Translation, original language: German

(1) # EC-TYPE EXAMINATION CERTIFICATE

(2) **Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC**

(3) EC-Type Examination Certificate Number: **KEMA 04ATEX2056** Issue Number: **2**

(4) Equipment: **Modular Transmitter Type M 700 X ******

(5) Manufacturer: **Mettler Toledo GmbH, Process Analytics**

(6) Address: **Im Hackacker 15, CH-8902 Urdorf, Switzerland**

(7) This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) KEMA Quality B.V., notified body number 0344 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the directive.

The examination and test results are recorded in confidential test report no. 2105795.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014 : 1997 + A1, A2	**EN 50019 : 2000**	**EN 50020 : 2002**
EN 50028 : 1987	**EN 50281-1-1 : 1998**	**EN 50284 : 1999**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment according to the Directive 94/9/EC. Further requirements of the directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment shall include the following:

II 2(1) GD EEx me ib [ia] IIC T4 T 70 °C

This certificate is issued on 11 May 2007 and, as far as applicable, shall be revised before the date of cessation of presumption of conformity of (one of) the standards mentioned above as communicated in the Official Journal of the European Union.

KEMA Quality B.V.

T. Pijpker
Certification Manager

PRODUCTS RvAC 001

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(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 04ATEX2056** **Issue No. 2**

(15) **Description**

The Modular Transmitter Type M 700 X **** is intended to record and process electrochemical data in the fluid analysis. By using exchangeable measuring and interface modules, the system can be configured to provide the required measuring and control functions in the analytical techniques. In the polished or polyester coated stainless steel housing with the power supply Type BASE M 700 X * / ***, up to three measuring and interface modules can be mounted. On the front panel of the door Type FRONT 700 X * - 01* the keyboard and LC-display is provided, on the rear panel a SmartMedia-Card slot is located.

The complete System M 700 X * / *** consists of the following power supplies, door and measuring and interface modules:

Module:	Description:	Type of protection:
BASE M 700 X * / ***	Power Supply (100-230 V ac or 24 V ac/dc)	EEx em ib IIC
FRONT M 700 X *-01*	Door	EEx ib IIC
pH 2700 X	pH-Measurement Module	EEx ib [ia] IIC
Cond 7700 X	Conductivity Measurement Module	EEx ib [ia] IIC
O2 4700 X	Oxygen Concentration Measurement Module	EEx ib [ia] IIC
EC 700 X	Unical 9000 X Communication Module	EEx ib [ia] IIC
Cond Ind 7700 X	Inductive Conductivity Measurement Module	EEx ib [ia] IIC
Out 700 X	Output Module (Analog and Switch Outputs)	EEx ib IIC
PID 700 X	PID Controller	EEx ib IIC
PA 700 X / FF 700 X	Interface (Profibus-PA and Foundation Fieldbus)	EEx ib [ia] IIC
CO2 5700i X	Carbon dioxide Concentration Measurement Module	EEx ib [ia] IIC
i700 X	Fourfold RS 485 Module	EEx ib [ia] IIC

Ambient temperature range: -20 °C to +50 °C.

Degree of ingress protection: IP 65 according to EN 60529. The door FRONT M 700 X *-01* may be opened for a short time in order to change the SmartMedia-card.

The maximum surface temperature of the housing T 70 °C is based on a maximum ambient temperature of +50 °C.

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Electrical data

BASE M 700 X * / ***:

Power supply circuit (terminals KL L, KL N, KL PE)	in type of protection increased safety EEx e, with the following maximum values: 100 ... 230 Vac (-15%, +10%), 15 VA, 48 ... 62 Hz or 24 V ac (-15%, +10%), 15 VA, 48 ... 62 Hz or 24 V dc (-15%, +20%), 8 W U_m = 253 V					
	in type of protection intrinsic safety EEx ib IIC, only for connection to intrinsically safe circuits, with the following maximum values per circuit:					
	U_i (V)	I_i (mA)	P_i (W)	C_i (nF)	L_i (mH)	
OK-inputs OK1 and OK2 (KL30, KL31 and KL30, KL33)	30	any	any	0	0	
Switch circuits K1, K2, K3, K4 (KL60, KL61, KL63, KL65 and KL71, KL72)	30	500	10	0	0	
	in type of protection intrinsic safety EEx ib IIC, with the following maximum values:					
	U_o (V)	I_o (mA)	P_o (mW)	C_o (nF)	L_o (mH)	
Output circuits I1 and I2 (KL51, KL52 and KL53, KL54)	17	84	357	243	3	Linear characteristic
Power supply, KBus (D-SUB, WE-Connector)	in type of protection intrinsic safety EEx ib IIC, only for connection to certified Modules Type *700 X and the door FRONT 700 X * / ***					
The power supply circuit is infallibly galvanically separated from all other circuits up to a peak voltage of 375 V. The switch circuits K1, K2, K3, the switch circuit K4, the OK-input circuits OK1, OK2, the output circuits I1, I2 and the power supply, KBus are infallibly galvanically separated from each other up to a peak voltage of 60 V. The switch circuits K1, K2 and K3 are galvanically connected. The OK-inputs OK1 and OK2 are galvanically connected. The output circuits I1 and I2 are galvanically connected. The power supply and the KBus are galvanically connected.						

