



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	IECEX BVS 12.0098X	Issue No: 2	<u>Certificate history:</u> Issue No. 2 (2014-12-19) Issue No. 1 (2013-12-06) Issue No. 0 (2012-12-19)
Status:	Current	Page 1 of 6	
Date of Issue:	2014-12-19		
Applicant:	KEM Küppers Elektromechanik GmbH Liebigstraße 5 85757 Karlsfeld Germany		
Electrical Apparatus:	Coriolis Flow Meter type C-Flow KCE80**/KCM**** and Tricor TCE80**/TCM****		
<i>Optional accessory:</i>			
Type of Protection:	Flameproof enclosure "d", Equipment protection by intrinsic safety "i"		
Marking:	Ex d [ia] IIC T4 Gb Ex d [ia] IIB T4 Gb [Ex ia Gb]IIC [Ex ia Gb] IIB Ex ia IIC T4 Gb Ex ia IIB T4 Gb	(Transmitter housing with reference to model) alternate Transmitter housing with reference to model) (Transducer housing with reference to model)	

Approved for issue on behalf of the IECEx
Certification Body:

Dr. F. Eickhoff

Position:

Head of Certification Body

Signature:
(for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:



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Dinnendahlstrasse 9
44809 Bochum
Germany





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Manufacturer: **KEM Küppers Elektromechanik GmbH**
Liebigstraße 5
85757 Karlsfeld
Germany

Additional Manufacturing
location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Explosive atmospheres - Part 0: General requirements
Edition:6.0
IEC 60079-1 : 2003 Electrical apparatus for explosive gas atmospheres - Part 1: Flameproof enclosure 'd'
Edition: 5
IEC 60079-11 : 2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

[DE/BVS/ExTR12.0103/02](#)

Quality Assessment Report:

[DE/TPS/QAR12.0003/02](#)



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

Description of the equipment

The Coriolis Flow Meter type C-Flow KCE8** / KCM**** or type Tricor TCE8** / TCM**** respectively, comprises either:
- A flameproof transmitter housing and an IS-transducer, directly flanged (compact version), or separately mounted; or
- a transmitter housing made of plastics material (panel mountable housing) intended for installation in the safe area combined with separately mounted IS-transducer.

The measuring electronic assemblies type KCE800n / TCE800n, Typ KCE801n / TCE801n or type KCE802n / TCE802n inside the flameproof transmitter housing or inside the panel mountable housing provide IS power supply of the transducer and data transfer between the multi-wire IS transducer circuit to non-IS signal circuits and are designed as current limiting and safety shunt assembly modules.

The measuring electronic assemblies type *CE800n and *CE801n or *CE802n provide different IS driver-coil power, KCE80*n and TCE80*n are identical.

CONDITIONS OF CERTIFICATION: YES as shown below:

1. Transmitter Unit

type KCE80**-WE-*-*Ex / type TCE80**-E-****-Ex-** /
type KCE80**-WG-*-*Ex / type TCE80**-W-****-Ex-** /

and Compact Version

type KCM****-'EF/EFH/EM/EMH/E*(H)''-**-**-Ex /
type KCM****-'CF/CFH/CM/CMH/C*(H)''-**-**-Ex /
type TCM****-**-****-E***-Ex-** / type TCMH****-**-****-E***-
Ex-** / type TCM****-**-****-C***-Ex-**
/ type TCMH****-**-****-C***-Ex-**

None

2. Transmitter Unit type KCE80**-SE-*-*Ex / type TCE80**-L-****-Ex-**

2.1 The Transmitter Units shall be installed in the safe area only.

2.2 The installation of Transmitter Units shall be carried out in such a way that the clearances of bare conductive parts of intrinsically safe circuits to grounded metal parts of the enclosure are at least 3 mm, and bare conductive parts of non-intrinsically safe circuits of other apparatus are located in a distance of at least 50 mm away from terminals for external intrinsically safe circuits, or are separated from them by a partition wall according to clause 6.2.1 of IEC 60079-11:2011.

3. External Transducer Units type KCM****-0-**-**-Ex / type KCM****-1-**-**-Ex /
type TCM****-**-****-AZZ*-Ex-** / type TCMH****-**-****-AZZ*-Ex-**

None



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EQUIPMENT (continued):

Extended Type Code

See Annex

Ratings

See Annex



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

The Coriolis Flow Meter type Tricor TCE80** / TCM**** has been enhanced optionally with Transducer Units type TCM*0100-**-****-****-Ex-** / TCM*0450-**-****-****-Ex-** and TCM*230k-**-****-****-Ex-**.

