1 Scope

This Section of ISA-RP60 is intended to assist the design engineer in establishing the electrical requirements of a control center; it is also intended to comply with the provisions of the National Electrical Code. What follows are the practices normally used by architects, engineers, user organizations and control center manufacturers. Special considerations which may apply to particular devices or circuits are not taken into account in this section.

2 General

2.1 Application

This Section of ISA-RP60 applies to the inter-connection wiring between devices within a control center, or between control centers. It does not apply to the internal wiring of an instrument or device, nor to the wiring between the control center and field-mounted instruments.

2.2 Compliance

All wiring recommendations in this Standard are intended to comply with the National Electrical Code. Compliance with other applicable local or industry codes requires specific reference in the control center specification. General references to these codes should be avoided.

2.3 Wiring

2.3.1 Power wiring

Each device requiring control center power shall be wired so that when wires are removed from any one device, power will not be disrupted to any other device. It is recommended that no voltages greater than 125 Vdc or 120 Vac be used. If higher voltages are required, refer to color coding below. Provisions should be made for power wire segregation and identification to insure personnel safety.

The recommended minimum size for power wiring up to 15 A is #14 stranded copper conductor, 600 V, 60 C with thermo-plastic insulation. Different insulation material should be considered if the insulation has to be self-extinguishing or nontoxic. Refer to Table 310-13 "Conductor Application and Insulations" of the National Electrical Code, latest revision for particular provisions. Where power is 150 W or less and run to each instrument through a separate fuse or circuit breaker, the wire size can be reduced to #16 or #18. Refer to Article 310 — "Conductors for General Wiring" in the National Electrical Code, latest revision for currents greater than 15A.

2.3.1.1 Color coding of ac power wiring

1) 120 Vac, 2 wire, single phase:

   Phase—Φ1 or L1, black

   Neutral—N or L2, white

2) 120/240 Vac or 120/208 Vac, 3 wire, single phase with neutral:

   Phase 1—Φ1 or L1, black