

Translation of the original German version

**Physikalisch-Technische Bundesanstalt
Braunschweig and Berlin**

[Mark]

Approval certificate
EEC-Type approval
No. 1.33-3271.51-DMB-E16

According to paragraph 9 of the Weights and Measures Law of 11 July 1969 (BGBl. 1S. 759); in connection with paragraph 26 of the Weights and Measures Law issue 23 March 1992 (BGBl. 1S. 711) and paragraph 16 chapter 4 and 17, chapter 1 of the calibration regulations of 12 August 1988 (BGBl. 1S. 1657) in the valid issue; is the company:

Daniel Messtechnik GmbH Babelsberg
14482 Potsdam

granted the allowance for EEC-initial verification of:

Gas Turbine Meter

The model holds the following approval mark:

D 97
[E-mark]
7.211.16

The actual markings and when applicable the approval duties, conditions as well as limitations are stated in the attachment. This attachment is a part of this approval and contains 4 pages.

Physikalisch-Technische Bundesanstalt

Braunschweig, 25 April 1997

[Rubber stamp] Official rubber stamp

as ordered

[Signature]

H. Krebs

Approval certificates without signature or rubber stamp are not valid
Approval certificates may only be reproduced and forwarded without changes
Extracts or changes require the approval of the Physikalisch-Technische Bundesanstalt

Physikalisch-Technische Bundesanstalt

Braunschweig and Berlin

Attachment

Page 1 from 4

To type approval certificate No.: 1.33-3271.51-DMB-E16 Dated 25 April 1997

Owner of the approval: Daniel Messtechnik GmbH
Babelsberg
14482 Potsdam

Kind of device: Gas Turbine Meter

Approval mark: D 97 (see German version for official sign)
7.211.16

1 Regulations

For the measurement devices of the approved model the following regulations apply:
The general regulations of "Der Eichordnung" of 21/6/1994 (BGB1 I, S.1293) and chapter 1 of attachment 7 of "Der Eichordnung" of 24/9/1992 (BGB1 I, S.1653) and also the "PTB-Anforderungen" PTB-A 7.1 Gas Volume Meters of April 1988,
The "Technische Richtlinie" (Technical Guidelines) TR G 7, issue 7/81 and
The "Technische Richtlinie" (Technical Guidelines) TR G 13, issue 12/94.

The mentioned regulations of attachment 7 chapter 1 of the "Eichordnung" are equal to the EEC Guidelines regarding Gas Volume Meters

-71/318/EEC of 26/7/1971, -74/331/EEC of 12/6/1974, -78/365/EEC of 31/3/1978 and -82/623/EEC of 1/7/1982

2 Description of the model

At gas turbine meters of this model (MGTM) the gas velocity is increased at the inlet of the meter by means of a reduction of the flowing surface by a co-axial mounted body. Performing this way the impulse at the turbine wheel (located after the mentioned body) is increased. The flowing gas axially accesses the turbine wheel and set it in a rotating movement so that the number of revolutions is a measure for the gas volume passed. The turbine wheel is made of Delrin or Aluminum.

The shaft of the turbine wheel is supported by ball bearings. These ball bearings are lubricated by a pressure-oil system.

Gas meters of this model can be equipped with or without a mechanical shaft output.
Electronic pulse outputs can be available in the index head or at the meter body.

Undependable of the orientation of the meter during calibration, the meters of DN100 (4") and smaller can be used in a user chosen orientation. Gas meters larger than DN100 must both be calibrated and used in a horizontal position.

3 Technical specifications

DN Mm	G	Q _{max}	Q _{min} m ³ /h			Md _{max} N.mm			P _{max} bar
			1:20	1:10	1:5				
50	40	65	-	-	13	-	-	-	100
50	65	100	-	10	20	-	-	-	100
80	100	160	-	16	32	-	-	-	100
80	160	250	13	25	50	-	-	-	100
80	250	400	20	40	80	-	-	-	100
100	250	400	20	40	80	-	-	-	100
100	400	650	32	65	130	-	-	-	100
150	400	650	32	65	130	-	-	-	100
150	650	1000	50	100	200	-	-	-	100
150	1000	1600	80	160	320	-	-	-	100
200	1000	1600	80	160	320	-	-	-	100
200	1600	2500	130	250	500	-	-	-	100
250	1000	1600	80	160	320	-	-	-	100
250	1600	2500	130	250	500	-	-	-	100
250	2500	4000	200	400	800	-	-	-	100
300	2500	4000	200	400	800	-	-	-	100
300	4000	6500	320	650	1300	-	-	-	100
400	4000	6500	320	650	1300	-	-	-	100
400	6500	10000	500	1000	2000	-	-	-	100
500	6500	10000	500	1000	2000	-	-	-	100
500	10000	16000	800	1600	3200	-	-	-	100
600	10000	16000	800	1600	3200	-	-	-	100
600	16000	25000	1300	2500	5000	-	-	-	100

4 Approval documentation

4.1 Drawings and descriptions

Drawing No	Issue	Name of the drawing
TI9001	11.11.96	Description
TI9002	11.11.96	Material list
TI9003	20.11.96	Sizes of exhaust and turbine blades
TI9004	11.11.96	Adjustment table
TI9005	20.11.96	Sizes of the straightening section
76873.9000	14.11.96	Pulse sensor at the turbine wheel
76873.9001	15.11.96	Pulse sensor at the reference wheel
76804.9000	11.11.96	Gas turbine meter cut away drawing
76804.9001	20.11.96	Seal position drawing
TI9006	20.11.96	Gear wheel table
76853.9000	13.11.96	Index head
76853.9001	20.11.96	Pulse sensors in the index head
76853.1101	12.08.96	Main name plate
76853.1106	20.11.96	Pulse sensor name plate

4.2 Slides

F1 Gas Turbine Meter DN100 G250

5 Special approval information

This gas meter model did resist the perturbation tests according to OIML-recommendation IR-32/89, annex A for light and heavy perturbations.

For the construction of the metering line the rules of Chapter 1 of the TR G13 apply.

6 Approval mark

The approval mark and the other applicable figures are shown at the main nameplate.

7 Seal positions

The main seal is in the right hand bottom corner at the main nameplate. This seal also secure the nameplate for removal.

The other seal positions are indicated at the applicable drawing.

8 Legal calibrations

8.1 Initial verification

For the initial verification the following test prescription applies: “PTB Prufregeln Band 4” Gas Volume Meters in the 2nd revised issue 1982.

8.2 Mounting

This gas meter model complies to the mounting prescriptions of TR G 13 Chapter 1.

10 Validity of the Type Approval

This type approval is valid until 30/4/2007