The type code of previous intrinsically safe TCM-Transducer Units may be extended optionally with 'H', marking a new product line for special application; electrical parameters of these versions are identical with TCM****-**-****-****-Ex-**.

The electronic circuitry of the Transmitter Unit type KCE80**-*-*-Ex or type TCE80**-*-****-Ex-**: may be replaced optionally by a new version.

Previous and new models of intrinsically safe transducer units may be equipped with a special terminal box replacing previous snap-cap terminal box.

Annex:

[BVS_12_0098X_KEM_Annex_issue2.pdf](#)



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Extended Type Code

Coriolis Flow Meter Type C-Flow KCE80** / KCM****
 or Type Tricor TCE80** / TCM***
 or Type Tricor TCE80** / TCMH***, comprising:
 Transmitter Unit Type KCE80**-**-*-Ex
 or Type TCE80**-**-****-Ex-**, respectively:

and optionally one of the following Transducer Units:

Type KCM0300-**-**-**-*-Ex or KCM0325-**-**-**-*-Ex,
 KCM0600-**-**-**-*-Ex or KCM0650-**-**-**-*-Ex,
 KCM1500-**-**-**-*-Ex or KCM1550-**-**-**-*-Ex,
 KCM3000-**-**-**-*-Ex or KCM3100-**-**-**-*-Ex,
 KCM7900-**-**-**-*-Ex or KCM5500-**-**-**-*-Ex,
 KCM28K-**-**-**-*-Ex,
 KCM65K-**-**-**-*-Ex,
 Type TCM*0100-**-****-****-Ex-**,
 TCM*0300-**-****-****-Ex-** or TCM*0325-**-****-****-Ex-**,
 TCM*0450-**-****-****-Ex-**,
 TCM*0600-**-****-****-Ex-** or TCM*0650-**-****-****-Ex-**,
 TCM*1500-**-****-****-Ex-** or TCM*1550-**-****-****-Ex-**,
 TCM*3000-**-****-****-Ex-** or TCM*3100-**-****-****-Ex-**,
 TCM*7900-**-****-****-Ex-** or TCM*5500-**-****-****-Ex-**,
 TCM*28K-**-****-****-Ex-**,
 TCM*65K-**-****-****-Ex-** or TCM*230k-**-****-****-Ex-**.

Type code Transducer Unit type KCM**-**-**-*-*-Ex**

Type	Flow rate	Type	Flow rate
KCM0300-a-bc-d-e-f-g-Ex	≤ 300 kg / h	KCM3000-a-bc-d-e-f-g-Ex	≤ 3000 kg / h
KCM0325-a-bc-d-e-f-g-Ex	≤ 300 kg / h	KCM3100-a-bc-d-e-f-g-Ex	≤ 3000 kg / h
KCM0600-a-bc-d-e-f-g-Ex	≤ 600 kg / h	KCM5500-a-bc-d-e-f-g-Ex	≤ 5500 kg / h
KCM0650-a-bc-d-e-f-g-Ex	≤ 600 kg / h	KCM7900-a-bc-d-e-f-g-Ex	≤ 7900 kg / h
KCM1500-a-bc-d-e-f-g-Ex	≤ 1500 kg / h	KCM28k-a-bc-d-e-f-g-Ex	≤ 28000 kg / h
KCM1550-a-bc-d-e-f-g-Ex	≤ 1500 kg / h	KCM65k-a-bc-d-e-f-g-Ex	≤ 65000 kg / h
Remark: Specification of spacers 'a' to 'g': no change			

Type code Transducer Unit type TCM**-**-****-****-Ex-****
type TCMH**-**-****-****-Ex-****

Type	Flow rate	Type	Flow rate
TCM*0100-ab-cdef-ghik-Ex-xx	≤ 100 kg / h	TCM*3000-ab-cdef-ghik-Ex-xx	≤ 3000 kg / h
TCM*0300-ab-cdef-ghik-Ex-xx	≤ 300 kg / h	TCM*3100-ab-cdef-ghik-Ex-xx	≤ 3100 kg / h
TCM*0325-ab-cdef-ghik-Ex-xx	≤ 325 kg / h	TCM*5500-ab-cdef-ghik-Ex-xx	≤ 5500 kg / h
TCM*0450-ab-cdef-ghik-Ex-xx	≤ 450 kg / h	TCM*7900-ab-cdef-ghik-Ex-xx	≤ 7900 kg / h
TCM*0600-ab-cdef-ghik-Ex-xx	≤ 600 kg / h	TCM*28k-ab-cdef-ghik-Ex-xx	≤ 28000 kg / h
TCM*0650-ab-cdef-ghik-Ex-xx	≤ 650 kg / h	TCM*65k-ab-cdef-ghik-Ex-xx	≤ 65000 kg / h
TCM*1500-ab-cdef-ghik-Ex-xx	≤ 1500 kg / h	TCM*230k-ab-cdef-ghik-Ex-xx	≤ 230000 kg / h
TCM*1550-ab-cdef-ghik-Ex-xx	≤ 1550 kg / h		
Remarks: Specification of spacers 'a' to 'k' and 'xx': no change; Spacer '*' omitted or 'H'.			

