Zone 1, Ex/AEx eb ib mb [ia Ga] IIC T4 Gb ZU1042: Class I, Zone 1, Ex/AEx ec ib mb [ia Ga] IIC T4 Gc NI Class I, Division 2, Groups ABCD T4 NI Class II,III, Division 2, Groups EFG T70°C including nonincendive field wiring IS Class I,II,III, Division 1, Groups ABCDEFG associated apparatus / appareillage associé

Enclosure NEMA 4X, IP65

Control Drawing 201.003-170

BASE 4400X*/24V:

Knick)

Protos II (E





Type 4400X*/24V

No. 1234567

Power 24 V AC/DC ~, <15 VA, 48 to 62 Hz, <10 W -20 ≤ T_{amb} ≤ +50 °C

w



No. 00000 / 0000000 / JJWW

01

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FM19US0234X FM19CA0127X

Class I, Zone 1, Ex/AEx eb ib mb [ia Ga] IIC T4 Gb ZU1042: Class I, Zone 1, Ex/AEx ec ib mb [ia Ga] IIC T4 Gc NI Class I, Division 2, Groups ABCD T4 NI Class II,III, Division 2, Groups EFG T70°C including nonincendive field wiring IS Class I,II,III, Division 1, Groups ABCDEFG associated apparatus / appareillage associé

Enclosure NEMA 4X, IP65

Control Drawing 201,003-170



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FRONT 4400X*-015:



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Measuring Modules: Protos pH3400X-033:



Protos pH3400X-035:



Protos Cond 3400X-041:



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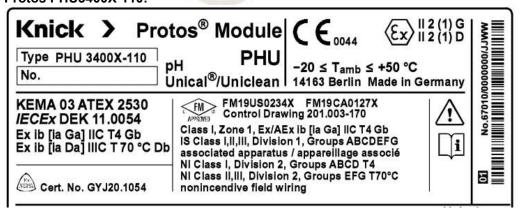
Protos OXY3400x-067:



Protos FIU3400X-140-2:



Protos PHU3400X-110:



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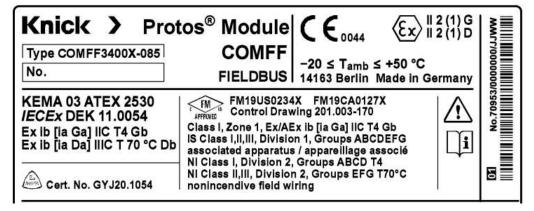
Protos Condl 3400X-051:



Protos COMPA3400X-081:



Protos COMFF3400X-085:



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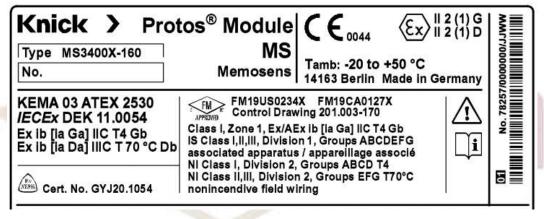
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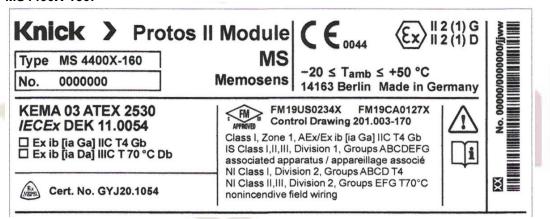
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US Certificate Of Conformity No: FM19US0234X

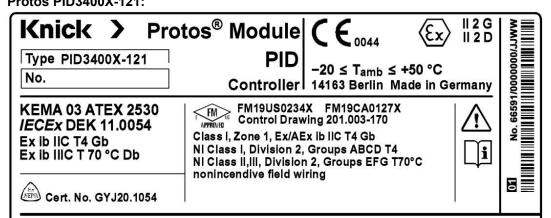
MS3400X-160:



MS4400X-160:



Communication Modules: Protos PID3400X-121:



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US Certificate Of Conformity No: FM19US0234X

Protos OUT3400X-071:

Knick > Profittype OUT 3400X-071 No.	tos [®] Module OUT analog / digital C € 0044 -20 ≤ T _{amb} ≤ 14163 Berlin Ma	Ex II 2 G II 2 D +50 °C ade in Germany	WWLL\00000000\
KEMA 03 ATEX 2530 IECEx DEK 11.0054 Ex ib IIC T4 Gb Ex ib IIIC T 70 °C Db Cert. No. GYJ20.1054	FM19US0234X FM19CA0127X Control Drawing 201.003-170 Class I, Zone 1, Ex/AEx ib IIC T4 Gb NI Class I, Division 2, Groups ABCD T4 NI Class II,III, Division 2, Groups EFG T7 nonincendive field wiring	rocc i	OX NO. 66590

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.

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NINASIS

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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.

Communication Modules:
OUT 3400X-071. Output Module.
PID 3400X-121. PID Controller Module.



- 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:

Description
Original Issue.
Supplement 1: Report Reference: 3026396 dated 7 th July 2006.
Description of the Change: Addition of modules as defined in referenced report
Supplement 2: Report Reference: 3023762rev080423 dated 19 th June 2009.
Description of the Change: Addition of modules OXY 3400X-067 and FIU 3400-14* Supplement 3: Report Reference: 3023762rev100802 dated 23 rd December 2010. Description of the Change: Addition of module type FIU 3400X-140-2

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US Certificate Of Conformity No: FM19US0234X

3 rd May 2011	Supplement 4:
	Report Reference: 3041828 dated 3 rd May 2011.
	Description of the Change: Re-examination to FM Class 3610:2010
	Supplement 5:
1 st December 2020	Report Reference: PR455159 dated 1st 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.
16 th November 2021	Supplement 6:
	Report Reference: RR229264 dated 16th November 2021.
	Description of the Change: Add MS 4400X-160 module. Update the FM 3610,
	FM3611 and FM3810 standards to the 2021 editions.

