

Australian Standard 2373, Part 1—1980

CONTROL CABLES FOR ELECTRICITY SUPPLY SYSTEMS

Part 1—GENERAL CONTROL CABLES

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AUSTRALIAN STANDARD

**CONTROL CABLES FOR ELECTRICITY
SUPPLY SYSTEMS**

**Part 1
GENERAL CONTROL CABLES**

AS 2373, Part 1-1980

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PREFACE

This standard was prepared by the Association's Committee on Electric Wires and Cables, at the request of the Electricity Supply Association of Australia.

The standard is Part 1 of a two-part standard for multicore and twisted pair cables used for control, supervisory, protection and instrumentation circuits both within power station and substation confines and to and from these stations. Part 1 covers general control cables and Part 2* covers aerial control cables.

The nominal cross-sectional areas of conductors of 0.5 mm² and above are taken from AS 1125, Conductors in Insulated Electric Cables and Flexible Cords, and are identical with the values recommended in IEC 228, Nominal Cross-sectional Areas and Composition of Conductors of Insulated Cables. For areas below 0.5 mm², only single strand conductors have been specified, namely 0.2 mm² and 0.35 mm².

Only two types of insulation are provided for in this standard, namely polyethylene (PE) and PVC. The thicknesses of insulation for cables having conductors of nominal cross-sectional area of 0.5 mm² and above are based on values specified in AS 3191, Electric Flexible Cords, and AS 3147, PVC Insulated Electric Cables and Flexible Cables for Working Voltages 0.6/1 kV.

Two non-metallic sheath materials are provided in the standard, namely polyethylene and moisture resistant PVC compound.

The standard also provides for bedding, armouring, moisture barriers, metal sheaths and oversheaths.

Requirements for bending radii for control cables are under consideration.

The standard makes reference to the following standards:

- AS 1026 Impregnated Paper Insulated Cables for Electricity Supply at Working Voltages up to and Including 33 kV
- AS 1049 Polyethylene Insulation and Sheath of Telecommunication Cables
- AS 1125 Conductors in Insulated Electric Cables and Flexible Cords
- AS 1660 Methods of Test for Electric Cables and Flexible Cords (Including Conductors, Insulation and Sheath)
 - Part 2 — Test Methods for Insulation, Sheath and Braid
 - Part 3 — Test Methods for Complete Cable.
- AS 1931 High Voltage Testing Techniques
- AS 3147 PVC Insulated Electric Cables and Flexible Cables.
- AS 3191 Electric Flexible Cord
- AS C91 Lead and Lead Alloy Sheaths of Electric Cable

* In course of preparation.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
CONTROL CABLES FOR ELECTRICITY SUPPLY SYSTEMS

PART 1 — GENERAL CONTROL CABLES

1 SCOPE. This standard specifies screened and unscreened PVC insulated multicore control cable and screened polyethylene (PE) insulated twisted-pair control cables for voltages up to and including 0.6/1 kV for use in conjunction with electricity supply systems.

It applies to cables intended for use in control, supervisory, protection and instrumentation circuits within power station and substation confines, between one station and another and radiating from stations. Control cables complying with this standard may be used in industrial applications.

It does not apply to cables used solely for telecommunication purposes.

2 DEFINITIONS. For the purpose of this standard the definitions relating to conductors in AS 1125 and the following definitions apply:

2.1 Core — the conductor with its insulation but not including any protective covering.

2.2 Wavelength or length of lay — the axial distance between each successive crest of the waveform or turns of the helix formed by a core of a multicore cable or core of a pair or pairs of a twisted-pair cable.

2.3 Lay-up — the assembling of cores in a waveform or helical configuration to impart a degree of flexibility.

2.4 Control cable — a cable used for control, measuring, protection and communication circuits.

2.5 Voltage designation — for cables for a.c. systems, the rated voltages U_0 and U expressed in the form U_0/U ; or for cables for d.c. systems, the rated voltage U_0 ;

where —

U_0 is the r.m.s. power frequency voltage to earth of the supply system or d.c. voltage of the supply system for which the cable is designed; and

U is the r.m.s. power frequency voltage between phases of the supply system and for which the cable is designed.

2.6 Routine tests — tests made by the manufacturer on all finished cable lengths to demonstrate the integrity of the cable.

2.7 Special tests — tests made by the manufacturer on samples of completed cable, or components taken from a completed cable, so as to verify that the finished product meets the design specifications.

2.8 Type tests — tests required to be made by the manufacturer before supplying on a general commercial basis a type of cable covered by this standard in order to demonstrate satisfactory performance characteristics to meet the intended application. These tests are of such a nature that, after they have been made, they need not be repeated, unless changes are made in the cable materials or design which might change the performance characteristics.

3 OPERATING VOLTAGE. The rated voltage U_0/U recognized for the purpose of this standard is 0.6/1 kV.

4 CONDUCTORS. Conductors shall be of annealed copper of the type indicated in the appropriate tables of dimensions (Tables 5 and 6) and for conductor sizes of 0.5 mm² and above shall comply with the appropriate requirements and dimensions in AS 1125. Conductors below 0.5 mm² shall comply with the relevant requirements of AS 1125 and the maximum d.c. resistance at 20°C shall be as given in Appendix B.

Although acceptable, the tinning of conductors is not required by this standard. Where such tinning is provided, the wires taken from the finished conductor shall not be required to pass the tinning test specified in AS 1125.

5 INSULATION.

5.1 Material. The insulation material shall be one of the following compounds:

- (a) PE — 03 grade polyethylene, complying with the appropriate requirements of AS 1049 (for twisted-pair control cables).
- (b) PVC — V-75 moisture-resistant grade polyvinyl chloride complying with the appropriate requirements of AS 3147 (for multicore control cables).