



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 KEM 08.0034X issue No.:1

Certificate history:
Issue No. 1 (2009-3-5)
Issue No. 0 (2008-12-5)

Status: **Current**

Date of Issue: **2009-03-05** Page 1 of 4

Applicant: **ABB Automation Products GmbH**
Dransfelder Strasse 2
37079 Göttingen
Germany

Electrical Apparatus: **Coriolis Flowmeters Series FCM2000**
Optional accessory: **Refer to Appendix 1**


Type of Protection: **Ex d, ia, ib, e, nA, nR, nL, mb, tD, iaD, ibD, FISCO, FNICO**

Marking: **Refer to Appendix 1**

Approved for issue on behalf of the IECEx Certification Body: T. Pijpker

Position: Certification manager

Signature:
(for printed version)


2009-03-05

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.

Certificate issued by:

KEMA Quality B.V.
Utrechtseweg 310
6812 AR Arnhem
The Netherlands





IECEX Certificate of Conformity

Certificate No.: IECEx KEM 08.0034X
Date of Issue: 2009-03-05 Issue No.: 1
Page 2 of 4

Manufacturer: **ABB Automation Products GmbH**
Dransfelder Strasse 2
37079 Göttingen
Germany

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 : 2004 Edition: 4.0	Electrical apparatus for explosive gas atmospheres - Part 0: General requirements
IEC 60079-1 : 2007-04 Edition: 6	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-11 : 2006 Edition: 5	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-15 : 2005-03 Edition: 3	Electrical apparatus for explosive gas atmospheres Part 15: Construction, test and Marking of Type of Protection "n" electrical apparatus
IEC 60079-18 : 2004 Edition: 2.0	Electrical apparatus for explosive gas atmospheres - Part 18: Construction, test and marking of type of protection encapsulation 'm' electrical apparatus
IEC 60079-26 : 2006 Edition: 2	Explosive atmospheres - Part 26: Equipment with equipment protection level (EPL) Ga
IEC 60079-27 : 2005-04 Edition: 1.0	Electrical apparatus for explosive atmospheres- Part 27: Fieldbus intrinsically safe concept (FISCO) and Fieldbus non-incendive concept (FINCO)
IEC 60079-7 : 2006-07 Edition: 4	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
IEC 61241-0 : 2004 Edition: 1	Electrical apparatus for use in the presence of combustible dust - Part 0: General requirements
IEC 61241-1 : 2004 Edition: 1	Electrical apparatus for use in the presence of combustible dust - Part 1: Protection by enclosures "tD"
IEC 61241-11 : 2005 Edition: 1	Electrical apparatus for use in the presence of combustible dusts - Part 11: Protection by intrinsic safety 'iD'

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:

NL/KEM/ExTR07.0042/00

Quality Assessment Report:
DE/TUN/QAR06.0010/00



IECEX Certificate of Conformity

Certificate No.: IECEx KEM 08.0034X

Date of Issue: 2009-03-05

Issue No.: 1

Page 3 of 4

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

Description

Coriolis Flowmeters Series FCM2000 convert the mass flow of a process medium, the fluid, into electrical signals. The mass flow system consists of a Primary that is installed in the process pipe line and a Transmitter that processes the measurement signals. The Transmitter can be combined with the Primary in a Compact version or can be separately mounted.

The several versions have the following model code:

Separate Primary type MC21 M, N and MC26 B, E

Compact Transmitter type MC23 M, N and MC27 B, E

Separate Transmitter type ME21 M, N, ME24 M, N, ME25 M, N, ME26 B, E, ME27 B, E and ME28 B, E

Refer to Appendix 1 for the temperature data and the electrical data.

CONDITIONS OF CERTIFICATION: YES as shown below:

Refer to Appendix 1 for the temperature data and the electrical data.



IECEX Certificate of Conformity

Certificate No.: IECEx KEM 08.0034X

Date of Issue: 2009-03-05

Issue No.: 1

Page 4 of 4

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

Standard IEC 60079-26, 2nd edition added (was omitted erroneously).
Appendix updated (correction of errors)



Appendix 1 to IECEx Certificate of Conformity **IECEx KEM 08.0034 X**

Description

Coriolis Flowmeters series FCM2000 convert the mass flow of a process medium, the fluid, into electrical signals.

The mass flow system consists of a primary that is installed in the process pipe line and a transmitter that processes the measurement signals.

The transmitter can be combined with the primary in a compact version or can be separately mounted.

