

APPROVED



National Iranian Gas Co.

مدیریت پژوهش و فناوری

Research and Technology Management

امور تدوین استانداردها

Standardization Division

IGS

Iranian Gas Standards

مشخصات فنی خرید

کنتور گاز نوع دیافراگمی

Gas Meters Diaphragm Types

FOREWORD

This standard is intended to be mainly used by **NIGC** and contractors and has been prepared on interpretation of recognized standards , technical documents , knowledge ,backgrounds and experiences in gas industries at national and international levels.

Iranian Gas Standards (**IGS**) are prepared , reviewed and ammended by technical standard committees within NIGC Standardization Div. and submitted to the **NIGC's "STANDARDS COUNCIL"** for approval .

IGS Standards are subject to revision , amendment or withdrawal , if required , thus the latest edition of **IGS** shall be checked/inquired by **NIGC** users .

This standard must not be modified or altered by the end users within **NIGC** and her contractors. Any deviation from normative references and/or well known manufacturers specifications must be reported to Standardization div.

Any comments from concerned parties on **NIGC** distributed **IGS** are welcome to technical standards committees and will receive serious attention and consideration should a revision to standards is recommended .

GENERAL DEFINITIONS :

Throughout this standard the following definitions , where applicable , should be followed :

1- "**STANDARDIZATION DIV.**" has been organized to deal with all aspects of industrial standards in NIGC . Therefore , all queries for clarification or amendments are requested to be directed to the mentioned div.

2- "**COMPANY**" : refers to national iranian gas company .

3- "**SUPLIER**" : refers to a firm who will supply the service , equipment or material to igs specification whether as the prime producer or manufacturer or a trading firm .

4- "**SHALL**" : is used where a provision is mandatory.

5- "**SHOULD**" : is used where a provision is advised only.

6- "**MAY**" : is used where a provision is completely discretionary.

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پیشگفتار

- ۱- این استاندارد/دستورالعمل بمنظور استفاده اختصاصی در شرکت ملی گاز ایران و شرکتهای فرعی وابسته تهیه شده است.
- ۲- شرکت ملی گاز ایران در مورد نیازهای عمومی از استانداردهای وزارت نفت (IPS) و در مورد نیازهای اختصاصی از استانداردهای اختصاصی خود (IGS) استفاده می نماید.
- ۳- استانداردهای شرکت ملی گاز ایران (IGS) توسط کمیته های تخصصی استاندارد متشکل از کارشناسان بخش های مختلف و یا مشاور تهیه می شود و توسط شورای استاندارد (منتخب هیئت مدیره شرکت ملی گاز ایران) به تصویب میرسند.
- ۴- در تنظیم متن استانداردهای (IGS) از کلیه منابع شناخته شده استاندارد، اطلاعات فنی - تخصصی مربوط به صنایع گاز دنیا، مشخصات فنی تولیدات سازندگان معتبر جهانی و نیز از نتیجه تحقیقات و تجربیات کارشناسان و متخصصان داخلی بر حسب مورد استفاده می شود. همچنین بمنظور استفاده هر چه بیشتر از تولیدات داخلی قابلیت های سازندگان داخلی نیز مورد توجه قرار میگیرد.
- ۵- استانداردها از طریق پایگاه اینترنتی شرکت * ویا لوح فشرده (CD) در اختیار واحدها و کاربران قرار می گیرد .
- ۶- استانداردها بطور متوسط هر ۵ سال یکبار و یا در صورت ضرورت زودتر، مورد بازنگری و بروزرسانی قرار میگیرند. بنابراین کاربران باید همیشه آخرین نگارش را مورد استفاده قرار دهند.
- ۷- هرگونه نظر و یا پیشنهاد اصلاح در مورد استانداردها مورد استقبال و بررسی قرار خواهد گرفت و در صورت تأیید، استاندارد مربوطه نیز مورد تجدید نظر قرار خواهد گرفت .

تعاریف عمومی

در متن استانداردهای (IGS) از تعاریف و اصطلاحات زیر استفاده میشود.

- ۱- "شرکت" (COMPANY): منظور از شرکت "شرکت ملی گاز ایران" و یا شرکتهای فرعی وابسته میباشد.
- ۲- "فروشنده" (SUPPLIER/VENDOR): به فرد یا موسسه ای اطلاق میگردد که تعهدی را نسبت به شرکت تقبل نموده است.
- ۳- "خریدار" (PURCHASER): منظور از خریدار "شرکت ملی گاز ایران" و یا شرکتهای فرعی وابسته میباشد.
- ۴- "SHALL": در مواردی بکاربرده میشود که انجام خواسته مورد نظر اجباری است
- ۵- "SHOULD": در مواردی بکاربرده میشود که انجام خواسته مورد نظر ترجیحی و درعین حال اختیاری است
- ۶- "MAY": در مواردی بکاربرده میشود که انجام کار به شکل مورد بحث نیز قابل قبول میباشد

* آدرس پایگاه اینترنتی (<http://igs.nigc.ir>) ، آدرس الکترونیکی (nigcigs@nigc.ir)

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شرکت ملی گاز ایران
National Iranian Gas Co.

