



شرکت ملی گاز ایران

مدیریت پژوهش و فناوری

امور تدوین استانداردها

IGS

Iranian Gas Standards

مشخصات فنی خرید

کنتاکتورهای برقی

Contactors



تاریخ: ۱۳۸۹/۷/۷

شماره: گ/دب/۰ - ۳۹۸/۰ - ۱۵۳۸۸



دفتر مدیرعامل

ابلاغ مصوبه هیأت مدیره

مدیر محترم پژوهش و فناوری و رئیس شورای استاندارد

باسلام،

به استحضار می‌رساند در جلسه ۱۴۱۴ مورخ ۱۳۸۹/۵/۲۶ هیأت مدیره، نامه شماره گ/۰۰۰/۹۶۲۸۳۸ مورخ ۱۳۸۹/۵/۱۲ آن مدیریت در مورد تصویب نهایی استانداردها تحت عناوین ذیل:

- | | |
|-----------------|---|
| IGS-M-EL-022(1) | ۱- کنتاکتورهای برقی |
| IGS-M-EL-016(1) | ۲- لامپ های فلورسنت کم مصرف پیچی |
| IGS-M-SF-03 | ۳- مشخصات فنی دستگاه نشت یاب |
| IGS-M-SF-04 | ۴- دستورالعمل نشت یابی |
| IGS-E-IT-04(0) | ۵- فهرست اطلاعات مورد نیاز برای سیستم اسکادای دیسپچینگ شرکت ملی گاز ایران |
- مطرح و مورد تصویب قرار گرفت.

اسناد
کتابخانه
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سخت افزار
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لغو
۱۹ - ۷/۱۷

ناصر آبگون

دبیر هیأت مدیره

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

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1- Scope

This standard replaces IGS-EL-22(0):1999 and specifies minimum NIGC requirements of technical specification for electromagnetic A.C contactors whose main contacts are intended to be connected to circuits the rated voltage of which does not exceed 1000 V A.C.

2- Normative References

Throughout this standard specification, the following standards are referred to and are in effect at the time of issuing this standard specification . The applicability of changes in standards that occur after the date of standards that referred shall be mutually agreed upon by the purchaser and supplier and/or manufacturer.

- 1- IEC 60947-4-1: 2001,"*Low-voltage switchgear and controlgear* ": Part 4-1: Contactors and motor-starters - Electromechanical contactors and motor-starters.
- 2- IEC 60947-4-2: 2001,"*Low-voltage switchgear and controlgear* ": Part 4-2: Contactors and motor-starters - AC semiconductor motor controllers and starters
- 3- BS EN 60947-1:2007, "*Low-voltage switchgear and controlgear* ": Part 1: General rules.
- 4- IEC 61095 :2000, "*Electromechanical contactors for household and similar purposes*".
- 5- ISIRI 2868:1386," *Degrees of protection provided by enclosures (IP Code)*".
- 6- BS EN 60947-5-1:2004, "*Low-voltage switchgear and controlgear* " : Part 5-1 : *Control/circuit devices and switching elements-Electromechanical control circuit devices.*
- 7- BS EN 60445:2007 ," *Basic and safety principles for man-machine interface, marking and identification -Identification of equipment terminals and conductor terminations*".
- 8- BS EN 60715:2001." *Dimensions of low-voltage switchgear and controlgear*". *Standardized mounting on Rails for Mechanical support of Electrical Devices in switchgear and controlgear.*

3-Definitions

3.1 AC contactors

AC contactors intended for closing and opening electric circuits.

3.2 Utilization Category

The classification of contactors based on different loads as per clause 5.4 ,IEC 60947-4-1:2001.

AC-1 Non Inductive or slightly inductive loads, resistance furnaces, heaters.

AC-2 Slip-ring motors: starting ,switching off.

AC-3 Squirrel-cage motors: starting, switching off motors during running , most typical industrial application.

AC-4 Squirrel-cage motors: starting, plugging, inching

3.3 Duty Class

Maximum operation cycles of contactor per hour (Maximum operating rate).

3.4 Rated Insulation Voltage (U_i)

The rated insulation voltage of an equipment is the value of voltage to which dielectric tests and creepage distances are referred

3.5 Impulse Withstand Voltage (U_{imp})

The highest peak value of an impulse voltage, of prescribed form and polarity, which does not cause breakdown under specified conditions of test.

3.6 Temperature Class of Insulating

Designation of an Electrical Insulation System (EIS) that is equal to the numerical value of the maximum use temperature in degrees Celsius (°C) for which the EIS is appropriate.

3.7 Uninterrupted duty

A duty without any off-load period in which the main contacts of an equipment remain closed, whilst carrying a steady current without interruption for periods of more than eight hours (weeks, months, or even years).

4-Requirements

4.1 Voltage Rating

The rated operational contacts voltage of contactors shall be up to 400 V ac.

4.2 Current Rating (I_e)

The rated operational contacts current of contactors shall be from 9 A (Amperes) to 210 A.

4.3 Overload current withstand capability of contactors

Contactors with utilization categories AC-3 or AC-4 shall withstand the overload currents given in below table, as specified in EN 60947-4-1:2001 clause 9.3.5.