FRONT M 700 X *-01*:

Power supply, KBus (BU2)	in type of protection intrinsic safety EEx ib IIC, only for connection to the certified Transmitter Type M 700 X ****
SmartMedia-Card (SmartMedia-Card Slot)	in type of protection intrinsic safety EEx ib IIC, only for use with a SmartMedia-Card Type ZU 0543
The power supply and KBus are galvanically connected.	

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pH 2700 X (exceptions see below):

	in type of protection intrinsic safety EEx 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 (KL2, KL8, KL12, KL13, KL16)	10	20	25	1,5	1	Linear characteristic
DF-supply circuit (KL14, KL15)	10	14	35	1,26	1,2	Linear characteristic
Temperature measurement circuit (KL17, KL18, KL19)	10	10	12	1,2	1	Linear characteristic
pH / Temperature measurement circuit (KL2, KL8, KL12, KL13, KL16, KL 17, KL18, KL19)	10	30	38	1,1	1	Linear characteristic
Power supply and KBus (ST1)	in type of protection intrinsic safety EEx ib IIC, only for connection to the certified Transmitter Type M 700 X ****					
The measurement circuits are galvanically connected and are infallibly galvanically separated from the power supply and the KBus up to a peak voltage of 60 V.						

Cond 7700 X:

	in type of protection intrinsic safety EEx ia IIC, with the following maximum values:					
	U_o (V)	I_o (mA)	P_o (mW)	C_o (µF)	L_o (mH)	
Conductivity measurement circuit (KL1, KL2, KL3, KL4, KL5)	10	112	139	1	1	Linear characteristic
Temperature measurement circuit (KL16, KL17, KL18, KL19)	10	10	12	1,26	1	Linear characteristic
Conductivity / Temperature measurement circuit (KL1, KL2, KL3, KL4, KL5, KL16, KL17, KL18, KL19)	10	122	153	0,858	1	Linear characteristic
Power supply and KBus (ST1)	in type of protection intrinsic safety EEx ib IIC, only for connection to the certified Transmitter Type M 700 X ****					
The measurement circuits are galvanically connected and are infallibly galvanically separated from the power supply and the KBus up to a peak voltage of 60 V.						

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pH2700i X und CO2 5700i X:

	in type of protection intrinsic safety EEx ia IIC, with the following maximum values:					
	U_o (V)	I_o (mA)	P_o (mW)	C_o (µF)	L_o (mH)	
pH measurement circuit (KL2, KL8, KL12, KL15)	12	1,6	2,9	0,947	1	Linear characteristic
pH/ISFET measurement circuit (KL2, KL8, KL12, KL13, KL14, KL15)	12	4,3	7,8	0,933	1	Linear characteristic
Temperature measurement circuit (KL18, KL19)	7,2	6,6	11,9	3	1	Linear characteristic
pH / Temperature measurement circuit (KL2, KL8, KL12, KL15, KL18, KL19)	12	8,2	14,8	0,923	1	Linear characteristic
pH / ISFET / Temperature measurement circuit (KL2, KL8, KL12, KL13, KL14, KL15, KL18, KL19)	12	10,9	19,7	0,909	1	Linear characteristic
pH / ISM / Temperature measurement circuit (KL2, KL8, KL12, KL15, KL16, KL17, KL18, KL19)	12	23,4	42,2	0,911	1	Linear characteristic
pH / ISFET / ISM / Temperature measurement circuit (KL2, KL8, KL12, KL13, KL14, KL15, KL16, KL17,KL18, KL19)	12	26,1	47	0,909	1	Linear characteristic
Power supply and KBus (ST1)	in type of protection intrinsic safety EEx ib IIC, only for connection to the certified Transmitter Type M 700 X ****					
The measurement circuits are galvanically connected and are infallibly galvanically separated from the power supply and the KBus up to a peak voltage of 60 V.						