امور پژوهش و استانداردهای صنعتی

IGS

Iranian Gas Standards

Specification for :

Gas Meters , Diaphragm Type

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FOREWORD

THIS STANDARD IS INTENDED TO BE MAINLY USED BY N.I.G.C AND HAS BEEN PREPARED ON INTERPRETION OF RECOGNIZED STANDARDS , TECHNICAL DOCUMENTS , KNOWLEDGE , BACKGROUNDS AND EXPERIENCES IN GAS INDUSTRIES AT NATIONAL & INTERNATIONAL LEVELS .

IRANIAN GAS STANDARDS (IGS) ARE PREPARED , REVIEWED AND AMENDED BY TECHNICAL STANDARD COMMITTEES WITHIN NIGC RESEARCH AND STANDARDIZATION DIV. AND SUBMITTED TO THE “ SUPREME STANDARD COMMITTEE OF NIGC “ FOR APPROVAL .

IRANIAN GAS STANDARDS (IGS) ARE SUBJECT TO REVISION , AMENDMENT OR WITHDRAWAL , IF REQUIRED , THUS THE LATEST EDITION OF IGS SHALL BE CHECKED / INQUIRED BY NIGC USERS .

ANY COMMENTS FROM CONCERNED PARTIES ON NIGC DISTRIBUTED IGS ARE WELCOME TO TECHNICAL STANDARDS COMMITTEES AND WILL RECEIVE SERIOUS ATTENTION AND CONSIDERATION SHOULD A REVISION TO STANDARDS IS RECOMMENDED .

GENERAL DEFINITIONS :

THROUGHOUT THIS STANDARD THE FOLLOWING DEFINITIONS , WHERE APPLICABLE , SHOULD BE FOLLOWED :

- 1- “ RESEARCH & STANDARDIZATION DIV . “ HAS BEEN ORGANIZED TO DEAL WITH ALL ASPECTS OF INDUSTRIAL STANDARDS IN NIGC . THEREFORE , ALL QUERIES FOR CLARIFICATION OR AMENDMENTS ARE REQUESTED TO BE DIRECTED TO THE MENTIONED DIV.
- 2- “ COMPANY “ : REFERS TO NATIONAL IRANIAN GAS COMPANY .
- 3- “ SUPPLIER “ : REFERS TO A FIRM WHO WILL SUPPLY THE SERVICE , EQUIPMENT OR MATERIAL TO IGS SPECIFICATION WHETHER AS THE PRIME PRODUCER OR MANUFACTURER OR A TRADING FIRM .

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1. GENERAL SCOPE :

THIS SPECIFICATION TOGETHER WITH THE APPENDICES THERE TO COVERS THE MINIMUM REQUIREMENTS FOR DESIGN , MATERIAL FABRICATION , TESTING , INSPECTION , MARKING AND PACKAGING OF DIAPHRAGM TYPE GAS METERS TO BE USED FOR MEASURING DOMESTIC AND COMMERCIAL NATURAL GAS AS PER COMPOSITION IN APPENDIX "C" .
FOR SPECIFIC REQUIREMENTS SEE APPENDIX " D " .

2. GENERAL REQUIREMENTS :

SUPPLIER IS REQUIRED TO COMPLETE AND SIGN THE ATTACHED DATA SHEET (S) AND AS WELL AS 2 SETS OF THE FOLLOWING DOCUMENTATION IN ENGLISH TOGETHER WITH TECHNICAL QUOTATION :

2.1 ALL TECHNICAL INFORMATION AND ORIGINAL COPIES OF PRINTED CATALOGUE (S)

2.2 FULL PARTS LIST CATALOGUE (S)

2.3 GENERAL DRAWING (S) SHOWING OUTLINE DIMENSIONS .

2.4 MANUALS FOR INSTALLATION , COMMISSIONING , OPERATION AND MAINTENANCE .

2.5 TYPICAL PRESSURE DROP CURVE FOR AIR WITH DENSITY OF 1.2 kg/m³ AND ALSO GAS WITH SPECIFIC GRAVITY OF 0.65 .

NOTE 1

AFTER RECEIVING THE ORDER THE SUPPLIER SHALL SUBMIT 10 SETS OF ABOVE INFORMATION (ITEM 2.1 TO 2.5) FOR EACH 5000 NOS. OF METERS (MINIMUM 10 SETS) .

3. DESIGN AND SERVICE CONDITIONS :

THE METER SHALL HAVE EASY MOVING PARTS WITHOUT STRESSES AND BE CONSTRUCTED OF QUALITY MATERIALS IN A WORKMANLIKE MANNER IN ORDER TO ATTAIN GAS TIGHTNESS , STABILITY OF PERFORMANCE AND SUSTAINED ACCURACY OVER A PERIOD OF TIME AND OVER THE RANGE OF OPERATING CONDITIONS WITH MINIMUM OF

MAINTENANCE , WHEN METERING NATURAL GAS . SUCH METER SHALL HAVE THE GENERAL CHARACTERISTICS LISTED BELOW :

3.1- THE METER SHALL BE TAMPER PROOF , GAS TIGHT AND CAPABLE TO SUSTAIN ACCURACY UNDER THE WHOLE RANGE OF SERVICE CONDITIONS .

