



1 **EU-TYPE EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

3 Certificate Number: **Sira 18ATEX1295X** Issue: **1**

4 Equipment: **TCMP series of Coriolis Mass Flow Meter**

5 Applicant: **KEM Kueppers Elektromechnik GmbH**

6 Address: **Liebigstr. 5
85757 Karlsfeld
Germany**

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

8 CSA Group Netherlands B.V., notified body number 2813 in accordance with Articles 17 and 21 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN IEC 60079-0:2018 EN 60079-1:2014 EN 60079-11:2012

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to Specific Conditions of Use identified in the schedule to this certificate.

11 This EU-Type Examination Certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:

Mount Version Configuration 1 for all other configurations refer to the Product Description



II 2(1)G
Ex db ia [ia Ga] IIC T* Gb
Ta = -20°C to +60°C

Project Number 80064061

Signed: J A May

Title: Director of Operations

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EU-TYPE EXAMINATION CERTIFICATE

Sira 18ATEX1295X
Issue 1

13 DESCRIPTION OF EQUIPMENT

Mount Version Configuration 1



II 2(1)G
Ex db ia [ia Ga] IIC T* Gb
Ta = -20°C to +60°C

Mount Version Configuration 2



II 2(1)G
Ex db ia [ia Ga] IIC T* Gb
Ta = -40°C to +60°C

Remote & Wall Mounted Version Configuration 3



TCD II 2(1)G
Ex db ia [ia Ga] IIC T4 Gb
Ta = -20°C to +60°C

TCM Ex ia II* T4...T2 Ga
Ta = -20°C to +60°C

* Note : IIC When TCM0050, TCM0100, TCM0325, TCM0450, TCM0650, TCM1550, TCM3100, TCM5500, and TCM 7900. IIB when TCM028K, TCM065K, TCM230K, and TCM430K.

Remote & Wall Mounted Version Configuration 4



TCD II 2(1)G
Ex db ia [ia Ga] IIC T4 Gb
Ta = -40°C to +60°C

TCM Ex ia II** T4...T2 Ga
Ta = -40°C to +60°C

** Note: IIC When TCM0050, TCM0100, TCM0325, TCM0450, TCM0650, TCM1550, TCM3100, TCM5500 and TCM 7900, and IIB when TCM028K, TCM065K, TCM230K, TCM430K.

Remote & Wall Mounted Version Configuration 5



II 2(1)G
Ex db ia [ia Ga] IIC T* Gb
Ta = -20°C to +60°C

The TCMP**** series of Coriolis Mass Flow Meter, being afforded certification, consists of:

- A previously certified flameproof TCD transmitter - certificate no. Sira 19ATEX1005X and Sira 19ATEX1006X;
- A flameproof transition piece, including a previously certified flameproof line bushing – EPS 11ATEX1342X;
- A previously certified intrinsically safe Tricor Coriolis Mass (TCM) Flow Meters - SIRA 18ATEX1264X.

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SCHEDULE

EU-TYPE EXAMINATION CERTIFICATE

Sira 18ATEX1295X
Issue 1

The TCMP**** series of Coriolis Mass Flow Meter uses the Coriolis principle to measure flow and is available in 5 recognised configurations:

- Compact version (Configuration 1 and 2): A single mechanical unit where the flameproof TCD transmitter is directly mounted on a Tricor Coriolis Mass (TCM) Flow Meter.
- Remote version (Configuration 3 and 4): The flameproof TCD 92x0 transmitter is remotely connected, by a sensor cable (max. 30m), a suitable cable gland and cable gland adapter, to Tricor Coriolis mass flow meters (TCM). Tricor Coriolis mass flow meter (TCM) is IS powered by TCD 92x0 transmitter.
- Remote version (Configuration 5): The flameproof TCD 9200 transmitter system consists of a mechanical unit (flameproof TCD transmitter (Link Module (DSL)) directly mounted on Tricor Coriolis mass flow meter, equivalent to Configuration 1) and a remotely & wall mounted display transmitter. Mechanical unit and wall mounted display transmitter are connected with a 4-wire connection which provides power and high-integrity digital communication.