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O2 4700 X und O2 4700 X ppb (exceptions see below):

	in type of protection intrinsic safety EEx ia IIC, with the following maximum values:					
	U_o (V)	I_o (mA)	P_o (mW)	C_o (µF)	L_o (mH)	
Oxygen measurement circuit (KL2, KL8, KL13, KL14, KL15, KL16)	10	10	13	1,5	1	Linear characteristic
Temperature measurement circuit (KL17, KL18)	10	1	2	1,38	1	Linear characteristic
Oxygen / Temperature measurement circuit (KL2, KL8, KL13, KL14, KL15, KL16, KL17, KL18)	10	11	14	1,38	1	Linear characteristic
Power supply and KBus (ST1)	in type of protection intrinsic safety EEx ib IIC, only for connection to the certified Transmitter Type M 700 X ****					
The measurement circuits are galvanically connected and are infallibly galvanically separated from the power supply and the KBus up to a peak voltage of 60 V.						

O2 4700i X und O2 4700i X ppb:

	in type of protection intrinsic safety EEx ia IIC, with the following maximum values:					
	U_o (V)	I_o (mA)	P_o (mW)	C_o (µF)	L_o (mH)	
Oxygen-Measurement circuit (KL2, KL8, KL12, KL13)	10	7,5	10	1,5	1	Linear characteristic
Temperature-Measurement circuit (KL16, KL17)	5	1	1,5	4,4	5	Linear characteristic
Oxygen / Temperature-Measurement circuit (KL2, KL8, KL12, KL13, KL16, KL17)	10	9	12	1,4	1	Linear characteristic
Oxygen / ISM / Temperature-Measurement circuit (KL2, KL8, KL12, KL13, KL14, KL15, KL16, KL17)	10	19	24	1,4	1	Linear characteristic
	in type of protection intrinsic safety EEx ia IIC, only for connection to intrinsically safe circuits, with the following maximum values:					
	U_i (V)	I_i (mA)	P_i (mW)	C_i (nF)	L_i (mH)	
0(4) – 20 mA-Measurement circuit (KL18, KL19)	30	125	1500	12	0	
Power supply and KBus (ST1)	in type of protection intrinsic safety EEx ib IIC, only for connection to the certified Transmitter Type M 700 X ****					
The measurement circuits are galvanically connected and are infallibly galvanically separated from the power supply and the KBus up to a peak voltage of 60 V.						

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O2 4700i X traces:

	in type of protection intrinsic safety EEx ia IIC, with the following maximum values:					
	U_o (V)	I_o (mA)	P_o (mW)	C_o (µF)	L_o (mH)	
Oxygen measurement circuit (KL2, KL8, KL12, KL13, KL15)	10	12	16	1,5	1	Linear characteristic
Temperature measurement circuit (KL13, KL14)	5	1	1,5	4,4	5	Linear characteristic
Oxygen / Temperature measurement circuit (KL2, KL8, KL12, KL13, KL14, KL15)	10	13	17	1,4	1	Linear characteristic
Oxygen / ISM / Temperature measurement circuit (KL2, KL8, KL12, KL13, KL14, KL15, KL16, KL17)	10	33	42	1,3	1	Linear characteristic
	in type of protection intrinsic safety EEx ia IIC, only for connection to intrinsically safe circuits, with the following maximum values:					
	U_i (V)	I_i (mA)	P_i (mW)	C_i (nF)	L_i (mH)	
0(4) – 20 mA measurement circuit (KL18, KL19)	30	125	1500	12	0	
Power supply and KBus (ST1)	in type of protection intrinsic safety EEx ib IIC, only for connection to the certified Transmitter Type M 700 X ****					
The measurement circuits are galvanically connected and are infallibly galvanically separated from the power supply and the KBus up to a peak voltage of 60 V.						

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EC 700 X:

	in type of protection intrinsic safety EEx ia IIC, with the following maximum values:					
	U_o (V)	I_o (mA)	P_o (mW)	C_o (µF)	L_o (mH)	
pH measurement circuit (KL2, KL8, KL12)	10	20	25	1,5	1	Linear characteristic
Temperature measurement circuit (KL13, KL14, KL15)	5	10	12	6	1	Linear characteristic
pH / Temperature measurement circuit (KL2, KL8, KL12, KL13, KL14, KL15)	10	29	47	1,4	1	Linear characteristic
Supply circuit (KL18, KL19)	7,5	140	297	1,68	1	Linear characteristic
Interface circuit (KL16, KL17, KL18)	5	257	322	3,5	1,2	Linear characteristic
Power supply and KBus (ST1)	in type of protection intrinsic safety EEx ib IIC, only for connection to the certified Transmitter Type M 700 X ****					
The measurement circuits are galvanically connected. The supply circuit and the interface circuit are galvanically connected. The measurement circuits and supply circuit / interface circuit and power supply / KBus are infallibly galvanically separated from each other up to a peak voltage of 60 V.						