3.2- THE METER SHALL BE CAPABLE TO REGISTER SPECIFIED APACITY AT SPECIFIED INLET AND DIFFERENTIAL PRESSURE .

3.3- NORMAL INLET PRESSURE OF METER IS 18 MBAR .

3.4- METER MAXIMUM WORKING PRESSURE SHALL BE 100 MBAR

3.5- THE AMBIENT TEMPERATURE RANGE FOR THE METER IS -20°F TO 140°F (-29°C TO 60°C) .

3.6- PRESSURE DROP ACROSS THE METER AT RATED CAPACITY WITH AIR OF DENSITY 1.2 kg/m³ SHALL BE AS SHOWN IN THE FOLLOWING TABLE :

DESIGNATION OF METER	MAX. ALLOWABLE PRESSURE DEOP (MBAR)
G 1.6 TO G 10 INC.	2
G 16 TO G 40 INC.	3
G 65 , G 100	4

3.7- METER ACCURACY SHALL BE 3% FOR CAPACITIES UP TO 2 TIMES THE MINIMUM CAPACITY ($2 \times Q_{\min}$) AND 2% FOR APACITIES OVER 2 TIMES THE MINIMUM APACITY .

3.8- THE TRANSMISSION SYSTEM TO INDEX SHALL BE MAGNETIC COUPLING TYPE .

3.9- INDEX SHALL BE DIGITAL AND DIRECT – READING TYPE , EXCEPT DECIMAL (S) WHICH COULD BE EITHER DIGITAL OR POINTER TYPE .

3.10- THE INDEX OF THE METER SHALL BE SEALED AGAINST FROM THE GAS INSIDE THE METER . THE INDEX WINDOW SHALL BE SEALED IN ITS FRAME AND VENT TO ATMOSPHERE THROUGH A SMALL HOLE IN THE FRAME AND POSITIONED TO PREVENT THE INGRESS OF WATER .

3.11- UPPER AND LOWER PARTS OF THE METER BODY SHALL BE CONNECTED TOGETHER BY MEANS OF :

- 1- STEEL NUTS & BOLTS OR**
- 2- STEEL BAND**

PROVISIONS SHALL BE MADE BY MANUFACTURER FOR SEALING PURPOSES OF UPPER AND LOWER PARTS OF METER IN ORDER TO PREVENT TAMPERING BY UNAUTHORIZED PERSONS .

3.12- NO SEALANT OR GREASE SHALL BE USED FOR SEALING PURPOSES AND VALVE COVERS OR GRIDS AND DIAPHRAGM AND PAN ASSEMBLY .

3.12- INLET AND OUTLET CONNECTIONS OF METER SHALL BE THREADED , STRAIGHT , MALE ACCORDING TO ISO 228/1 UPTO AND INCLUDING 2 INCHES NOMINAL SIZES AND FLANGE TYPE , RAISED FACE , SERRATED FINISH . METER FLANGES SHALL BE IN ACCORDANCE WITH ANSI B16.5 TO MATCH WELDING NECK FLANGES ANSI CLASS 150 FOR SIZES ABOVE 2 INCHES .

4. MATERIALS :

4.1- THE MATERIALS OF ALL COMPONENTS OF METER WHETHER SPECIFIED OR UNSPECIFIED SHALL BE SUITABLE FOR PRESSURE , TEMPERATURE AND OTHER OPERATING CONDITIONS SPECIFIED . IN APP. " D " (DATA SHEETS) .

4.2- ALL PARTS OF THE METER SHALL BE RESISTANT TO CORROSION DEVELOPING MEDIA NORMALLY TRACKED IN AIR OR GAS INCLUDING THE CONTINUOUS ATTACK OF ODORIZED NATURAL GAS .

4.3- RUBBER PARTS MATERIAL SUCH AS DIAPHRAGM SHALL BE MADE OF SYNTHETIC MATERIAL RESISTANT TO ODORIZED NATURAL GAS . OTHER RUBBER PARTS MATERIAL SUCH AS SEALINGS AND SEALING GLANDS SHALL BE FROM RESILIENT MATERIALS .
TEST REQUIREMENTS FOR RUBBER PARTS MATERIAL SHALL BE IN ACC. WITH APPENDIX "B" ITEM 9 .

4.4- THE INDEX CASE SHALL BE MADE OF MATERIAL SAME AS THOSE OF BODY OF METER OR PLASTIC . IN CASE OF PLASTIC FOR INDEX CASE , THE EXPANSION AND CONTRACTION OF THE INDEX DUE TO TEMPERATURE CHANGES MUST BE THE SAME AS THE BODY OF THE METER .

4.5- THE INDEX WINDOW SHALL BE MADE OF SUITABLE MATERIAL TO SATISFY THE TEST REQUIREMENTS SPECIFIED IN APPENDIX "B" ITEM 10 .