For the configurations involving the TRICOR TCD 9X10 transmitter installed with the sensor enclosure, for configurations no. 1 and 5, the maximum allowable process fluid temperatures with respect to temperature class for the device when used with potentially explosive gases in the following maximum ambient temperatures are:

Ta (°C)	Maximum Process Temperature per Temperature Class (°C)	
	T4	T3
60	70	70
55	100	100
50	130	130
45	135	160
40	135	190
35	135	200
30	135	200

For the configurations involving the TRICOR TCD 9X00 transmitter installed with the sensor enclosure, for configuration no. 2, the maximum allowable process fluid temperatures with respect to the marked temperature class and maximum surface temperature for the device in the following maximum ambient temperatures are:

Ta / °C	Maximum Process Temperature /°C	
	T4	T3
60	80	80
55	110	110
50	135	140
45	135	170

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SCHEDULE

EU-TYPE EXAMINATION CERTIFICATE

Sira 18ATEX1295X
Issue 1

Ta / °C	Maximum Process Temperature / °C	
	T4	T3
40	135	200
35	135	200
30	135	200

A part number breakdown of the TCMP series of Coriolis Mass Flow Meter is shown below:

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SCHEDULE

EU-TYPE EXAMINATION CERTIFICATE

Sira 18ATEX1295X
Issue 1

TCMP		XXXX	XX	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Process Connections	see section 3.2.2.	**																		
Mechanical Options	Medium Temperature Range																			
-60 °C ... +200 °C [-76 °F ... +392 °F]				T																
-40 °C ... +200 °C [-76 °F ... +392 °F]				U																
Other options				*																
Rupture Disc/Pressure Range					S															
Mechanical Design / Measuring Accuracy																				
Standard, ±0.1 % o.r. + zero point stability, with water at 20 °C [68 °F] (Gas ±0.5 %)						S														
Standard, basic accuracy ±0.1 % o.r. for liquids (Gas ±0.5 %), solder: ML4613						A														
Face to Face Length	see section 3.2.2.							*												
Electronics Options	Electronics Type																			
TCD 9010 - direct meter mount electronics without display, 1/2" NPT, 12 - 24 V DC																				W
TCD 9100 - direct meter mount electronics with display, 1/2" NPT, 20 - 28 V DC / 100 ... 240 V AC																				T
TCD 9200 - remote display + link modul, ALU, 1/2" NPT , 20 - 28 V DC / 100 ... 240 V AC																				R
Interface																				
Current output 4 ... 20 mA HART active/passive (factory setting= active) (non-Ex)																				G
Modbus RTU (Non-Ex)																				L
Other options																				*
Power Supply																				
12-24V DC (100 mA)																				D
20-28V DC (11 W) + 100-240V AC, 47-64 Hz, 30 VA																				B
Plug-In I/O-Card																				
None																				A
Signal I/O, Signal I/O, Signal I/O (Non-Ex)																				D
Signal I/O, Signal I/O, Relay (Non-Ex)																				E
Other options																				*
EX-Protection																				
Without protection																				
Other options																				
Cable Length																				
TCD 9200 Remote M12 Cable, 3 m [10 ft], Standard																				
TCD 9200 Remote M12 Cable, 6 m [20 ft]																				
TCD 9200 Remote M12 Cable, 10 m [33 ft]																				
TCD 9200 Remote M12 Cable, 15 m [49 ft]																				
Other options																				
Customer Specific⁹⁾																				

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SCHEDULE

EU-TYPE EXAMINATION CERTIFICATE

Sira 18ATEX1295X
Issue 1

For configuration 3, process temperature range for remote versions of the equipment is determined as follows:

- $-40^{\circ}\text{C} \leq T_p \leq +70^{\circ}\text{C}$ (for T4)
- $-40^{\circ}\text{C} \leq T_p \leq +135^{\circ}\text{C}$ (for T3)
- $-60^{\circ}\text{C} \leq T_p \leq +200^{\circ}\text{C}$ (for T2)

For configuration 4, process temperature range for remote versions of the equipment is determined as follows:

- $-40^{\circ}\text{C} \leq T_p \leq +70^{\circ}\text{C}$ (for T4)
- $-40^{\circ}\text{C} \leq T_p \leq +135^{\circ}\text{C}$ (for T3)
- $-60^{\circ}\text{C} \leq T_p \leq +200^{\circ}\text{C}$ (for T2)

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report number	Comment
0	27 October 2020	R70199788A	The release of the prime certificate.
1	04 December 2020	R80064061A	Transfer of certificate Sira 18ATEX1295X from Sira Certification Service to CSA Group Netherlands B.V

15 SPECIFIC CONDITIONS OF USE (denoted by X after the certificate number)

- 15.1 For the configurations involving the **TRICOR TCD 9X10 transmitter installed with the sensor enclosure, for configurations no. 1 and 5**, the maximum allowable process fluid temperatures with respect to temperature class for the device when used with potentially explosive gases in the following maximum ambient temperatures are:

