

Attachment to: IECEx DEK 11_0054, KEMA 03ATEX2530
 NL/DEK/ExTR11.0058/01,
 Applicant's name: Knick Elektronische Messgeräte GmbH & Co. KG
 Test item: Modular Analyzing System Protos Type 3400 X */***



The complete System Protos 3400 X */*** consists of the following components:

Module:	Description:	Type of protection:	
		IIC T4	IIIC T70°C
BASE 3400 X */***	Enclosure base Ex eb or tb Exchangeable power terminals Ex eb with encapsulated fuse Ex mb 100-230 V ac or 24 V ac/dc power supply with Ex i barriers and separations Ex mb Signal terminals Ex ib or ec (Ex ec only when covered by terminal cover ZU1042) Knick proprietary KBus Ex ib	Ex eb ib mb Gb or Ex ec ib mb Gc	Ex ib tb Db
FRONT 3400 X *-01*	Front door Ex eb or tb Keypad, Knick proprietary memory card interface and link from power supply Ex ib	Ex eb ib Gb	Ex ib tb Db
PH 3400X-03*	pH-Measurement Module Knick proprietary KBus Ex ib Sensor terminals Ex ia	Ex ib [ia Ga] Gb	Ex ib [ia Da] Db
COND 3400X-04*	Conductivity Measurement Module Knick proprietary KBus Ex ib Sensor terminals Ex ia	Ex ib [ia Ga] Gb	Ex ib [ia Da] Db
OXY 3400X-06*	Oxygen Concentration Measurement Module Knick proprietary KBus Ex ib Sensor terminals Ex ia	Ex ib [ia Ga] Gb	Ex ib [ia Da] Db
PHU 3400X-11*	Unical 9000 X Communication Module Knick proprietary KBus Ex ib Sensor terminals Ex ia	Ex ib [ia Ga] Gb	Ex ib [ia Da] Db
CONDI 3400X-05*	Inductive Conductivity Measurement Module Knick proprietary KBus Ex ib Sensor terminals Ex ia	Ex ib [ia Ga] Gb	Ex ib [ia Da] Db
OUT 3400X-07*	Output Module (Analog and Switch Outputs) Knick proprietary KBus Ex ib Signal terminals Ex ib	Ex ib Gb	Ex ib Db
PID 3400X-12*	PID Controller Knick proprietary KBus Ex ib Signal terminals Ex ib	Ex ib Gb	Ex ib Db
COM** 3400X-08*	Interface (Profibus-PA and Foundation Fieldbus) Knick proprietary KBus Ex ib Signal terminals Ex ia	Ex ib [ia Ga] Gb	Ex ib [ia Da] Db
CO2 3400X-130	Carbon dioxide Concentration Measurement Module Knick proprietary KBus Ex ib Sensor terminals Ex ia	Ex ib [ia Ga] Gb	Ex ib [ia Da] Db
FIU 3400X-140-2	Tripple RS 485 Module Knick proprietary KBus Ex ib Sensor terminals Ex ia	Ex ib [ia Ga] Gb	Ex ib [ia Da] Db
MS 3400X-16*	Memosens Module Knick proprietary KBus Ex ib Sensor terminals Ex ia	Ex ib [ia Ga] Gb	Ex ib [ia Da] Db

Electrical data

Protos BASE 3400 X */***:

Power supply circuit (terminals KL L, KL N, KL PE)	In type of protection increased safety Ex eb, with the following electrical data: 100 ... 230 Vac (-15%, +10%), 15 VA, 48 ... 62 Hz Internally fused 315 mA/T $U_m = 253 \text{ V}$					
Power supply circuit (terminals KL L1, KL L2, KL PE)	In type of protection increased safety Ex eb, with the following electrical data: 24 V ac (-15%, +10%), 15 VA, 48 ... 62 Hz or 24 V dc (-15%, +20%), 8 W Internally fused 630 mA/T $U_m = 253 \text{ V}$					
	In type of protection intrinsic safety Ex ib IIC or Ex ib IIIC, 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	$R_i = 3 \text{ k}\Omega$
Switch circuits K1, K2, K3, K4 (KL60, KL61, KL63, KL65 and KL71, KL72)	30	500	10	0	0	
	In type of protection intrinsic safety Ex ib IIC or Ex ib IIIC, 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
	In type of protection increased safety Ex ec, only for connection to SELV/PELV circuits, with the following maximum values per circuit:					
OK-inputs OK1 and OK2 (KL30, KL31 and KL30, KL33 covered by terminal cover ZU1042)	30 V $U_m = 60 \text{ V}$					
Switch circuits K1, K2, K3, K4 (KL60, KL61, KL63, KL65 and KL71, KL72 covered by terminal cover ZU1042)	30 V, 500 mA, 10 W $U_m = 60 \text{ V}$					
Output circuits I1 and I2 (KL51, KL52 and KL53, KL54 covered by terminal cover ZU1042)	$U_m = 60 \text{ V}$					
Knick proprietary K-Bus (D-SUB and modular connector)	In type of protection intrinsic safety Ex ib IIC or Ex ib IIIC, only for connection to the certified Knick Protos Modules ***3400X-*** and FRONT 3400 X */***					
<p>The power supply circuit is infallibly galvanically separated from all other circuits up to a peak voltage of 375 V.</p> <p>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.</p> <p>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.</p>						

