CERTIFICATE OF CONFORMITY

1. **HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**
2. **Certificate No:** **FM22US0034**
3. **Equipment:** **Measuring System Portavo Type 90aXc**
   (Type Reference and Name)
4. **Name of Listing Company:** **Knick Elektronische Messgeräte GmbH & Co. KG**
5. **Address of Listing Company:** **Beuckestrasse 22**
   Berlin D-14163
   Germany
6. The examination and test results are recorded in confidential report number:

   3054586 dated 10th June 2015
7. 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, FM3810:2021,
   ANSI/UL 60079-0:2020, ANSI/UL 60079-11:2018, ANSI/ISA 61010-1:2012
8. 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.

Certificate issued by:

J.E. Marquedant
VP, Manager - Electrical Systems

17 May 2022
Date

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

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SCHEDULE

US Certificate Of Conformity No: FM22US0034

9. Equipment Ratings:

Intrinsically Safe for Class I, Division 1, Groups A, B, C and D and Class I, Zone 0, AEx ia IIC in accordance with installation drawing 209.009-110 with an ambient temperature rating per the table below

10. The marking of the equipment shall include:

Intrinsically Safe for Class I, Division 1, Groups ABCD; T*(see table below) – 209.009-110

Intrinsically Safe for Zone 0 AEx ia IIC T*(see table below) Ga – 209.009-110;

Battery Quantity	Batteries	*Temperature Class	Ambient Temperature Range
4	Duracell MN1500	T4	Ta = -10°C to +40°C
4	Energizer E91	T3	Ta = -10°C to +50°C
4	Power One 4106	T3	Ta = -10°C to +50°C
4	Panasonic Pro Power LR6	T3	Ta = -10°C to +50°C

11. **Description of Equipment:**

General - The Measuring System Portavo Type 90*X* is an intrinsically safe handheld Battery Powered pH, conductivity and temperature measuring meter, for analog or digital sensors for use in potentially explosive environments. The analog sensors may be simple apparatus. The USB – Interface is only for use outside of explosion hazardous areas.

Ratings - The Measuring System Portavo Type 90*X* are rated for use in an ambient temperature range per the table below:

Battery Quantity	Batteries	*Temperature Class	Ambient Temperature Range
4	Duracell MN1500	T4	Ta = -10°C to +40°C
4	Energizer E91	T3	Ta = -10°C to +50°C
4	Power One 4106	T3	Ta = -10°C to +50°C
4	Panasonic Pro Power LR6	T3	Ta = -10°C to +50°C

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The Measuring System Portavo Type 90*X* has the following electrical ratings:

Supply	Only the following batteries may be used: Duracell MN1500 Energizer E91 Power One 4106 Panasonic Pro Power LR6					
	in type of protection intrinsic safety Ex ia IIC, with the following maximum values:					
	U_o(V)	I_o(mA)	P_o(mW)	C_o(µF)	L_o(mH)	
pH-Measuring circuit(MEAS)	4.1	0.1	0.1	100	1000	Linear characteristic
Temperature measurement circuit(TEMP1, TEMP2)	4.1	4.4	4.6	99	1000	Linear characteristic
pH / Temperature measurement circuit (MEAS, TEMP1, TEMP2)	7.2	4.4	4.6	13.3	1000	Linear characteristic
Conductivity measurement circuit(MEAS)	7.2	36	36.9	13.4	27	Linear characteristic
Conductivity / Temperature measurement circuit (MEAS, TEMP1, TEMP2)	7.2	40.6	41.7	13.3	22	Linear characteristic
Memosens interface circuit(MS and/or MEAS)	4.6	113	130	96	2.8	Linear characteristic
USB Interface(micro USB-B)	Um = 250 V					

Measuring System Portavo Type 90aXc
a = 2 without USB interface
= 4 USB interface version
c = PH pH / ORP/ °C measurement analog
COND Conductivity / °C measurement, analog
MULTI Memosens PH, COND, OXY

12. **Specific Conditions of Use:**

None

13. **Test and Assessment Procedure and Conditions:**

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

14. **Schedule Drawings**

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

15. **Certificate History**

SCHEDULE

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Details of the supplements to this certificate are described below:

Date	Description
10th June 2015	Original Issue.
17th May 2022	Supplement 1: Report Reference: – PR462822 dated 17th May 2022. Description of the Change: 1) FM3600 updated to latest edition (2022) 2) FM3610 updated to latest edition (2021) 3) FM3810:2021 added to Standards list 4) ANSI/ISA 60079-0:2009 updated to ANSI/UL 60079-0:2020 5) ANSI/ISA 60079-11:2011 updated to ANSI/UL 60079-11:2018 6) ANSI/ISA 61010-1:2012 added to Standards list 7) Certificate updated to new format

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