The several versions have the following model codes:

Separate Primary type MC21 M, N, MC 23 M, N and MC26 B, E

Compact Transmitter type MC23 M, N and MC27 B, E,

Separate Transmitter type ME21 M, N, ME24 M, N, ME25 M, N, ME26 B, E, ME27 B, E and ME28 B, E

Ambient temperature range: -20 °C to +60 °C for type MC2. M, MC2. B, ME2. M and ME2. B,
-40 °C to +60 °C for type MC2. N, MC2. E, ME2. N and M-E2. E

Process temperature range: -50 °C to +200 °C for type MC2...

The relation between the type, the temperature class, the maximum ambient temperature and the maximum fluid temperature is given in the table below.

type	temperature class	maximum fluid temperature in °C		
		Ta ≤ 40 °C	Ta ≤ 50 °C	Ta ≤ 60 °C
MC21 M, N MC23 M, N	T2	200	200	-
	T3	180	180	180
	T4	115	115	115
	T5	80	80	75
	T6	60	60	60
MC26 B, E MC27 B, E	T2	200	200	200
	T3	185	180	180
	T4	125	120	120
	T5	85	85	75
	T6	65	65	60

The maximum surface temperature T is equal to the fluid temperature but at least 115 °C.

Appendix 1 to IECEx Certificate of Conformity **IECEx KEM 08.0034 X**

Marking

type	code	note
MC21 M, N	Ex nA II T6 ... T2 Ex tD A21 IP6X T115 °C ... Tfluid	
MC23 M, N	Ex nA nR II T6...T2 or Ex nA nR [nL] IIC T6...T2 or Ex tD A21 IP6X T115 °C ... Tfluid FNICO field device	No PA/FF FNICO, no PA/FF connector PA/FF FNICO, no PA/FF connector PA/FF FNICO, no PA/FF connector PA/FF FNICO
MC26 B, E	Ex e mb [ia] IIC T6 ... T2 or Ga/Gb Ex e mb [ia] IIC T6 ... T2 Ex tD A21 IP6X T115 °C ... Tfluid	DN 10 ... DN 40 DN 50 ... DN 150
MC27 B, E	Ex d e [ia] [ib] IIC T6 ... T2 or Ex d e [ib] IIC T6 ... T2 or Ga/Gb Ex d e [ia] [ib] IIC T6 ... T2 or Ga/Gb Ex d e [ib] IIC T6 ... T2 Ex tD A21 IP6X T115 °C ... Tfluid or Ex tD [iaD] A21 IP6X T115 °C ... Tfluid or Ex tD [ibD] A21 IP6X T115 °C ... Tfluid FISCO field device	DN 10 ... DN 40 Hart passive and dig. I/O ia or PA/FF FISCO DN 10 ... DN 40 I/O non ia/ib and Hart active DN 50 ... DN 150 Hart passive and dig. I/O ia or PA/FF FISCO DN 50 ... DN 150 I/O non ia/ib and Hart active I/O non ia/ib Hart passive and dig. I/O ia or PA/FF FISCO Hart active PA/FF FISCO
ME21 M, N	Ex nR II T6 Ex nR [nL] IIC T6 Ex tD A21 IP6X T115 °C FNICO field device	No PA/FF FNICO, no PA/FF connector PA/FF FNICO, no PA/FF connector No PA/FF connector PA/FF FNICO
ME24 M, N	Ex nR [ib] IIC T6 or Ex nR [ib] [nL] IIC T6 Ex tD A21 IP6X T115 °C FNICO field device	No PA/FF FNICO, no PA/FF connector PA/FF FNICO, no PA/FF connector No PA/FF connector PA/FF FNICO
ME25 M, N	Ex nR [ib] IIC T6 or Ex nR [ib] [nL] IIC T6 Ex tD A21 IP6X T115 °C FNICO field device	No PA/FF FNICO, no PA/FF connector PA/FF FNICO, no PA/FF connector No PA/FF connector PA/FF FNICO
ME26 B,E	Ex d e [ia] [ib] IIC T6 or Ex d e [ib] IIC T6 Ex tD A21 IP6X T115 °C or Ex tD [iaD] A21 IP6X T115 °C or Ex tD [ibD] A21 IP6X T115 °C FISCO field device	PA/FF FISCO and no connector or HART passive HART active I/O non ia/ib Hart passive and dig. I/O ia or PA/FF FISCO Hart active PA/FF FISCO
ME27 B, E	Ex d e [ia] [ib] IIC T6 or Ex d e [ib] IIC T6 Ex tD [iaD] [ibD] A21 IP6X T115 °C or Ex tD [ibD] A21 IP6X T115 °C FISCO Field device	PA/FF FISCO and no connector or HART passive I/O non ia/ib and HART active Hart passive and PA/FF on terminals Hart active or I/O non ia/ib PA/FF FISCO
ME28 B,E	Ex d e [ia] [ib] IIC T6 or Ex d e [ib] IIC T6 Ex tD [iaD] [ibD] A21 IP6X T115 °C or Ex tD [ibD] A21 IP6X T115 °C FISCO Field device	PA/FF FISCO and no connector or HART passive I/O non ia/ib and HART active Hart passive and PA/FF on terminals Hart active or I/O non ia/ib PA/FF FISCO

