



(1) **EC-TYPE-EXAMINATION CERTIFICATE**  
(Translation)

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**



(3) EC-type-examination Certificate Number:

**PTB 99 ATEX 2032 U**

(4) Component: **Moving-iron amperemeter type AM 45 and type AM 72**

(5) Manufacturer: **CEAG Sicherheitstechnik GmbH**

(6) Address: **Neuer Weg Nord 49, D-69412 Eberbach**

(7) This component and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this component 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 to the Directive.

The examination and test results are recorded in the confidential report PTB Ex 99-27439.

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

**EN 50014:1997**

**EN 50019:1994**

(10) The sign "U" placed behind the certificate number indicates that this certificate should not be confounded with certificates issued for equipment or protective systems. This Component Certificate only serves as a basis for the issuing of certificates for equipment or protective systems.

(11) This EC-type-examination Certificate relates only to the design and construction of the specified component in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this component.

(12) The marking of the component shall include the following:

**II 2 G EEx e II and I M2 EEx e I**

Zertifizierungsstelle Explosionsschutz

Braunschweig, March 12, 1999

By order:

Dr.-Ing. U. Johannsmeyer  
Regierungsdirektor



## (13) SCHEDULE

### (14) EC-TYPE-EXAMINATION CERTIFICATE No. PTB 99 ATEX 2032 U

#### (15) Description of component

The moving-iron amperemeters type AM 45 and type AM 72 are used for measurement and indication of current values in explosion hazardous areas. Due to the unprotected terminals the measuring apparatus must be installed in protection enclosures or control boards in such a way that the degree of protection of at least IP 54 according to IEC 529 is attained and the creepage and clearance distances between the terminals and the housing parts comply to EN 50019 table 1.

#### Electrical data

##### Amperemeter type AM 45

Operating voltage  $\leq 420$  V

##### Nominal current

	measuring range	power consumption
0.7 A	0...1 A	ca. 0.14 W
1.0 A	0...1.5 A	ca. 0.11 W
1.7 A	0...2.5 A	ca. 0.13 W
2.7 A	0...4 A	ca. 0.13 W
3.3 A	0...5 A	ca. 0.13 W
4.0 A	0...6 A	ca. 0.11 W
6.7 A	0...10 A	ca. 0.15 W
10.7 A	0...16 A	ca. 0.21 W

##### Amperemeter type AM 72

Operating voltage  $\leq 750$  V

##### Nominal current

	measuring range	power consumption
0.67 A	0...1 A	ca. 0.14 W
1.0 A	0...1.5 A	ca. 0.11 W
1.67 A	0...2.5 A	ca. 0.13 W
2.67 A	0...4 A	ca. 0.13 W
3.33 A	0...5 A	ca. 0.13 W
4.0 A	0...6 A	ca. 0.11 W
6.67 A	0...10 A	ca. 0.15 W
10.0 A	0...15 A	ca. 0.18 W
10.67 A	0...16 A	ca. 0.21 W
16.67 A	0...25 A	ca. 0.31 W
26.67 A	0...40 A	ca. 0.16 W

#### (16) Report PTB Ex 99-27439

(17) Special condition

The amperemeters shall be completely installed into a housing of a degree of protection of IP 54. When the measuring apparatus are installed, it must be guaranteed that the creepage and clearance distances between the terminals and the housing parts are met according to EN 50019 table 1. The measuring apparatus type AM 45 and type AM 72 may also be installed in a temperature range of -55 °C to +58 °C in the temperature class T6.

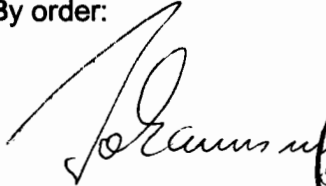
(18) Essential health and safety requirements

Met by correspondence to the standards mentioned above.

