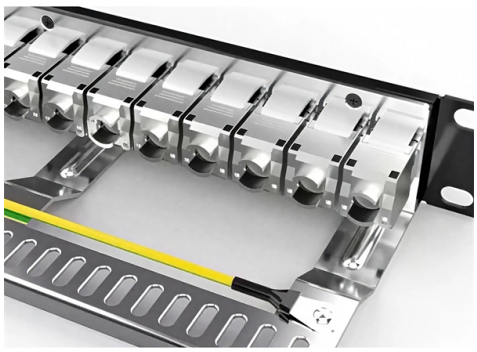
Identification Rules for Wire Numbers in Intelligent Power Distribution Cabinets



Overview

During new cabinet design, route wires in advance according to national standard color codes and numbering rules, and print labels simultaneously to avoid rework later.

Key Takeaways

Wire numbers in intelligent power distribution cabinets must be unique, readable, continuous, and correspond to their function, following standardized formats for main and control circuits.

Core Principles of Wire Numbering

Wire numbering ensures clarity of function, ownership, and connection relationships, preventing misoperation and facilitating maintenance. The key principles are: Uniqueness: Each wire number must be distinct within the cabinet or system. Repetition is avoided by using prefixes or partitions for different circuits.

Readability: Use clear fonts (Song or Kai typeface) with sizes adjusted to wire thickness and position (e.g., 10–12 pt for main wires, 8–10 pt for control wires). Colors should contrast with the wire or background (e.g., black on white or yellow),. Continuity: Wire numbers should follow a logical sequence along the circuit to facilitate tracing.

Correspondence: Numbers must reflect the wire's function, terminal, and connected components.

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Numbering Formats

Main Circuit (Power Circuit)Main circuits carry high current and require numbering that reflects phase, component, and wire sequence: Single-phase example: L1-QF1-1 (Live wire L1 → Circuit breaker QF1 → 1st wire section), N1-QF1-1 (Neutral wire). Three-phase example: A-QF1-1, B-QF1-1, C-QF1-1; subsequent extensions: A-KM1-2 (Phase A → Contactor KM1 → 2nd section),. Multi-circuit systems: Each circuit is numbered separately, maintaining uniqueness and traceability.

Control Circuit (Secondary Circuit)Control circuits are low-current signal wires, numbered by functional partitions: Example for a three-phase motor start-stop circuit: Power supply end: 1Stop button SB1: 2Start button SB2 + KM1 auxiliary: 3Contactor coil KM1: 4Thermal relay FR1: 5This sequence ensures easy fault tracing and loop continuity.

Terminal Blocks and Cross-

Cabinet Cables

Terminal blocks are labeled by number (e.g., XT1: 1 for terminal 1 of block XT1). Cross-cabinet cables must have consistent numbering at both ends (e.g., XT1: 10 ↔ XT2: 10) to maintain traceability. Color Coding and StandardsIEC 60446 and IEC 60445 provide global guidelines for wire identification, including color codes, terminal labeling, and functional symbols.

Standard colors: light blue for neutral, green-yellow for protective earth. Alternative identification methods (numbering, markers, functional labels) are allowed if clearly applied, ensuring compliance even without standard colors.

Practical Tips

Use a label printer to attach wire numbers 10 cm from terminals to avoid covering wire cores. Verify numbers against schematics and terminal diagrams. Ensure all personnel follow safety protocols (insulating gloves, shoes, goggles) when working inside cabinets.

Summary

Wire numbering in intelligent power distribution cabinets should be systematic, standardized, and traceable, combining unique identifiers, readable labels, functional correspondence, and adherence to IEC standards. Proper implementation improves safety, maintenance efficiency, and operational reliability.

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Article Content

Identification Rules for Wire Numbering in Power Distribution Cabinets

Wires in the power distribution cabinet are classified into "main circuit (primary circuit)" and "control circuit (secondary circuit)", with different numbering rules that need to be marked

How to distinguish the wire numbers on the distribution cabinet?

In the distribution cabinet, the distinction of wire numbers is mainly achieved through **numbering rules, marking positions, functional grouping**, etc., with the aim of facilitating installation, maintenance,

Rapid Identification of Wires in Distribution Cabinets

During new cabinet design, route wires in advance according to national standard color codes and numbering rules, and print labels simultaneously to avoid rework later.

ENA TS 50-19 Technical Specification | PDF | Electrical Wiring

The document is the Technical Specification 50-19 issued by the Energy Networks Association, which outlines a standardized system for identifying small wiring in transformers and switchgear.

Wiring color identification in control cabinets under IEC 60445

This article addresses a common question regarding wire color usage and labeling in Robotiq control cabinets, particularly in installations governed by IEC 60445 standards in Europe.

The Meaning of Secondary Line Numbers in Distribution Cabinets

Secondary line numbers serve as the “language system” of distribution cabinets, transforming complex circuit connections into a recognizable symbolic system through standardized

How to Identify Wire Numbers in a Distribution Cabinet

Video Description: □□ Confused about identifying wire numbers in your distribution cabinet? In this video, we''ll show you how to identify and label wire numbers inside a...

Wire Tag Guide: Industrial Cable Identification That Works

Wire tag explained for industrial panels and machines. Learn how proper cable identification reduces wiring errors and speeds maintenance.

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A Capella: A Unique Compilation | PDF | Wellness

This document contains a long list of words beginning with "ab-" or "ac-". It does not appear to be a coherent text, but rather a collection of unrelated terms.

Full text of "NEW"

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Circuit Numbering and Labeling for Electrical Equipment

LLNL-MI-823076 This standard describes requirements for numbering and labeling of real property electrical distribution equipment, circuits, and site lighting at Lawrence Livermore National Laboratory.

Identification of Wire Numbers in Electrical Control Cabinets

1. **Basic Composition and Rules of Wire Numbers** - **Number - based Numbering Method** - The most common is pure number numbering. Generally, numbers...

CONTROL CABINET WIRING

This guide will give you and overview of the most popular RS PRO parts for professional wiring of a control cabinet. Starting from bootlace ferrules to the right stripping and crimping tools, to cable

Rapid Identification of Wires in Distribution Cabinets

The core principle for rapid identification of wires in distribution cabinets is as follows: conduct an initial judgment according to standard color codes + numbering rules first, then verify with

Electrical Identification

Guidelines for Naming Power Distribution System Components The purpose of this standard is to establish consistency in the naming of components in the electrical distribution system and to allow

Electrical Control Circuit Numbering Rules

3. Detailed Rules for DC Circuit Numbering Different Uses, Different Ranges: Different ranges of numbers are used for different purposes. For example, control and protection circuits use

IEEE 525-2007_accepted

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1.2 Purpose The purpose of this guide is to provide guidance to the substation engineer in established practices for the application and installation of metallic and optical cables in electric power

The Meaning of Secondary Line Numbers in Distribution Cabinets

S econdary line numbers in distribution cabinets are numbering systems used to identify the connection relationships of wires in secondary circuits (control, protection, measurement, signal,

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

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