



(1) **EC-Type Examination Certificate**

- (2) Equipment or Protective Systems intended for use in potentially explosive atmospheres - **Directive 94/9/EC.**



(3) **TÜV 00 ATEX 1576**

- (4) Instrument: Variable Area Flowmeter Models AM5413.. and AM5417..

- (5) Manufacturer: ABB Automation Products GmbH

- (6) Address: D-37079 Göttingen, Dransfelder Straße 2, Germany

- (7) The equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and documents therein referred to.

- (8) The TÜV Hannover/Sachsen-Anhalt e.V., TÜV Certification Body No. 0032 in accordance with Article 9 of the Council Directive of the European Community of 23 March 1994 (94/9/EC) certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II of the directive.

The examination and test results are recorded in the confidential Report No.. 00 PX 10000.

- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with

EN 50 014:1997 EN 50 020:1994 EN 50 021:1999

- (10) If the sign "X" is placed after the certification number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

- (11) This EC-Type Test Examination Certificate relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of these equipment or protective system.

- (12) The markings for the equipment or protective system shall include the following specifications:

 **II 2 G EEx ib IIC T6 or II 3 G EEx n [L] IIC T6**

TÜV Hannover/Sachsen-Anhalt e.V.
TÜV CERT- Certification Body
Am TÜV 1
D-30519 Hannover, Germany

Hannover, 03. Jul. 2000

Stürwold

Head of the
Certification Body

(13)

SCHEDULE

(14) **EC-Type Examination Certificate No. TÜV 00 ATEX 1576**

(15) Description of the Equipment

The Variable Area Flowmeter Models AM5413.. and AM5417.. are used to measure the flowrates of gases and liquids. Model AM 5413.. is only suitable for Temperature Classes T1 to T4.

The relationship between the Model Numbers, Temperature Classes, allowable ambient temperatures and the maximum fluid temperature is listed in the Table below:

Model	Allow. Ambient Temperature Range	Max. Fluid Temperature	Temperature Class
AM5413	-55°C..+70°C	+380°C (meter insulated)	T1
		+440°C	T1
	-55°C..+60°C	+440°C	T1
		+290°C	T2
		+195°C	T3
		+130°C	T4
AM5417	-55°C..+70°C	+340°C (meter insulated)	T1
		+440°C	T1
	-55°C..+60°C	+420°C (meter insulated)	T1
		+440°C	T1
		+290°C	T2
		+195°C	T3
		+130°C	T4
		+95°C	T5
	+80°C	T6	

Electrical Specifications

The maximum allowable values as a function of the Model and the Design are listed in the Table below:

Model	II 2 G EEx ib IIC	U_i	I_i	P_i	C_i	$C_{i/PA}$	L_i
AM5413	Supply power circuit Terminals 31/32 (Terminal 31→+)	28 V	110 mA	770 mW	4.2 nF	6 nF	270 μH
	Contact Output Terminals 41/42 (Terminal 41→+)	15 V	30 mA	115 mW	3.6 nF	3.6 nF	133 μH
AM5417	Alarm Contact Terminals 41/42, 51/52 (Terminals 41, 51→+)	16 V	25 mA	64 mW	50 nF	-----	250 μH

Schedule to EC-Type Examination Certificate No. TÜV 00 ATEX 1576

Model	II 3 G EEx n [L] IIC	U_m	I_m
AM5413	Supply power circuit Terminals 31/32 (Terminal 31→+)	60 V	35 A
	Contact Output Terminals 41/42 (Terminal 41→+)	60 V	35 A
AM5417	Alarm Contact Terminals 41/42, 51/52 (Terminals 41, 51→+)	16V	25 mA

Variable Area Flowmeters which were operated under guaranteed compliance with the maximum values in Category 3 (Zone 2), can subsequently be used in Category 2 (Zone 1) without modification provided that the maximum values for this category are observed.

(16) Test documents are listed in the Test Report No. 00 PX 10000.

(17) Special Conditions

none

(18) Essential Health and Safety Requirements

none additionally

1st SUPPLEMENT

to EC-Type Examination Certificate No. TÜV 00 ATEX 1576

of the Company: ABB Automation Products GmbH
 Dransfelder Straße 2
 D-37079 Göttingen, Germany

The Variable Area Flowmeter Models AM5413.. und AM5417.. may now be manufactured in accordance with the documents listed in the Test Report and are used to measure the flowrates of gas and liquids. Model AM5413.. is only suitable for Temperature Classes T1 to T4.

