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 09.0007X issue No.:0	Certificate history:
Status:	Current	
Date of Issue:	2009-02-02	Page 1 of 3

Applicant: **Endress + Hauser GmbH + Co. KG**
Hauptstraße 1
79689 Maulburg
Germany

Electrical Apparatus: **Microwave barrier Soliwave M type FTR325-D** / FQR50-D / FDR50-D**
Optional accessory:

Type of Protection: **Protection by intrinsic safety 'iD' and 'i'**

Marking: **[Zone 0] [Ex ia] IIC [Ex iaD]**
(refers to switching amplifier Nivotester type FTR325-D)**
Zone 0 / 1 Ex ia IIC T4 Ex iaD 20/21 IP66 T98 °C
(refers to Soliwave M emitter / receiver type FQR50-D / FDR50-D)

Approved for issue on behalf of the IECEx Certification Body: Dr. R. Jockers

Position: Head of Certification Body

Signature:
(for printed version)

Date: 02. 02. 2009

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:

DEKRA EXAM GmbH
Dinnendahlstrasse 9
44809 Bochum
Germany

DEKRA
DEKRA EXAM GmbH

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Certificate No.: IECEx BVS 09.0007X

Date of Issue: **2009-02-02** Issue No.: **0**

Manufacturer: **Endress + Hauser GmbH + Co. KG**
Hauptstraße 1
79689 Maulburg
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 60079-11 : 2006 Edition: 5	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-26 : 2004 Edition: 1	Electrical apparatus for explosve gas atmospheres - Part 26: Construction, test and marking of Group II Zone 0 electrical apparatus
IEC 61241-0 : 2004 Edition: 1	Electrical apparatus for use in the presence of combustible dust - Part 0: General requirements
IEC 61241-11 : 2005 Edition: 1	Electrical apparatus for use in the pressence 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:

DE/BVS/ExTR09.0007/00

Quality Assessment Report:
DE/TUN/QAR06.0003/01

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Schedule

EQUIPMENT:
Equipment and systems covered by this certificate are as follows:

Description

Switching Amplifier Nivotester type FTR325-D**:

Printed circuit boards of the switching amplifier are packaged in a plastics enclosure mountable on DIN Rails. The enclosure
is fitted with terminals for the non-IS and IS circuits of the device.

Microwave emitter Soliwave M type FQR50-D and Microwave Receiver Soliwave M type FDR50-D:

The enclosure of the microwave emitter / receiver Soliwave M contains printed circuit boards fitted with electronic components
and consist of a top compartment (electronic enclosure) made of light alloy, steel or stainless steel and a bottom compartment
made of stainless steel, providing integrated process connection.
The microwave-input /-output of the antenna is closed by means of a PTFE cover disk.

Cable entries for the IS supply- and data-signal circuit are mounted in the side wall of the electronic enclosure.

Type Code and Ratings

see Annex

CONDITIONS OF CERTIFICATION: YES as shown below:

Special conditions for safe use:

- The installation of the microwave emitter Soliwave M type FQR50-D / microwave receiver type FDR50-D in the wall to areas requiring Zone 0 equipment shall provide a degree of protection IP67 according to IEC 60529.

- The installation of the microwave emitter Soliwave M type FQR50-D / microwave receiver type FDR50-D in the wall to areas requiring Zone 20 equipment shall provide a degree of protection IP6X according to IEC 60529.

- The installation in the boundary wall between Zone 0 / Zone 1, Zone 20 / Zone 21 areas shall be carried out in such a way, that all metallic parts are in conductive contact with the boundary wall, or, in case of a wall made of plastics material, all isolated metallic parts are integrated in the local equipotential bonding.

- Manufacturer's technical information related to use of the microwave emitter / receiver Soliwave M in contact with aggressive / corrosive media shall be observed.

Annexe: BVS_09_0007x_ENDRESS+HAUSER_Annex.pdf

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Annex

Type Code

Switching Amplifier Nivotester	type FTR325-	* * *
IECEx Certificate	D	
Variation code not relevant to Ex application		
Supply voltage (non IS)		
AC 85 V ≤ U ≤ AC 253 V 50 Hz / 60 Hz	A	
DC 20 V ≤ U ≤ DC 60 V / AC 20 V ≤ U ≤ AC 30 V 50 Hz / 60 Hz	E	
Microwave Emitter Soliwave M	type FQR50-	*
IECEx Certificate	D	
Microwave Receiver Soliwave M	type FDR50-	*
IECEx Certificate	D	

Ratings:

1 Non intrinsically safe circuits

1.1 Power supply

Switching Amplifier Nivotester Type	Voltage U_n	U_m
FTR325-D * A	AC 85 V ≤ U ≤ 253 V	AC 253 V
FTR325-D * E	AC 20 V ≤ U ≤ 30 V	AC 253 V
	DC 20 V ≤ U ≤ 60 V	AC 253 V

1.2 Relays contact-circuits

Voltage	U_m = AC 253 V
Rated voltage	DC 40 V / AC 253 V
Rated current	DC / AC 2 A
Rated power	DC 80 W / AC 500 VA

2 Intrinsically safe supply and signal circuit

Parameter	FTR325-D * *	FQR50-D FDR50-D	Value
Voltage	U_o	U_i	DC 15.5 V
Current	I_o	I_i	206 mA
Power	P_o	P_i	1571 mW
Current limiting resistor	R_i		148 Ω

Maximum cable length:
For interconnection-cable between switching amplifier type FTR325-D * * and microwave emitter type FQR50-D / microwave receiver type FDR50-D the following parameters apply:

Resistance	15 Ω/km	≤ R' ≤ 150 Ω/km
Inductance	0.4 mH/km	≤ L' ≤ 1 mH/km
Capacitance per unit length (including screen)	45 nF/km	≤ C' ≤ 200 nF/km

- $C' = C'_{wire/wire} + 0.5 \times C'_{wire/screen}$ supply- and signal circuit insulated
- $C' = C'_{wire/wire} + C'_{wire/screen}$ screen connected to the output of the amplifier

- maximum length of spurs (each) 60 m (Group IIC / IIB)

When meeting the parameter mentioned above, maximum permissible cable length for Group IIC is 1000 m.
When meeting the parameter mentioned above, maximum permissible cable length for Group IIB is 5000 m.

3 Microwave-radiation

Irradiance	≤ 8 mW/cm²
Radiated power	≤ 400 mW e.i.r.p
Frequency	24.125 GHz

4 Ambient temperature range:

-20 °C ≤ T_a ≤ +60 °C (FTR325-D * *)
-20 °C ≤ T_a ≤ +70 °C (FQR50-D / FDR50-D)