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Protos FRONT 3400 X */***:

KBus modular connector	In type of protection intrinsic safety Ex ib IIC or Ex ib IIIC, only for connection to the certified Knick Protos BASE 3400 X */***
SmartMedia-Card (SmartMedia-Card Slot)	In type of protection intrinsic safety Ex ib IIC or Ex ib IIIC, only for connection to SmartMedia-Card Type ZU 0543

Protos Module PH 3400X-03* (exceptions see below):

	In type of protection intrinsic safety Ex ia IIC or Ex ia IIIC, 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, KL17, KL18, KL19)	10	30	38	1,1	1	Linear characteristic
KBus (ST1)	In type of protection intrinsic safety Ex ib IIC or Ex ib IIIC, only for connection to the certified Measuring System Protos Type 3400 X */***					
The measurement circuits are galvanically connected and are infallibly galvanically separated from the KBus up to a peak voltage of 60 V.						

Protos Module COND 3400X-04*:

	In type of protection intrinsic safety Ex ia IIC or Ex ia IIIC, 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
KBus (ST1)	In type of protection intrinsic safety Ex ib IIC or Ex ib IIIC, only for connection to the certified Measuring System Protos Type 3400 X */***					
The measurement circuits are galvanically connected and are infallibly galvanically separated from the KBus up to a peak voltage of 60 V.						

Protos Modules PH 3400X-035, PH 3400X-036 and CO2 3400X-130:

	In type of protection intrinsic safety Ex ia IIC or Ex ia IIIC, 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
KBus (ST1)	In type of protection intrinsic safety Ex ib IIC or Ex ib IIIC, only for connection to the certified Measuring System Protos Type 3400 X */***					
The measurement circuits are galvanically connected and are infallibly galvanically separated from the KBus up to a peak voltage of 60 V.						

Protos Module OXY 3400X-06* (exceptions see below):

	In type of protection intrinsic safety Ex ia IIC or Ex ia IIIC, 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
KBus (ST1)	In type of protection intrinsic safety Ex ib IIC or Ex ib IIIC, only for connection to the certified Measuring System Protos Type 3400 X */***					
The measurement circuits are galvanically connected and are infallibly galvanically separated from the KBus up to a peak voltage of 60 V.						

Protos Modules OXY 3400X-065 and OXY 3400X-066:

	In type of protection intrinsic safety Ex ia IIC or Ex ia IIIC, 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 Ex ia IIC or Ex ia IIIC, 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	
KBus (ST1)	In type of protection intrinsic safety Ex ib IIC or Ex ib IIIC, only for connection to the certified Measuring System Protos Type 3400 X */***					
The measurement circuits are galvanically connected and are infallibly galvanically separated from the KBus up to a peak voltage of 60 V.						

Protos Module OXY 3400X-067:

	In type of protection intrinsic safety Ex ia IIC or Ex ia IIIC, 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

Protos Module OXY 3400X-067 (continued):

	In type of protection intrinsic safety Ex ia IIC or Ex ia IIIC, 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)	
O(4) – 20 mA measurement circuit (KL18, KL19)	30	125	1500	12	0	
KBus (ST1)	In type of protection intrinsic safety Ex ib IIC or Ex ib IIIC, only for connection to the certified Measuring System Protos Type 3400 X */***					
The measurement circuits are galvanically connected and are infallibly galvanically separated from the KBus up to a peak voltage of 60 V.						

Protos Module PHU 3400X-11*:

	In type of protection intrinsic safety Ex ia IIC or Ex ia IIIC, with the following maximum values:					
	U_o (V)	I_o (mA)	P_o (mW)	C_o (μ F)	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
KBus (ST1)	In type of protection intrinsic safety Ex ib IIC or Ex ib IIIC, only for connection to the certified Measuring System Protos Type 3400 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 KBus are infallibly galvanically separated from each other up to a peak voltage of 60 V.						

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Protos Module CONDI 3400X-05*:

	In type of protection intrinsic safety Ex ia IIC or Ex ia IIIC, 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
	Suitable for connection to the following sensors					
	Type:			Certificate number:		
	SE 655X, SE 656X			DMT 00 ATEX E 088 X		
	CLS 50-G...			DMT 99 ATEX E 075 X		
	ISC40S-...			KEMA 00ATEX1067 X		
KBus (ST1)	In type of protection intrinsic safety Ex ib IIC or Ex ib IIIC, only for connection to the certified Measuring System Protos Type 3400 X */***					
	The measurement circuits are galvanically connected and are infallibly galvanically separated from and from the KBus up to a peak voltage of 60 V.					

