AS 60947.8—2005
IEC 60947-8, Ed.1.0 (2003)

AS 60947.8—2005

Australian Standard™

Low-voltage switchgear and controlgear

Part 8: Control units for built-in thermal protection (PTC) for rotating electrical machines

STANDARDS AUSTRALIA

This Australian Standard was prepared by Committee EL-006, Industrial Switchgear and Controlgear. It was approved on behalf of the Council of Standards Australia on 3 March 2005.
This Standard was published on 31 March 2005.

The following are represented on Committee EL-006:

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This Standard was issued in draft form for comment as DR 04233.

Australian Standard™

Low-voltage switchgear and controlgear

Part 8: Control units for built-in thermal protection (PTC) for rotating electrical machines

Originated as AS 1023.1—1985 and AS 1023.3—1973.
Amalgamated, revised and redesignated AS 60947.8—2005.

Published by Standards Australia GPO Box 5420, Sydney, NSW 2001, Australia

ISBN 0 7337 6572 6

PREFACE

This Standard was prepared by the Standards Australia Committee EL-006, Industrial Switchgear and Controlgear to supersede AS 1023.1—1985 and AS 1023.3—1973.

The objective of this Standard is to specify rules for control units, which perform the switching functions in response to thermal detectors incorporated in rotating electrical machines.

This Standard is Part 8 of a series which, when complete, will consist of the following:

AS 60947	Low-voltage switchgear and controlgear	
AS 60947.1*	Part 1:	General rules
AS 60947.2*	Part 2:	Circuit-breakers
AS 60947.3	Part 3:	Switches, disconnectors, switch-disconnectors and fuse-combination units
AS 60947.3 Supp1	Part 3:	Switches, disconnectors, switch-disconnectors and fuse-combination units, Supplement 1: Fuse-switch-disconnectors and switch-disconnectors for use with low-voltage aerial bundled cables
AS 60947.4.1*	Part 4.1:	Contactors and motor-starters—Electromechanical contactors and motor-starters
AS 60947.4.2*	Part 4.2:	Contactors and motor-starters—A.C. semiconductor motor controllers and starters
AS 60947.4.3	Part 4.3:	Contactors and motor-starters—A.C. semiconductor controllers and contactors for non-motor loads
AS 60947.5.1*	Part 5.1:	Control circuit devices and switching elements—Electro-mechanical control circuit devices
AS 60947.5.2*	Part 5.2:	Control circuit devices and switching elements—Proximity switches
AS 60947.5.3	Part 5.3:	Control circuit devices and switching elements—Requirements for proximity devices with defined behaviour under fault conditions
AS 60947.5.4*	Part 5.4:	Control circuit devices and switching elements—Methods of assessing the performance of low-energy contacts–Special tests
AS 60947.5.5	Part 5.5:	Control circuit devices and switching elements—Electrical emergency stop devices with mechanical latching function
AS 60947.5.6	Part 5.6:	Control circuit devices and switching elements—D.C. interface for proximity sensors and switching amplifiers (NAMUR)
AS 60947.5.7*	Part 5.7:	Control circuit devices and switching elements—Requirements for proximity devices with analogue output
AS 60947.6.1	Part 6.1:	Multiple function equipment—Automatic transfer switching equipment
AS 60947.6.2*	Part 6.2:	Multiple function equipment—Control and protective switching devices (or equipment) (CPS)
AS 60947.7.1*	Part 7.1:	Ancillary equipment—Terminal blocks for copper conductors
AS 60947.7.2*	Part 7.2:	Ancillary equipment—Protective conductor terminal blocks for copper conductors
AS 60947.7.3*	Part 7.3:	Ancillary equipment—Safety requirements for terminal blocks for the reception of cartridge fuse-links

AS 60947.8*	Part 8:	Control units for built-in thermal protection for rotating machines (this Standard)

It is the intention of the Standards Australia Committee to align the numbering of this series of Standards with that of the corresponding IEC 60947 series of Standards.

Standards from the list above that are marked with an asterisk (*) are, at the time of publication of this document, available as a part of the AS 60947 series of Standards.

Standards that are not so marked remain as AS(/NZS) 3947 series Standards. Following the next amendment or revision of the corresponding IEC Standard, each of these Standards remaining in the AS(/NZS) 3947 series will be revised and renumbered as a part of the AS 60947 series.

This Standard is identical in technical content with and has been reproduced from, IEC 60947-8, Ed.1.0(2003), *Low-Voltage Switchgear and Controlgear, Part 8: Control units for built-in thermal protection (PTC) for rotating electrical machines*.

The provisions of the general rules dealt with in AS 60947.1 (hereinafter referred to as Part 1) are applicable to this Standard, where specifically called for. Clauses and subclauses, tables, figures and appendices of the general rules thus applicable are identified by reference to Part 1, for example, 1.2.3 of Part 1, table 4 of Part 1, or annex A of Part 1. Where reference is made to other parts of the AS 60947 (AS/NZS 3947) series, they too are referred to as their relevant parts. AS 60947.5.1 is referred to as Part 5.1.

Thermal protection systems that are based on the principle of monitoring the temperature of the protected parts constitute a simple and effective means of protecting rotating electrical machines against excessive temperature rises, including those caused by faults in the cooling system, or excessively high ambient temperature, whereas systems of protection based only on monitoring the current absorbed may not ensure this type of protection.

Since the operating temperature and response times of thermal protection systems are fixed in advance, they may not be adjusted in relation to the conditions of use of the machine and they may not be completely effective for all fault conditions or improper use of the machine.

A thermal protection system in accordance with this Standard may consist of a characteristic change thermal detector which has an associated control unit to convert a point on the characteristic of the detector to a switching function. A very large number of thermal protection systems are in use and, in all cases, the machine manufacturer will fit the detectors in the machine. The machine manufacturer will either supply the control unit with the machine or specify particulars of the control unit to be used.

It is also customary for the control units to be considered as part of the control system and not necessarily supplied with the machine. For this reason it is considered necessary to have an interchangeable system, where the characteristics of association between the detector and the control unit are specified. This particular system is not considered superior in any way to other systems complying with the requirements of this standard, but in some fields the practice is likely to be that this interchangeable system will be used, as indicated by the designation ‘Mark A’.

As this Standard is reproduced from an International Standard, the following applies:

(i) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(ii) In the source text ‘this standard’ should read ‘this Australian Standard’.

(iii) A full point should be substituted for a comma when referring to a decimal marker.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the annex to which they apply. A ‘normative’ annex is an integral part of a Standard, whereas an ‘informative’ annex is only for information and guidance.