The relationship between Temperature Classes, maximum allowable ambient and fluid temperatures for the Model AM 5413.. is illustrated in the table below:

Model	Allowable Ambient Temperature Range	Maximum Fluid Temperature	Temperature Class
AM5413	-55°C..+70°C	+380°C (insulated instrument)	T1
		+440°C	T1
	-55°C..+60°C	+440°C	T1
		+290°C	T2
		+195°C	T3
		+130°C	T4

Electrical Specifications

The maximum allowable values as a function of the Model and the Design are listed in the table below:

Model	II 2 G EEx ib IIC	U _i	I _i	P _i	C _i	C _{i/PA}	L _i
AM5413	Supply power circuit Terminals 31/32 (Terminal 31→+)	28 V	110 mA	770 mW	4,2 nF	6 nF	270 μH
	Contact Output Terminals 41/42 (Terminal 41→+)	15 V	30 mA	115 mW	3,6 nF	3,6 nF	133 μH

Model	II 3 G EEx n [L] IIC	U _m	I _m
AM5413	Supply power circuit Terminals 31/32 (Terminal 31→+)	60 V	35 A
	Contact Output Terminals 41/42 (Terminal 41→+)	60 V	35 A

AM5417.. II 2 G EEx ib IIC Alarm Contact Terminals 41/42, 51/52 (41/51 →+)					Maximum Fluid Temperature									
					Ambient Temperature –55°C ...									
					+60°C		+70°C						+60°C	
Insulated Instrument					Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	
U _i	I _i	P _i	L _i	C _i	T1				T2	T3	T4	T5	T6	
16 V	25 mA	34 mW	250 µH	50 nF	420°C	440°C	340°C	440°C	290°C	195°C	130°C	95°C	80°C	
	25 mA	64 mW			420°C	440°C	340°C	440°C	290°C	195°C	130°C	95°C	80°C	
	52 mA	169 mW			320°C	440°C	240°C	320°C	240°C	195°C	130°C	60°C	45°C ¹⁾	
	76 mA	242 mW			180°C	240°C	100°C	120°C	100°C	100°C	100°C	45°C ¹⁾	30°C ²⁾	

1) Max. ambient temperature 45°C

2) Max. ambient temperature 30°C

AM5417.. II 3 G EEx n [L] IIC Alarm Contact Terminals 41/42, 51/52 (41/51 →+)					Maximum Fluid Temperature										
					Ambient Temperature –55°C ...										
					+60°C		+70°C						+60°C		
Insulated Instrument					Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes		
U _m	I _m	P _m					T1				T2	T3	T4	T5	T6
16 V	25 mA	34 mW					420°C	440°C	340°C	440°C	290°C	195°C	130°C	95°C	80°C
	25 mA	64 mW					420°C	440°C	340°C	440°C	290°C	195°C	130°C	95°C	80°C
	52 mA	169 mW					320°C	440°C	240°C	320°C	240°C	195°C	130°C	60°C	45°C ¹⁾
	76 mA	242 mW					180°C	240°C	100°C	120°C	100°C	100°C	100°C	45°C ¹⁾	30°C ²⁾

1) Max. ambient temperature 45°C

2) Max. ambient temperature 30°C

Variable Area Flowmeters which were operated under guaranteed compliance with the maximum values of Category 3 (Zone 2), can subsequently be used in Category 2 (Zone 1) without modification provided that the maximum values for this category are observed.

(16) Test documentation are listed in Test Report No. 00 PX 23500.

(17) Special Conditions

none

(18) Basic Safety and Health Requirements

none additionally

TÜV Hannover/Sachsen-Anhalt e.V.
TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover

Hannover, 22. Nov. 2000

Stürwold

Head of the Certification Body

2nd SUPPLEMENT
to
EC-Type Examination Certificate No. TÜV 00 ATEX 1576

of: ABB Automation Products GmbH
 Dransfelder Strasse 2
 D-37079 Göttingen

The Variable Area Flowmeter Models AM5413.. and AM5417.., may now be manufactured according to the documents listed in the Test Report. The modifications are related to the outside structure of the DN15 .. DN80 nominal diameters. Both models are complemented by a meter tube version with a heating jacket.

The relationship between type, temperature classification, permissible ambient temperature range and the maximum temperatures of the measured medium/the heating medium is shown in the table.