Protos Modules OUT 3400X-07* and PID 3400X-12*:

	In type of protection intrinsic safety Ex ib IIC or Ex ib IIIC, 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	
KBus (ST1)	In type of protection intrinsic safety Ex ib IIC or Ex ib IIIC, only for connection to the certified Measuring System Protos Type 3400 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 and from the KBus up to a peak voltage of 60 V.						

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Protos Module COM 3400X-08*:

	In type of protection intrinsic safety Ex ia IIC/IIB, Ex ib IIC/IIB or Ex ia IIIC/IIIB, 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)	17,5	380	5,32	5	10	FISCO Power Supply
	24	250	1,5	5	10	Linear Barrier
KBus (ST1)	In type of protection intrinsic safety Ex ib IIC or Ex ib IIIC, only for connection to the certified Measuring System Protos Type 3400 X * / ***					
The bus connection is infallibly galvanically separated from from the KBus up to a peak voltage of 60 V.						

Protos Module FIU 3400X-140-2:

	In type of protection intrinsic safety Ex ia IIC or Ex ia IIIC, with the following maximum values:					
	U _o (V)	I _o (mA)	P _o (mW)	C _o (µF)	L _o (mH)	
Supply / Interface circuit Memosens II and Memosens I (KL6, KL7, KL8, KL9, KL10 and KL11, KL12, KL13, KL14, KL15)	5	123	154	97,4	2	Linear characteristic
				C _i (µF)	L _i (µH)	
				2,6	0	
Suitable for connection of Memosens measuring cable type CA/MS-***X** (BVS 09 ATEX E 083 X) or for connection of Memosens measuring cable type CYK 10-G**1 (BVS 04 ATEX E 121 X)						
	In type of protection intrinsic safety Ex ia IIC or Ex ia IIIC, with the following maximum values:					
	U _o (V)	I _o (mA)	P _o (mW)	C _o (µF)	L _o (mH)	
Supply circuit Unical (KL18, KL19)	7,5	115	216	10,9	2	Linear characteristic
	Suitable for connection to Retractable Probe Control Unit Type Unical 9000-X... or Type Uniclean 900-X... (KEMA 04ATEX1036).					
	In type of protection intrinsic safety Ex ia IIC or Ex ia IIIC, with the following maximum values:					
	U _o (V)	I _o (mA)	P _o (mW)	C _o (µF)	L _o (mH)	
Interface circuit Unical (KL16, KL17, KL18)	5	118	148	100	2	Linear characteristic
	Suitable for connection to Retractable Probe Control Unit Type Unical 9000-X... or Type Uniclean 900-X... (KEMA 04ATEX1036).					
KBus (ST1)	In type of protection intrinsic safety Ex ib IIC or Ex ib IIIC, only for connection to the certified Measuring System Protos Type 3400 X */***					
The supply and interface circuits are galvanically connected and are infallibly galvanically separated from the KBus up to a peak voltage of 60 V.						

Protos Module MS 3400X-16*:

	In type of protection intrinsic safety Ex ia IIC or Ex ia IIIC, with the following maximum values:					
	U _o (V)	I _o (mA)	P _o (mW)	C _o (μF)	L _o (mH)	
Supply / Interface circuit Memosens (KL1, KL2, KL3, KL4, KL5)	5	127	159	96,2	2	Linear characteristic
				C _i (μF)	L _i (μH)	
				3,8	2	
	Suitable for connection of Memosens measuring cable type CA/MS-***X** (BVS 09 ATEX E 083 X) or for connection of Memosens measuring cable type CYK 10-G**1 (BVS 04 ATEX E 121 X)					
	In type of protection intrinsic safety Ex ia IIC or Ex ia IIIC, with the following maximum values:					
	U _o (V)	I _o (mA)	P _o (mW)	C _o (μF)	L _o (mH)	
Supply / Interface circuit ISM (KL15, KL17)	8,3	9,3	20	7,2	400	Linear characteristic
	In type of protection intrinsic safety Ex ia IIC or Ex ia IIIC, 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)	
Current I-Input (KL7, KL9)	30	100	750	12	0	Linear characteristic
OK-input (KL11, KL13)	30	any	any	0	0	Linear characteristic
KBus (ST1)	In type of protection intrinsic safety Ex ib IIC or Ex ib IIIC, only for connection to the certified Measuring System Protos Type 3400 X */***					
The supply and interface circuits are galvanically connected and are infallibly galvanically separated from and the KBus up to a peak voltage of 60 V.						