

IGS-M-IN-305(1)	July 2017
Approved	مصوب



شرکت ملی گاز ایران
مدیریت پژوهش و فناوری
امور تدوین استانداردها

IGS

مشخصات فنی خرید

شتاب نگار زلزله در سیستم قطع خودکار ایستگاههای گاز شهری

Earthquake accelerometers in automatic shut-off system of
urban gas stations



Documents
Document Sharing Hub



تاریخ: ۱۳۹۶/۵/۲۲
شماره گ.ا.دب: ۲۱۴/۱۰ ۱۸۰۱۰



شرکت ملی گاز ایران



دفتر مدیرعامل



ابلاغ مصوبه هیأت مدیره



مدیر محترم پژوهش و فناوری



باسلام،

به استحضار می‌رساند در جلسه ۱۷۴۳ مورخ ۱۳۹۶/۵/۲۲ هیأت مدیره، نامه شماره گ.ا.دب/۶۳۲۷۲/۰۰۰/۹۶ مورخ ۹۶/۵/۱۷ مدیر پژوهش و فناوری در مورد تصویب نهایی استانداردها به شرح زیر مطرح و مورد تصویب قرار گرفت.



۱. مشخصات فنی شتاب نگار زلزله در سیستم قطع خودکار ایستگاه‌های گاز شهری



IGS-M-IN-305(1)

۲. مشخصات فنی اتصالات چدنی مالیل یا داکتیل

IGS-M-PL-037(1)

۳. مشخصات فنی مواد ضد کف برای سیستم شیرین سازی گاز طبیعی



IGS-M-CH-031(1)



۴. دستورالعمل اجرای پوشش اپوکسی درون لوله‌های خطوط انتقال گاز طبیعی

IGS-C-PL-023(1)



این تصمیم به منزله مصوبه مجمع عمومی شرکت‌های تابعه محسوب می‌شود.



الهام ملکی

مدیر هیأت مدیره



رونوشت: مدیرعامل محترم شرکت ملی گاز ایران و رئیس هیأت مدیره

: اعضای محترم هیأت مدیره

: مشاور و رئیس دفتر محترم مدیرعامل

: رئیس کل محترم امور حسابداری داخلی

: رئیس محترم امور حقوقی

: رئیس محترم امور مجامع



TABLE OF CONTENTS

1-	SCOPE.....	2
2-	REFERENCES.....	2
3-	DEFINITIONS.....	2
4-	TYPE OF ACCELEROMETERS.....	3
5-	SPECIFICATIONS OF ACCELEROMETER.....	3
6-	ACCELEROMETER ANALYTICAL AND EXECUTIVE SPECIFICATIONS	11
7-	ACCELEROMETER CALIBRATION	11
8-	TECHNICAL DOCUMENTATION	11
9-	ACCELEROMETER ACCESSORIES.....	12
10-	INSTALLATION REQUIREMENTS	12
11-	INSPECTION AND TESTING.....	13

1- SCOPE

This standard provides minimum requirements for procurement specifications of earthquake accelerometers in automatic shut-off systems of urban gas station. The specifications provided in this standard shall also be applied for the maintenance of accelerometers used in automatic shut-off systems. Accelerometers are one part of automatic shut-off system and this standard provides specifications only for accelerometers. For other parts of the shut-off system, all other standards and codes of NIGC shall be met.

2- REFERENCES

- a. Instrumentation Guidelines for the Advanced National Seismic System, (2007), U.S. Geological Survey and ANSS National Implementation Committee
- b. Guideline for ANSS Seismic Monitoring Of Engineered Civil Systems, (2005), UGSG, Open file Report 2005-1039
- c. IEC60529, Degrees of Protection Provided by Enclosures (IP Code), (2004), National Electrical Manufacturers Association
- d. IEC61326, Electrical Equipment for Measurement, Control And Laboratory Use –EMC Equirements (2002), International Electrotechnical Commission, Switzerland
- e. EN55022, Information Technology Equipment-Radio Disturbance Characteristics- Limits and methods of measurment, (2006) European Standard

3- DEFINITIONS

3-1- Sensor

A sensor is a device that detects changes in physical quantities such as vibration, displacement, pressure, temperature, humidity and provides a corresponding analog or digital electrical output to changes.

3-2- Accelerometer

Accelerometer or strong-motion sensor is a sensor that measures ground motion acceleration.

4- TYPE OF ACCELEROMETERS

4-1- Simple Pendulum Accelerometer

Simple pendulum accelerometer works as an open loop accelerometer. This method is widely used in the manufacturing of MEMS (Micro Electro-Mechanical Sensors) accelerometer.

4-2- Force-balanced Accelerometer

In such accelerometer, external force that applied to the mass of accelerometer is compensated by an equal electromagnetic force in the opposite direction in a way that the mass remains stationary. In this approach, moving of the mass is prevented with the aid of a feedback circuit.

4-3- MEMS

MEMS (Micro Electro Mechanical Sensors) accelerometers are microelectromechanical systems that are built onto semiconductor chips and measure acceleration. It is possible to use force-balance or MEMS accelerometer for shutting off the gas in earthquakes provided that the specifications of Section 6 of this standard are met.

5- SPECIFICATIONS OF ACCELEROMETER

The minimum acceptable accelerometer performance specifications for applying in automatic gas shut-off devices are represented as bellow:

5-1- Number of Recording Axes

Accelerometers used in shut-off systems shall record ground acceleration in three orthogonal axes. These components shall be independent to each other.

5-2- Clip-level

The maximum recordable acceleration by accelerometer is called clip level. Clipping level depends on the accelerometers mechanics and digitizer specifications. The clip level of the accelerometers shall be at least 1.5 times the ground acceleration (1.5g). This value is obtained from statistical analysis of strong motion data recorded in Iran and specific application of accelerometers for shutting off the gas stations. The maximum recorded PGA