Rated operational current	Test current	Duration of test
≤630 A	8 × I _e max/AC-3	10 s

4.4 Power Rating

The power rating of contactors shall be from 2 KW (Kilo Watt) to 110 KW.

4.5 Coil Voltage

The coil voltage of contactors shall be from 24 to 440 V ac/dc.

4.6 Impulse Withstand Voltage (U_{imp})

The rated impulse withstand voltage shall be 8 KV (According to IEC 60947-2) .

4.7 Insulation voltage (U_i)

The rated insulation voltage of contactor shall be 1000 V(According to IEC 60947-2)

4.8 Rated Frequency

The supply frequency for which a contactor is designed and to which the other characteristic values correspond shall be 50 Hz.

4.9 Ambient Temperature

The ambient temperature range shall be -20 to + 55 °C .

4.10 Temperature Class of Insulating

The temperature class of insulating shall be "F" (135 °C).

4.11 IP , Protection Class

The ingress protection (IP) class of contactors shall meet at least IP 20 according to IEC 60529:1989.

4.12 Number of Poles

The contactors shall have 3 or 4 poles. When a contactor (4 poles) is provided with a pole intended only for connecting the neutral, this pole shall be clearly identified to that effect by the letter "N" .A switched neutral pole shall not break before and shall not make after the other poles. The value of the conventional thermal current shall be identical for all poles.

4.13 Auxiliary Contacts

The auxiliary contacts of contactors shall have minimum 1 normally open (NO) and 1 normally close (NC) contact and dealt with in BS EN 60947-5-1:2004.

4.14 Terminals

Terminals shall be screw-type and all parts of terminals which maintain contact and carry current shall be of metal having adequate mechanical strength. Terminal connections shall be such that the conductors may be connected by screws so as to ensure that the necessary contact pressure is maintained. Terminals shall not allow the conductors to be displaced, or be displaced themselves in a manner detrimental to the operation of the contactor and the insulation voltage shall not be reduced below the rated values. The terminal shall be suitable for conductors of the same type (rigid . solid or stranded or flexible) at least two sizes smaller. Terminals shall be clearly and permanently identified in accordance with BS EN 60445:2007.

4.15 Mounting

The contactor shall be fast, snap-on DIN rail mounted according to BS EN 60715:2001 and/or mounted by screws.

4.16 Rated duty

The Rated duty of the contactor shall be uninterrupted according to EN 60947-1 :2007 ,clause 4.3.4.2.

4.17 Duty Class

The duty class of the contactor shall be up to 120 cycles per hours.

4.18 Tests and Certificate

All tests shall be done according to EN 60947-4-1:2001 .

Any certificate which declare the conformity of the product to EN 60947-4-1:2001 is acceptable.

5- Marking

Each contactor shall be provided with a name-plate containing the following data marked in a durable manner and so placed that the marking is visible when the contactor is installed:

a) Designation of the contactor,

- b) Manufacturer's name and/or trade-mark,
- c) Manufacturer's type reference and serial number,
- d) Country of origin.

All the relevant technical details of the contactor shall be given in the separate leaflet, which shall include the following details:

- a) Overall dimensions and mounting details (Front/back connection),
- b) Number of main poles and their arrangement (NO/NC),
- c) Number of auxiliary contacts and their arrangement (NO/NC),
- d) Values of the operational currents for different utilization categories, classes of intermittent duty and on-load factors ,
- e) Type and VA ratings,
- f) List of all components with parts numbered,
- g) Ratings of the auxiliary contacts,
- h) Mass of the contactor.

6- Documentation

The approval test reports shall be issued by certifying body which is accepted by N.I.G.C.

**Normative Annex
Data sheet**

Item	Subject	Requirement	Supplier offer	Remark
1	Utilization Category	AC1 <input type="checkbox"/> AC2 <input type="checkbox"/> AC3 <input type="checkbox"/> AC4 <input type="checkbox"/>		
2	Voltage Rating	Up to 400 VAC		
3	Current Rating	9 to 210 A		
4	Power	2 to 110 KW		
5	Overload current withstand capability	8 × I _e max/AC-3,AC-4 Acc. to EN 60947-4-1:2001		
6	Rated Frequency	50 Hz		
7	Nos. of Poles	3/4 Poles		
8	Coil Voltage	24 to 440 AC/DC		
9	Aux Contacts	Min 1 NO, 1 NC Acc. to BS EN 60947-5-1:2004		
10	Mounting	On rail and/or by Screw Acc. to BS EN 60715:2001		
11	Protection Class	IP 20		
12	Ambient Temperature	- 20 to +55 °C		
13	Terminal Type	Screwed type Acc. to BS EN 60445:2007		
14	Temperature Class of Insulating	"F" , 135 °C		
15	Rated duty	Uninterrupted according to EN 60947-4-2:2001		
15	Duty Class	Up to 120 cycles per hour		
16	Tests	According to EN 60947-4-1:2001		

- ✿ Any deviation from the above specification shall be clearly specified by
Manufacturer / Supplier.
- ✿ This datasheet shall be signed by Manufacturer / Supplier .