



JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS C 4602 : 2017

(JEMA/JSA)

**Overcurrent relays for 6.6 kV
consumers**

ICS 29.120.70

Reference number : **JIS C 4602 : 2017 (E)**

Date of Establishment: 1970-08-01

Date of Revision: 2017-12-20

Date of Public Notice in Official Gazette: 2017-12-20

Investigated by: Japanese Industrial Standards Committee
Standards Board for IEC area
Technical Committee on Electricity

JIS C 4602:2017, First English edition published in 2018-08

Translated and published by: Japanese Standards Association
Mita MT Building, 3-13-12, Mita, Minato-ku, Tokyo, 108-0073 JAPAN

In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

© JSA 2018

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

Printed in Japan

HT/AT

Contents

	Page
Introduction	1
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
3A Service conditions	4
3B Ratings	4
4 Specification of the function	5
4.1 General	5
4.2 Calculation of relay input and characteristic quantity	5
4.3 Binary input signals	6
4.4 Functional logic	6
4.5 Binary output signals	9
4.6 Additional influencing functions/conditions	9
4.7 Specific characteristics	9
4.7A Setting	10
5 Performance specification	10
5.1 Performance related to operate value and reset characteristics	10
5.2 Operate time	10
5.3 Reset time	12
5.4 Transient performance	12
5.5 Current transformer requirements	13
5.5A Operating characteristics of operation indicator and auxiliary contactor	13
5.5B Frequency characteristic	13
5.5C Influence of temperature	13
5.5D Distorted wave current characteristic	13
5.5E Durability	14
5.5F Resistance to overload	14
5.5G Temperature rise	14
5.5H Vibration	15
5.5I Mechanical shock	15
5.5J Insulation resistance	15
5.5K Power frequency withstand voltage	15
5.5L Lightning impulse withstand voltage	15
5.5M Resistance to noise	15
5.5N Rated burden	15
5.5O Construction	15

6	Test methods	17
6.1	General	17
6.2	Operate value and reset characteristic	19
6.3	Operate time	19
6.3A	Threshold of independent time operation	20
6.4	Reset time characteristic	21
6.5	Transient performance	21
6.5A	Operating characteristics of operation indicator and auxiliary contactor	22
6.5B	Frequency characteristic	22
6.5C	Influence of temperature	22
6.5D	Distorted wave current characteristic	23
6.5E	Durability	23
6.5F	Resistance to overload	24
6.5G	Temperature rise	24
6.5H	Vibration	25
6.5I	Mechanical shock	26
6.5J	Insulation resistance	26
6.5K	Power frequency withstand voltage	26
6.5L	Lightning impulse withstand voltage	27
6.5M	Resistance to noise	29
6.5N	Rated burden	33
6.5O	Construction	33
7	Documentation requirements	33
7A	Marking	33
7B	Marking of precautions	34
Annex A (informative)	Constants for inverse time operating characteristic	35
Annex B (informative)	Reset time determination for relays with trip output only	36
Annex JA (informative)	Reasons for recommending instantaneous reset	37
Annex JB (informative)	Current transformer requirements	38
Annex JC (informative)	Reasons for recommending a voltage trip system	39
Annex JD (normative)	Requirements for analogue overcurrent relays	41
Annex JE (informative)	Comparison table between JIS and corresponding International Standard	56

Foreword

This Japanese Industrial Standard has been revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by The Japan Electrical Manufacturers' Association (JEMA)/Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14. Consequently **JIS C 4602:1986** is replaced with this Standard.

This **JIS** document is protected by the Copyright Law.

Attention is drawn to the possibility that some parts of this Standard may conflict with patent rights, applications for a patent after opening to the public or utility model rights. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying any of such patent rights, applications for a patent after opening to the public or utility model rights.

Overcurrent relays for 6.6 kV consumers

Introduction

This Japanese Industrial Standard has been prepared based on **IEC 60255-151**: 2009, Edition 1. Some of the technical contents of the said international standard have been modified so that they are more in keeping with conditions of the high voltage power receiving facilities in Japan and more suitable for the characteristics of digital overcurrent relays in Japan.

The vertical lines on both sides and dotted underlines indicate changes from the corresponding International Standard. A list of modifications with the explanations is given in Annex JE. Annex JA to Annex JD are unique contents to **JIS** that are not given in the corresponding International Standard.

1 Scope

This Standard specifies requirements for overcurrent relays (hereafter referred to as relays) which are installed at power receiving points of 6.6 kV consumers for the purpose of protecting the electrical circuits against short circuits and overloads. Requirements for digital relays are provided in the main body, and those for analogue relays, in Annex JD.

NOTE The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

IEC 60255-151:2009 *Measuring relays and protection equipment—Part 151: Functional requirements for over/under current protection* (MOD)

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21-1**.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS C 60068-2-6 *Environmental testing—Part 2-6: Tests—Test Fc: Vibration (sinusoidal)*

JIS C 60068-2-27 *Environmental testing—Part 2-27: Tests—Test Ea: Shock*

JIS C 61000-4-2 *Electromagnetic compatibility (EMC)—Part 4-2: Testing and measurement techniques—Electrostatic discharge immunity test*

3 Terms and definitions

For the purpose of this Standard, the following terms and definitions apply.