Type code Transmitter Unit C-Flow type series KCE80-**-*-Ex**
 No change.



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Type code Transmitter Unit Tricor type series TCE80-*-****-Ex-****
 No change.

Rating:

1. Panel mountable housing

1.1 Non-IS circuits

Parameters / circuit	Voltage U_n	Voltage U_m	Terminals
Power supply (AC) or optionally Power supply (DC)	230 V	AC 264 V	91 (N), 90 (L), 52 (PE)
	24 V	AC 264 V	50 (+24 V), 51 (GND), 52 PE)
Relay-SPDT-contact	30 V	AC 264 V	40, 41, 42
RS485 interface	3.3 V	DC 30 V	22 (+), 21 (-), 20 (GND)
Foundation Fieldbus	24 V	DC 30 V	32 (FF+), 31 (FF-), 20 (GND)
Analogue output(4-20 mA)	24 V	DC 30 V	1 (I1+), 2 (I1-), 3 (I2+), 4 (I2-)
Digital-input	24 V	AC 264 V	7 (CTL IN), 8 (GND)
Digital output	24 V	AC 264 V	5 (F-OUT), 6 (CTL OUT)

1.2 IS circuits designed for interconnection to transducers (probes)

Parameter	Circuit			
	Driver		Sensor	Temperature sensor
Voltage U_o	DC 16.4 V	DC 9.4 V	DC 2 V	DC 10.5 V
Current I_o	382 mA	219 mA	17 mA	45 mA
Power P_o	1.56 W	515 mW		
Characteristics	linear	linear	trapezoidal	trapezoidal
Connection	9-pol-Sub D connector			
Probe type	*CM*28K-x ¹⁾ *CM*65K-x ¹⁾ TCM*230K ¹⁾	TCM*0100-x ¹⁾ *CM*0300-x ¹⁾ *CM*0325-x ¹⁾ TCM*0450-x ¹⁾ *CM*0600-x ¹⁾ *CM*0650-x ¹⁾ *CM*1500-x ¹⁾ *CM*1550-x ¹⁾ *CM*3000-x ¹⁾ *CM*3100-x ¹⁾ *CM*5500-x ¹⁾ *CM*7900-x ¹⁾	(all models)	
Type of protection	Ex ia IIB	Ex ia IIC	Ex ia IIC / IIB	
Remark:	¹⁾ first '*' replaced by 'K' or 'T'; second '*' and 'x': see full-scale type code			



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2. Flameproof enclosure

2.1 Non-IS circuits

Parameter / Circuit	Voltage U_n	Voltage U_m	Terminals
Power supply (AC) ¹⁾ exclusive-or Power supply (DC) ¹⁾	230 V 24 V	AC 264 V AC 264 V	91 (N), 90 (L), 52 (PE) 50 (+24 V), 51 (GND), 52 (PE)
RS485 interface	3.3 V	DC 30 V	22 (+), 21 (-), 20 (GND)
Foundation Fieldbus	24 V	DC 30 V	32 (FF+), 31 (FF-), 20 (GND)
Analogue output (4-20 mA)	24 V	DC 30 V	1 (I1+), 2 (I1-), 3 (I2+), 4 (I2-)
Digital-input	24 V	AC 264 V	7 (CTL IN), 8 (GND)
Digital output	24 V	AC 264 V	5 (F-OUT), 6 (CTL OUT)
Remark: Relay-SPDT-contact not provided ¹⁾ according to model			