Zertifizierungsstelle Explosionsschutz

Braunschweig, March 12, 1999

By order:



Dr.-Ing. U. Johannsmeyer  
Regierungsdirektor



## 1. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 2032 U

(Translation)

Equipment: Moving-coil amperemeter AM 72 and AM 45

Marking:  II 2 G EEx ib IIC and I M2 EEx ib I

Manufacturer: CEAG Sicherheitstechnik GmbH

Address: Neuer Weg Nord 49  
D-69412 Eberbach

### Description of supplements and modifications

The type series of the moving-iron amperemeters will be extended for the moving-coil amperemeters for the application in intrinsically safe circuits. Because of the unprotected terminals the measuring instruments have to be mounted into protective housings or control boards as such that at least the degree of protection of IP 54 according to IEC 529 is met and that clearances and creepage distances between terminals and parts of the housing correspond to table 1, EN 50019.

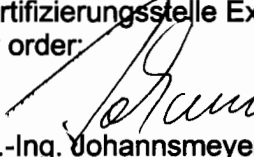
### Electrical data

amperemeter type	AM 45 and AM 72
measuring range	0/4 to 24 mA
inductance $L_i$	< 0.1 mH
capacitance $C_i$	< 0.1 nF
winding specifications of the moving-coil	26.5 windings
internal resistance	$2.5 \Omega \pm 30\%$
open-circuit voltage max.	30 V
short-circuit current max.	150 mA

Test report: PTB Ex 00-20077

Zertifizierungsstelle Explosionsschutz

By order:

  
Dr.-Ing. Johannsmeyer  
Regierungsdirektor



Braunschweig, June 09, 2000

Sheet 1/1

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

## 2nd SUPPLEMENT

according to Directive 94/9/EC Annex III.6

### to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 2032 U

#### (Translation)

Equipment: Moving-iron amperemeter AM 72 and AM 45m and  
Moving-iron voltmeters VM 72 and VM 45

Marking:  II 2 G EEx em II and I M2 EEx em

Manufacturer: CEAG Sicherheitstechnik GmbH

Address: Neuer Weg Nord 49  
69412 Eberbach, Germany

#### Description of supplements and modifications

The type series of the moving-iron amperemeter is expanded to include the moving-iron amperemeters and moving-iron voltmeters designed to type of protection "Encapsulation".

#### Electrical data

##### Amperemeter, type AM 45

Working voltage  $\leq 415$  V

Rated current

0.01 A

0.03 A

Measuring range

0 ... 0.02 A

0 ... 0.04 A

Input

approx. 0.13 W

approx. 0.128 W

##### Amperemeter, type AM 72

Working voltage  $\leq 690$  V

Rated current

0.01 A

0.03 A

Measuring range

0 ... 0.02 A

0 ... 0.04 A

Input

approx. 0.13 W

approx. 0.128 W

##### Voltmeter, type VM 45

Rated voltage

6 V

10 V

15 V

25 V

40 V

60 V

Measuring range

0 ... 6 V

0 ... 10 V

0 ... 15 V

0 ... 25 V

0 ... 40 V

0 ... 60 V

Input

approx. 0.23 VA

approx. 0.22 VA

approx. 0.27 VA

approx. 0.19 VA

approx. 0.25 VA

approx. 0.37 VA

100 V	0 ... 100 V	approx. 0.40 VA
110 V	0 ... 110 V	approx. 0.42 VA
150 V	0 ... 150 V	approx. 0.33 VA
250 V	0 ... 250 V	approx. 0.36 VA
400 V	0 ... 400 V	approx. 0.36 VA
415 V	0 ... 415 V	approx. 0.39 VA

Voltmeter, type VM 72

Rated voltage	Measuring range	Input
6 V	0 ... 6 V	approx. 0.23 VA
10 V	0 ... 10 V	approx. 0.22 VA
15 V	0 ... 15 V	approx. 0.27 VA
25 V	0 ... 25 V	approx. 0.19 VA
40 V	0 ... 40 V	approx. 0.25 VA
60 V	0 ... 60 V	approx. 0.37 VA
100 V	0 ... 100 V	approx. 0.40 VA
110 V	0 ... 110 V	approx. 0.42 VA
150 V	0 ... 150 V	approx. 0.33 VA
250 V	0 ... 250 V	approx. 0.36 VA
400 V	0 ... 400 V	approx. 0.36 VA
415 V	0 ... 415 V	approx. 0.39 VA
500 V	0 ... 500 V	approx. 0.37 VA
600 V	0 ... 600 V	approx. 0.35 VA
660 V	0 ... 660 V	approx. 0.35 VA