Ta (°C)	Maximum Process Temperature per Temperature Class (°C)	
	T4	T3
60	70	70
55	100	100
50	130	130
45	135	160
40	135	190
35	135	200
30	135	200

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SCHEDULE

EU-TYPE EXAMINATION CERTIFICATE

Sira 18ATEX1295X
Issue 1

- 15.2 For the configurations involving the **TRICOR TCD 9X00 transmitter installed with the sensor enclosure, for configuration no. 2**, the maximum allowable process fluid temperatures with respect to the marked temperature class and maximum surface temperature for the device in the following maximum ambient temperatures are:

Ta / °C	Maximum Process Temperature / °C	
	T4	T3
60	80	80
55	110	110
50	135	140
45	135	170
40	135	200
35	135	200
30	135	200

- 15.3 For **configuration 3**, process temperature range for remote versions of the equipment is determined as follows:
-40°C ≤ Tp ≤ +70°C (for T4)
-40°C ≤ Tp ≤ +135°C (for T3)
-60°C ≤ Tp ≤ +200°C (for T2)
- 15.4 For **configuration 4**, process temperature range for remote versions of the equipment is determined as follows:
-40°C ≤ Tp ≤ +70°C (for T4)
-40°C ≤ Tp ≤ +135°C (for T3)
-60°C ≤ Tp ≤ +200°C (for T2)
- 15.5 The end user shall contact the manufacturer of the Coriolis units, which will be required in some applications, to be covered in a thermal insulating material. The manufacturer will be able to provide the necessary information on either;
a) Maintaining the process fluid at a suitable temperature in line with this certificate, or;
b) When placed near other pipelines at high temperatures, to protect the Coriolis units from the resulting external heat source;
- 15.6 This equipment includes non-conducting parts that may generate an ignition-capable level of electrostatic charges under certain extreme conditions. The user shall ensure that the equipment is not installed in a location where it may be subjected to external conditions (such as high-pressure steam) which might cause a build-up of electrostatic charges on non-conducting surfaces. Additionally, cleaning of the equipment shall be done only with a damp cloth;
- 15.7 The end user shall ensure that all cable entries are fitted with any suitably certified cable gland or blanking elements;
- 15.8 The flameproof joints of the TCMP**** series of Coriolis Mass Flow Meter are not intended to be repaired;

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SCHEDULE

EU-TYPE EXAMINATION CERTIFICATE

Sira 18ATEX1295X
Issue 1

- 15.9 The end user shall always refer to the TCMP series complete system equipment label before installation in any suitable explosive atmosphere, zone, ambient, and process temperature;
- 15.10 Remote terminal boxes of the equipment may be manufactured from aluminium; in the event of rare incidents, ignition sources due to impact and friction sparks could occur. This shall be considered when the remote version of the TRICOR flow meters are being installed in locations that specifically require group II Zone 0 applications;
- 15.11 The TCM transducer cable shall not exceed 30 meters when it is not provided by the manufacturer. The cable shall be either Type A or Type B cable as defined in EN 60079-14 and the conductors inside of the cable shall provide an insulation of 0.25 mm thick minimum.
- 15.12 The TCMP**** series of Coriolis Mass Flow Meter shall not be disassembled by the end user, and shall remain in the condition provided by the manufacturer;
- 15.13 The TRICOR TCD 9X00 shall only be electrically powered / connected to an overvoltage category II or better circuit as defined in IEC 60664-1 and required by Annex F of EN 60079-11
- 15.14 The quoted entity parameters of Co and Lo are applicable for the distributed capacitance and inductance in cables. Where there is circuit capacitance or inductance in the connected equipment (represented by Ci and Li) that both total more than 1% of quoted Co and Lo then these values shall not exceed 50% of the quoted Co and Lo values;
- 15.15 The equipment internal circuits at the 4-Pin Connection – A, B, 0 and 15 V or Connector X700 (Pin 1 = 15 V, Pin 2 = 0 V, Pin 3 = A and Pin 4 = B) are not capable of withstanding a 500 V r.m.s. a.c. test to earth as required by clause 6.3.13 of EN 60079-11:2012. This shall be taken into account in any equipment installation;
- 15.16 **Intrinsically safe installations only:** A temporary connection of the TCD9X10 to an uncertified programming or data download device is permitted, when the TCD9X10 is located in the non-hazardous area (typically prior to installation). Alternatively, such a connection may be made when the TCD9X10 remains in the hazardous area, but the area is declared 'gas-free'. The uncertified programming or data download device shall be suitably-approved as a SELV supply to IEC 60950-1, IEC 61010-1 or an equivalent standard, with a maximum output voltage of 60 V. The input terminals of the TCD9X10 have a maximum voltage $U_m = 60V$
- 16 **ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II (EHSRs)**
- The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in the reports listed in Section 14.2.