Appendix 1 to IECEx Certificate of Conformity **IECEx KEM 08.0034 X**

Electrical data

All transmitters

Supply (connection terminals 1+ and 2-) : 24 V ... 60 Vdc, max. 25 W, $U_m = 250$ V or
(connection terminals L and N) : 85 ... 253 V, max. 25 W, $U_m = 265$ V

Instrumentation circuits not in type of protection intrinsic safety

The electrical data of the circuits depend on the version and the options

Current output 1, active (terminals 31 and 32):	$U_N = 30$ V, $I \leq 30$ mA
Current output 1, passive (terminals 31 and 32):	$U_N = 30$ V, $I \leq 30$ mA
Current output 2, passive (terminals 33 and 34):	$U_N = 30$ V, $I \leq 30$ mA
Contact output (terminals 41 and 42):	$U_N = 30$ V, $I \leq 220$ mA
Pulse output (terminals 51 and 52):	$U_N = 30$ V, $I \leq 220$ mA
Contact input (terminals 81 and 82):	$U_N = 30$ V, $I \leq 10$ mA
Fieldbus (PA or FF) (terminals 97 and 98):	$U_N = 32$ V, $I_N = 10$ mA

The fieldbus interface complies with the requirements of a FNICO field device per IEC 60079-27.

For all non-intrinsically safe input and output circuits, $U_m = 250$ V;
these instrumentation circuits shall be connected to SELV or PELV equipment, or alternatively, each circuit shall additionally be protected with a fuse, rated 20 A maximum, with a breaking capacity of at least 1500 A.

Instrumentation circuits in type of protection intrinsic safety

Current output 1, active (terminals 31 and 32):
in type of protection intrinsic safety Ex ib IIC, with following maximum values:
 $U_o = 20$ V; $I_o = 100$ mA, $P_o = 500$ mW; $C_o = 217$ nF; $L_o = 3$ mH.
If connected to an associated intrinsically safe circuit in type of protection Ex ib IIC, additionally the following maximum values apply:
 $U_i = 60$ V; I_i = not applicable; P_i = not applicable; $C_i = 2,4$ nF; $L_i = 170$ nH.
In this case, for the loop, voltage and/or current addition shall be taken into account.

Current output 1, passive (terminals 31 and 32) and
Current output 2, passive (terminals 33 and 34):
in type of protection intrinsic safety Ex ia IIC, only for connection to certified intrinsically safe circuits,
with following maximum values (per circuit):
 $U_i = 60$ V; $I_i = 300$ mA; $P_i = 2$ W; $C_i = 1$ nF; $L_i = 170$ nH.

Contact output (terminals 41 and 42) and
Pulse output (terminals 51 and 52):
in type of protection intrinsic safety Ex ia IIC, only for connection to certified intrinsically safe circuits,
with following maximum values (per circuits):
 $U_i = 60$ V; $I_i = 300$ mA; $P_i = 2$ W; $C_i = 1$ nF; $L_i = 170$ nH.

Contact input (terminals 81 and 82):
in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit,
with following maximum values:
 $U_i = 60$ V; $I_i = 300$ mA; $P_i = 2$ W; $C_i = 1$ nF; $L_i = 170$ nH.



Appendix 1 to IECEx Certificate of Conformity **IECEX KEM 08.0034 X**

Fieldbus (Profibus PA or Foundation Fieldbus) (terminals 97 and 98 or connector):
in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit,
with following maximum values:

$U_i = 60 \text{ V}$; $I_i = 380 \text{ mA}$; $P_i = 5,32 \text{ W}$; $C_i = 0 \text{ nF}$; $L_i = 170 \text{ nH}$.

The fieldbus interface complies with the requirements of a FISCO field device per IEC 60079-27.

The intrinsically safe instrumentation circuits are infallibly galvanically isolated from the non-intrinsically safe circuits. The intrinsically safe current input circuits are connected to earth.

Transmitters and Primaries

Sensor circuits not in type of protection intrinsic safety

The sensor circuits are internal circuits or the Primary is connected to the Transmitter via an interconnecting cable.

Sensor circuits in type of protection intrinsic safety

The sensor circuits that are in type of protection intrinsic safety Ex ia IIC are internal circuits in the compact versions of the Mass Flowmeter and in the Primaries.

Installation instructions

The installation instructions as provided with the equipment shall be followed in detail in order to assure safe operation.