2.2 IS circuits designed for interconnection to transducers (probes)

Parameter	Circuit			
	Driver		Sensor	Temperature sensor
Voltage U_o	DC 16.4 V	DC 9.4 V	DC 2 V	DC 10.5 V
Current I_o	382 mA	219 mA	17 mA	45 mA
Power P_o	1.56 W	515 mW		
Characteristics	linear	linear	trapezoidal	trapezoidal
Connection facility	LEMO FAG.2B.308 (TCM-****-**-****-E***-Ex-**, compact) ²⁾ cable with open leads (KCE80**-WE-*-*-Ex, wall mountable housing) cable with open leads (TCE80**-E-****-Ex-**, wall mountable housing) direct wiring (KCM****-EF/EFH/EM/EMH/E*(H)-**-*-*-*-Ex, compact) ²⁾			
Probe type	*CM*28K-x ¹⁾ *CM*65K-x ¹⁾ TCM*230K ¹⁾	TCM*0100-x ¹⁾ *CM*0300-x ¹⁾ *CM*0325-x ¹⁾ TCM*0450-x ¹⁾ *CM*0600-x ¹⁾ *CM*0650-x ¹⁾ *CM*1500-x ¹⁾ *CM*1550-x ¹⁾ *CM*3000-x ¹⁾ *CM*3100-x ¹⁾ *CM*5500-x ¹⁾ *CM*7900-x ¹⁾	(all models)	
Type of protection	Ex ia IIB	Ex ia IIC	Ex ia IIC / IIB	
Remarks: ¹⁾ first '*' replaced by 'K' or 'T'; second '*' and 'x': see full-scale type code ²⁾ compact version: Transmitter Unit and Transducer Unit form a mechanical unit marked with KCM / TCM				



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3. Intrinsically safe transducers (probes)

Parameter	Circuit			
	Driver		Sensor	Temperature sensor
Voltage U_i	DC 16.4 V	DC 9.4 V	DC 2 V	DC 10.5 V
Current I_i	382 mA	219 mA	17 mA	45 mA
Power P_i	1.56 W	515 mW		
Characteristics	linear	linear	trapezoidal	trapezoidal
Connection facility	screwed terminals (KCM****-0-**-**-2-Ex, external) screwed terminals (KCM****-1-**-**-2-Ex, external) screwed terminals (TCM****-**-****-AZZ*-Ex, external) LEMO HEG.2B.308 (TCM****-**-****-E***-Ex, compact) direct wiring (KCM****-EF/EFH/EM/ECMH/E*(H)-**-**-**-Ex, compact)			
Probe type	*CM*28K ¹⁾ *CM*65K ¹⁾ TCM*230K ¹⁾	TCM*0100-x ¹⁾ *CM*0300-x ¹⁾ *CM*0325-x ¹⁾ TCM*0450-x ¹⁾ *CM*0600-x ¹⁾ *CM*0650-x ¹⁾ *CM*1500-x ¹⁾ *CM*1550-x ¹⁾ *CM*3000-x ¹⁾ *CM*3100-x ¹⁾ *CM*5500-x ¹⁾ *CM*7900-x ¹⁾	(all models)	
Type of protection	Ex ia IIB	Ex ia IIC	Ex ia IIC / IIB	
Remark:	¹⁾ first '*' replaced by 'K' or 'T'; second '*' and 'x': see full-scale type code			

4. For the Coriolis C-Flow Meter type C-Flow KCE80 / KCM**** or type Tricor TCE80** / TCM*** / TCMH***, respectively, the following ambient temperature range applies:**

Model	Type	Ambient temperature range	Medium temperature range	Temperature class
Panel mountable housing	KCE80x-SE-x-Ex TCE80x-L-x-Ex-x	$0\text{ °C} \leq T_a \leq 60\text{ °C}$	not applicable	not applicable
Flameproof enclosure	KCE80x-WE-x-Ex TCE80x-E-x-Ex	$-40\text{ °C} \leq T_a \leq 70\text{ °C}$	not applicable	T4
Transducer compact version	KCMx-a-x-x-Ex TCMx-x-x-Ex-Ex-x	$-40\text{ °C} \leq T_a \leq 70\text{ °C}$	$-40\text{ °C} \leq T \leq 70\text{ °C}$	T4
External transducer	KCMx*-0-x-Ex KCMx-1-x-Ex TCMx-x-x-Ax-Ex-x	$-40\text{ °C} \leq T_a \leq 70\text{ °C}$	$-100\text{ °C} \leq T \leq 70\text{ °C}$	T4
			$-100\text{ °C} \leq T \leq 135\text{ °C}$	T3
			$-100\text{ °C} \leq T \leq 210\text{ °C}$	T2
Remarks: 'x' see full-scale type code 'a' = EF / EFH / EM / EMH / E*(H)				