Model	Maximum Temperatures of Measured Medium/Heating Medium				
	Ambient temperature	Temperature Classification			
AM5413 with heating jacket II 2G EEx ib IIC or II 3G EEx n[L] IIC		T1	T2	T3	T4
	-55°C..+40°C	290°C	290°C	195°C	130°C
	-55°C..+50°C	255°C	255°C	195°C	130°C
	-55°C..+60°C	220°C	220°C	195°C	130°C
	-55°C..+70°C	190°C	190°C	190°C	130°C

The relationship between type, electrical data, temperature classification, permissible ambient temperature range and the maximum temperatures of the measured medium/the heating medium is shown in the tables.

Model AM5417 with heating jacket II 3G EEx n[L] IIC			Maximum Temperatures of Measured Medium/Heating Medium						
Contact Output terminals 41/42, 51/52 (41/51? +)			Ambient temperature	T1	T2	T3	T4	T5	T6
U _m	I _m	P _m							
16 V	25 mA	34 mW	-55°C..+40°C	290°C	290°C	195°C	130°C	95°C	80°C
			-55°C..+60°C	220°C	220°C	195°C	130°C	95°C	80°C
			-55°C..+70°C	190°C	190°C	190°C	130°C	95°C	80°C
	25 mA	64 mW	-55°C..+40°C	290°C	290°C	195°C	130°C	95°C	80°C
			-55°C..+60°C	220°C	220°C	195°C	130°C	95°C	80°C
			-55°C..+70°C	190°C	190°C	190°C	130°C	95°C	45°C
	52 mA	169 mW	-55°C..+40°C	255°C	255°C	195°C	130°C	95°C	50°C
			-55°C..+60°C	185°C	185°C	185°C	130°C	50°C	45°C ¹⁾
			-55°C..+70°C	150°C	150°C	150°C	130°C	20°C	45°C ¹⁾
	76 mA	242 mW	-55°C..+40°C	185°C	185°C	185°C	130°C	55°C	30°C ²⁾
			-55°C..+60°C	115°C	115°C	115°C	115°C	45°C ¹⁾	30°C ²⁾
			-55°C..+70°C	80°C	80°C	80°C	80°C	45°C ¹⁾	30°C ²⁾

¹⁾ Max. ambient temperature +45°C

²⁾ Max. ambient temperature +30°C

Translation of German Original
2nd Supplement to EC-Type Examination Certificate No. TÜV 00 ATEX 1576

Model AM5417 with heating jacket II 2G EEx ib IIC					Maximum Temperatures of Measured Medium/Heating Medium						
Contact Output terminals 41/42, 51/52 (41/51? +)					Ambient temperature	T1	T2	T3	T4	T5	T6
U _i	I _i	P _i	L _i	C _i							
16V	25 mA	34 mW	250 µH	50 nF	-55°C..+40°C	290°C	290°C	195°C	130°C	95°C	80°C
					-55°C..+60°C	220°C	220°C	195°C	130°C	95°C	80°C
					-55°C..+70°C	190°C	190°C	190°C	130°C	95°C	80°C
	25 mA	64 mW			-55°C..+40°C	290°C	290°C	195°C	130°C	95°C	80°C
					-55°C..+60°C	220°C	220°C	195°C	130°C	95°C	80°C
					-55°C..+70°C	190°C	190°C	190°C	130°C	95°C	45°C
	52 mA	169 mW			-55°C..+40°C	255°C	255°C	195°C	130°C	95°C	50°C
					-55°C..+60°C	185°C	185°C	185°C	130°C	50°C	45°C ¹⁾
					-55°C..+70°C	150°C	150°C	150°C	130°C	20°C	45°C ¹⁾
	76 mA	242 mW			-55°C..+40°C	185°C	185°C	185°C	130°C	55°C	30°C ²⁾
					-55°C..+60°C	115°C	115°C	115°C	115°C	45°C ¹⁾	30°C ²⁾
					-55°C..+70°C	80°C	80°C	80°C	80°C	45°C ¹⁾	30°C ²⁾

¹⁾ Max. ambient temperature +45°C

²⁾ Max. ambient temperature +30°C

All other details and the special condition apply unchanged to this supplement.

(16) Test documentation are listed in Test Report No. 02 YEX 180432.

(17) Special conditions

None

(18) Essential Health and Safety Requirements

None additionally

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Hanover, 05.07.2002

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