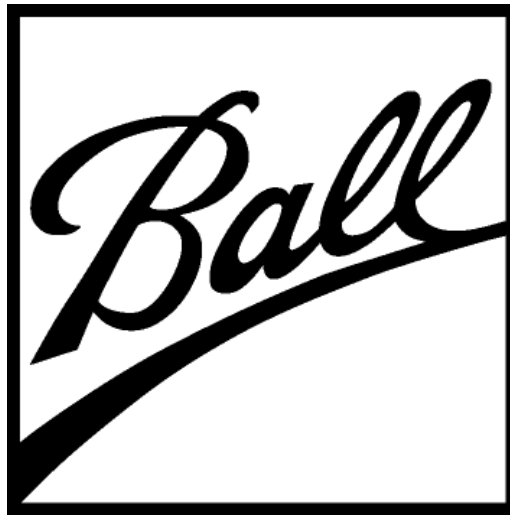


Ball Aerospace

Facilities Guidelines & Standards



Conduit and Wire: Colors, Sizes, and Labeling

Revision 0



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Section 1 – Summary

1. This design guideline aims to ensure consistency for all electrical conduit colors, labels, and sizes, and identification for electrical wire color-coding. All circuits, raceways, and conduits shall be color-coded, labeled, and sized to match the appropriate system type.

Section 2 – Identification of Conduits

- 2.1. Conduit identification labels shall be represented where conduits penetrate electrical equipment including, but not limited to, switchgear, switchboards, panelboards, transfer switches, disconnect switches, transformers, motor starters, motor control centers, etc.
- 2.2. Conduit shall be color-coded to match the appropriate system type.
- 2.3. Conduit labels shall include circuit number, feeder identification, and voltage.

Section 3 – Electrical Conduit Color, Label, and Size Identification

3.1. General

- 3.1.1. Conduit shall be designated by system type, identified by color, and labeled with correct markings included in this section.
- 3.1.2. Provide separate raceway systems for each of the following:
 - 3.1.2..1. Lighting
 - 3.1.2..2. Power Distribution
 - 3.1.2..3. Communications and Data
 - 3.1.2..4. Emergency Systems: Life Safety and Standby
 - 3.1.2..4.1. Lighting
 - 3.1.2..4.2. Power Distribution
 - 3.1.2..5. Fire Alarm
 - 3.1.2..6. Building Automation Systems (BAS)



3.2. Conduit Color Code

3.2.1. Apply the following color designations:

System Type	Conduit Color
Normal Power	No color
Emergency Power	Yellow
Standby Power	Yellow
Fire Alarm	Red
BAS/Temperature Control	Green
Data and Telephone System	Blue
Building Security (excluding classified security)	Purple

3.3. Conduit Labeling

3.3.1. Adhesive marking labels for exposed raceway shall be identified by pre-printed flexible, self-adhesive labels indicating voltage and service type (Emergency, Lighting, Power AC/DC, Communications, Control, Fire, HVAC).

3.3.2. Apply the following identification for conduit labeling:

System Type	Labeling
Label size for raceways	1 inch high by 12 inches long (minimum) with 5/8-inch minimum height letters.
Normal power 600 Volts and Below	White letters on black background indicating source equipment designation, circuit number(s), and voltage.
Emergency and Standby Power 600 Volts or below	Black letters on yellow background indicating source equipment designation, circuit number(s), and voltage for each branch.
Fire Alarm	White letters on a red background.
Controls	White letters on blue background.
Ground	White letters on a green background.
Building Alarms	Orange letters on white background.

3.4. Conduit Size

3.4.1. Conduit shall be sized per drawings. If the conduit size is not given on the drawings, the conduit shall be sized in accordance with NEC based on the number of conductors enclosed plus a parity-sized equipment ground conductor.



Section 4 – Wire Color-Coding

4. General

4.1.1. The following color-coding shall be represented on all feeders, branch circuits, and distribution conductors and shall include the correct phase type and identification throughout the entire electrical system.

4.1.2. Wire shall be identified with:

- 4.1.2.1. Phase tape near each terminal connection point.
- 4.1.2.2. Color wire.

4.2. AC Wire Color-Coding

4.2.1. All individual conductors shall be color-coded as noted below.

Conductor	Voltage (120/208V)	Voltage (277/480V)
Phase A	Black	Brown
Phase B	Red	Orange
Phase C	Blue	Yellow
Neutral	White	Gray
Ground	Green	Green
Protected Earth Ground	Bare, Green/Yellow	Bare, Green/Yellow

4.1.4. Feeders for all new construction shall have color-coded phase identification to all junction boxes and shall have color-coded insulation for phase designation. Where the proper color wire insulation cannot be obtained, black insulation shall be used, and conductors shall be coded with plastic vinyl tape, 3M #190-A or equivalent.

4.3. DC/ Control Wire Color-Coding

4.3.1. Branch circuits and control systems being supplied from DC circuits or low voltage conductors shall be properly phased and identified throughout the entire electrical system.

4.3.2. All individual conductors shall be color-coded as noted below.

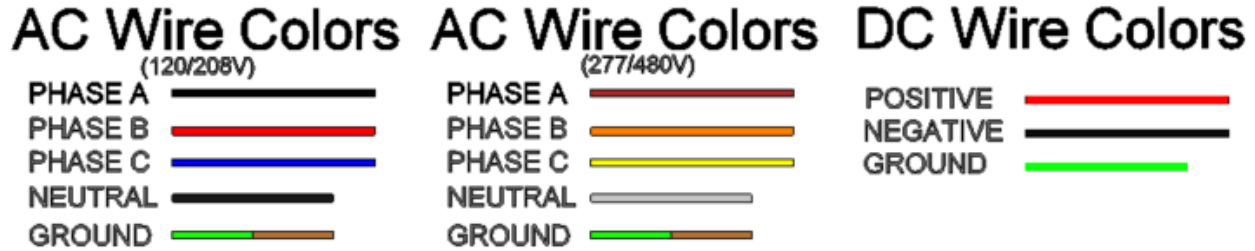
Conductor	Voltage	Color
Positive	12V, 24V	Red
Negative	0V	Black
Ground	0V	Green

4.2.3. Conductors shall be identified by polarity at all terminals, connections, and splice points by properly marked tape, tagging, or other approved means.



Supplemental Document Information

The following resource documents should be referenced for the execution of the standards and guidelines described above.



Document Number	Document Title

Revision Log

Revision	Release Date	Description of Changes
0	08/01/2022	Initial Release