Cond Ind 7700 X:

	in type of protection intrinsic safety EEx ia IIC, with the following maximum values:					
	U_o (V)	I_o (mA)	P_o (mW)	C_o (µF)	L_o (mH)	
Conductivity measurement circuit (KL1 … KL7)	7	45	26	1,4	12	Linear characteristic
Temperature measurement circuit (KL16, KL17, KL18, KL19)	5	9,1	12	3,26	16	Linear characteristic
Conductivity / Temperature measurement circuit (KL1 … KL7, KL16 ... KL19)	7	54,1	38	1,05	10	Linear characteristic
	or for connection to sensor Type 871EC-…, certfied under KEMA 00ATEX1160 X.					
Power supply and KBus (ST1)	in type of protection intrinsic safety EEx ib IIC, only for connection to the certified Transmitter Type M 700 X ****					
The measurement circuits are galvanically connected and are infallibly galvanically separated from the power supply and from the KBus up to a peak voltage of 60 V.						

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Out 700 X und PID 700 X:

	in type of protection intrinsic safety EEx ib IIC, only for connection to intrinsically safe circuits, with the following maximum values per circuit:					
	U_i (V)	I_i (mA)	P_i (mW)	C_i (nF)	L_i (µH)	
Output circuits OUT 3400X-07*: I3 and I4 PID 3400X-12*: IV1 and IV2 (KL7, KL8 and KL9, KL10)	30	100	800	12	0	
Switch circuits OUT 3400X-07*: K5 ... K8 PID 3400X-12*: KV1,KV2, K9,K10 (KL 12, KL13; KL14, KL15; KL16, KL17; KL18, KL19)	30	100	800	12	0	
Power supply and KBus (ST1)	in type of protection intrinsic safety EEx ib IIC, only for connection to the certified Transmitter Type M 700 X ****					
The output circuits are galvanically connected. The switching circuits are galvanically connected.The switch circuits and the output circuits are infallibly galvanically separated from each other and from the power supply and from the KBus up to a peak voltage of 60 V.						

PA 700 X und FF 700 X:

	in type of protection intrinsic safety EEx ia IIC/IIB resp. EEx ib IIC/IIB, only for connection to a certified intrinsically safe circuit (e.g. a FISCO power supply), with the following maximum values:					
		U_i (V)	I_i (mA)	P_i (W)	C_i (nF)	L_i (µH)
Bus connection (KL12, KL13, KL14)	FISCO Power Supply	17,5	380	5,32	5	10
	Linear Barrier	24	250	1,5	5	10
Power supply and KBus (ST1)	in type of protection intrinsic safety EEx ib IIC, only for connection to the certified Transmitter Type M 700 X ****					
The bus connection is infallibly galvanically separated from the power supply and from the KBus up to a peak voltage of 60 V.						

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i700 X:

	in type of protection intrinsic safety EEx ia IIC, with the following maximum values:					
	U_o (V)	I_o (mA)	P_o (mW)	C_o (µF)	L_o (mH)	
Supply / Interface circuit Comfu C (KL1, KL2, KL3, KL4, KL5)	5,1	518	277	88	0,1	Linear characteristic
Supply / Interface circuit InduCon II and InduCon I (KL6, KL7, KL8, KL9, KL10 and KL11, KL12, KL13, KL14, KL15)	5,1	130	166	88	2	Linear characteristic
Supply circuit EC 400 (KL18, KL19)	7,5	140	263	11,1	1,5	Linear characteristic
	or for connection to Retractable Probe Control Unit Type Easy Clean 400 X (KEMA 04ATEX1134).					
Interface circuit EC 400 (KL16, KL17, KL18)	5	120	153	100	2	Linear characteristic
	or for connection to Retractable Probe Control Unit Type Easy Clean 400 X (KEMA 04ATEX1134).					
Power supply and KBus (ST1)	in type of protection intrinsic safety EEx ib IIC, only for connection to the certified Transmitter Type M 700 X ****					
The supply and interface circuits are galvanically connected and are infallibly galvanically separated from the power supply and the KBus up to a peak voltage of 60 V.						

(13) **SCHEDULE**

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Installation instructions

The cable entries and blanking elements must be certified in type of protection increased safety EEx e and must be correctly installed. Instead of cable entries, two ½" metal rigid conduits can be used.

Routine tests

Each mains power supply Type BASE 3400 X * / *** must be tested according to EN 50019, clause 7.1, with a test voltage of 1500 V during 1 minute.

Each transformer constructed according to EN 50020 must be tested according to EN 50020, clause 11.2, with a test voltage according to Table 9 during 10 seconds.

Each mains power supply Type BASE M 700 X * / *** must be subjected to the following tests according to EN 50028, clause 7:
- 7.1 visual check
- 7.2 electric strength test
- 7.3 checking the electrical data

(16) **Test Report**

KEMA No. 2105795.

(17) **Special conditions for safe use**

None.

(18) **Essential Health and Safety Requirements**

Assured by compliance with the standards listed at (9).

(19) **Test documentation**

As listed in Test Report No. 2105795.