Test report: PTB Ex 01-20335

Special conditions

Since the terminals are not protected, the measuring devices shall be installed in protective housings or switchboards in such a way that IP 54 protection according to IEC 60529 will be provided as a minimum and that the clearance and creepage distances between terminals and housing elements will comply with EN 50019, table 1.

The voltmeters and amperemeters with encapsulated coils and primer pretreatment may also be used within a temperature range of -55 °C to +55 °C in temperature class T6.

Zertifizierungsstelle Explosionsschutz

Braunschweig, June 26, 2002

By order:



Dip.-Ing. R. Wilkens



Physikalisch-Technische Bundesanstalt • Postfach 33 45 • 38023 Braunschweig

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Frau Silke Frankhauser  
Postfach 15 63

69405 Eberbach  
DEUTSCHLAND

Ihr Zeichen: **Edgar Setzer / S. Frankhauser**  
Ihre Nachricht vom: **2008-01-11**  
Unser Zeichen: **3.6-359/08-AL**  
Unsere Nachricht vom:

Bearbeitet von: **Dipl.-Ing. (FH) A. Linne**  
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


Datum: **2008-02-25**

### Umstellung der Konformitätserklärung auf neue Normausgaben EN 60 079-0 ff Messinstrument AM 45/72 und VM 45/72 – PTB 99 ATEX 2032 U

Sehr geehrte Frau Frankhauser,

aufgrund der von Ihnen abgegebenen Erklärung vom 2008-01-11 und der dazu eingereichten Unterlagen zur EG-Baumusterprüfbescheinigung **PTB 99 ATEX 2032 U** bestehen keine sicherheitstechnischen Bedenken, die Konformitätserklärung und die Kennzeichnung entsprechend dem zur Zeit aktuellen Normenstand auszuführen.

Die Kennzeichnung ist dann wie folgt auszuführen:

 II 2 G	Ex e II	und	I M 2	Ex e I
 II 2 G	Ex ib IIC	und	I M 2	Ex ib I
 II 2 G	Ex emb II	und	I M 2	Ex emb I

Bitte nehmen Sie dieses Schreiben mit in Ihre Zulassungsunterlagen auf und reichen Sie diese Änderung bei der nächsten Ergänzung mit ein.

Mit freundlichen Grüßen  
Im Auftrag



Dipl.-Ing (FH) Axel Linne

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Ihr Zeichen: **Edgar Setzer / S. Frankhauser**  
Ihre Nachricht vom: **2008-01-11**  
Unser Zeichen: **3.6-359/08-AL**  
Unsere Nachricht vom:

Bearbeitet von: **Dipl.-Ing. (FH) A. Linne**  
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E-Mail: **axel.linne@ptb.de**




Datum: **2008-02-25**

### Adaption of the declaration of conformity to the new edition of the standards EN 60 079-0 ff Measuring instrument AM 45/72 and VM 45/72 – PTB 99 ATEX 2032 U

Dear Mrs. Frankhauser,

On the basis of your declaration dated 2008-01-11 and the submitted documents to the EC-type examination certificate **PTB 99 ATEX 2032 U**, there are no objections with respect to safety technology to adapt the declaration of conformity to the marking of the currently valid edition of the standards.

The marking shall be stated as follows:

 II 2 G	Ex e II	and	I M 2	Ex e I
 II 2 G	Ex ib IIC	and	I M 2	Ex ib I
 II 2 G	Ex emb II	and	I M 2	Ex emb I

Please include this letter in your documentation and file this modification with the next supplement.

Yours faithfully  
by order:



Dipl.-Ing (FH) Axel Linne