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Certificate Annexe



Certificate Number: Sira 18ATEX1295X
 Equipment: TCMP series of Coriolis Mass Flow Meter
 Applicant: KEM Kueppers Elektromechnik GmbH

Issue 0

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
TCMP-ATEX-MRK-LBL-MTR-MNT-1	1 of 1	R07	16 Mar 20	TCMP & TCD 9010 Meter Mount Labels: Configuration 1
TCMP-ATEX-MRK-LBL-MTR-MNT-2	1 of 1	R06	16 Mar 20	TCMP & TCD 9100 Meter Mount Labels: Configuration 2
TCMP-ATEX-MRK-LBL-RMT-MNT-1	1 of 1	R06	01 Apr 20	TCMP & TCD 9210 Remote Mount Labels: Configuration 3
TCMP-ATEX-MRK-LBL-RMT-MNT-2	1 of 1	R06	01 Apr 20	TCMP & TCD 9220 Remote Mount Labels: Configuration 4
TCMP-ATEX-MRK-LBL-RMT-MNT-3	1 to 2	R07	01 Apr 20	TCMP & TCD 9200 Remote Mount Labels: Configuration 5
TCD-9010-X-ASM-BOM-X-1	1 of 1	R06	16 Dec 19	TCD9010 Meter Mount BOM
TCD-9010-X-ASM-BOM-X-2	1 of 1	R04	16 Dec 19	TCD9010 Meter Mount BOM
TCD-9100-X-ASM-BOM-X-1	1 of 1	R06	16 Dec 19	TCD9100 Meter Mount BOM
TCD-9100-X-ASM-BOM-X-2	1 of 1	R04	16 Dec 19	TCD9100 Meter Mount BOM
TCD-9200-X-ASM-BOM-X-1	1 of 1	R08	16 Dec 19	TCD9200 Transmitter TCD9010 Meter Mount and TCD9100 Display BOM
TCD-9210-X-ASM-BOM-X-1	1 of 1	R07	16 Dec 19	TCD9210 Remote Wall Mount TCD9010 Meter Mount BOM
TCD-9220-X-ASM-BOM-X-1	1 of 1	R06	16 Dec 19	TCD9220 Remote Wall Mount TCD9100 Meter and Wall Mount BOM
TCD-9010-X-ASM-DIM-X-1	1 of 1	R03	16 Dec 19	TCD9010 Meter Mount Dimensions
TCD-9100-X-ASM-DIM-X-1	1 of 1	R03	16 Dec 19	TCD9100 Meter Mount Dimensions
TCD-9210-X-ASM-DIM-X-1	1 of 1	R03	16 Dec 19	TCD9210 Remote Wall Mount TCD9010 Meter and Wall Mount Dimensions
TCD-9220-X-ASM-DIM-X-1	1 of 1	R03	16 Dec 19	TCD9220 Remote Wall Mount TCD9100 Meter and Wall Mount Dimensions
TCM-XX-04-AD-XX-TCD-EX	1 of 1	R14	16 Dec 19	Transition Piece Adapter
TCM-0300-065k-ADA-1.4305-L50	1 of 1	R07	27 Mar 20	Flanged Adapter Option 1 (tested option)
TCM-0300-065k-ADA-1.4404-HT	1 of 1	R02	16 Dec 19	Flanged Adapter Option 2
TCM-ADA-E01.Ex3.WG-1.4404	1 of 1	R03	16 Dec 19	Flanged Adapter Option 3
TCMP-TCD-X-ASM-BOM-X-1	1 of 1	R02	16 Dec 19	TCMP with TCD9010 and TCD 9100 Meter Mount Configuration
TCMP-TCD-X-ASM-BOM-X-2	1 of 1	R04	16 Dec 19	TCMP and TCD Remote Configuration
TCE-XX-04-AP-XX-XX-M20X1.5	1 of 1	R01	16 Dec 19	Cable Gland Adapter Plate
KCE-5000-04-WH-X-X-X	1 of 1	R06	16 Dec 19	Transition Piece Wallmount Assembly

Issue 1 – No new drawings were introduced.

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 Utrechtseweg 310, Building B42,
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