Cable Labeling for Audiovisual Systems
AVIXA F501.01:2015 (Formerly INFOCOMM F501.01:2015)
Cable Labeling for Audiovisual Systems (CLAS)

This Standard has been re-published to replace the InfoComm International® name with the association’s new name, AVIXA™ (Audiovisual and Integrated Experience Association), but all content remains the same.

Abstract
This Standard defines requirements for audiovisual system cable labeling for a variety of venues. The Standard provides requirements for easy identification of all power and signal paths in a completed audiovisual system to aid in operation, support, maintenance, and troubleshooting.

Keywords
audio, audiovisual cables, AV, cable, cable labeling, labeling control, labels, visual

ICS Code: 33.160

1. Scope, Purpose, and Application

1.1 This Standard defines requirements for labeling audiovisual system cabling in order to facilitate identification of each cable within an installed system. Planning for the use of this Standard should begin at the outset of the project and implementation shall be in conjunction with a fully-developed package of project documentation.

1.2 The audiovisual system cabling includes all ends of system cabling connected to all existing AV components or provided for future use (whether the cable is terminated or left unterminated) as defined in the project documentation. Typical use of the Standard applies to individual cables within the system. Any power cabling provided as part of the audiovisual system (e.g., within an equipment rack, desk, lectern) shall be labeled in accordance with this Standard. See Annex 1 for more information.

1.3 In the case of multi-core cables, multi-conductor cables, and cable harnesses, refer to the project documentation for labeling requirements for individual cables, cores, conductors, or harnesses.

1.4 This Standard can be used by all parties involved in the audiovisual system installation process including consultants, integrators, manufacturers, technology support staff, owners, and third-party verification agents to verify that audiovisual cabling in a system has been labeled and documented to enable ongoing support of the system.

1.5 This Standard also provides for improved ease-of-use and user experience through nomination of optional labeling requirements specific to cables with which users interact.

Exclusions

This Standard does not:

1.5.1 apply to temporary installations not intended for permanent retention.
1.5.2 apply to temporary labeling.
1.5.3 prescribe any particular numbering system to be used within the audiovisual system design and installation.
1.5.4 apply to labeling of items other than cables (e.g., connection panels, patch panels, face plates, table connections).
1.5.5 apply to mains power cabling not provided as part of the audiovisual systems installation. Typically, this would be permanent building power provided to socket outlets or other connections by electrical trades, and would be considered part of the fixed electrical installation.
2. Definitions

As used in this Standard, the following definitions apply:

2.1 AV components – items of passive or active equipment, cabling, connectors, panels, etc. that when assembled form the audiovisual system

2.2 Labeling system – materials applied to a cable that are used to provide identification and other information related to the cable to which it is applied

3. Requirements

3.1 There are two levels of data identified by this Standard: primary and secondary. The Standard identifies the required data elements for the primary label as well as optional elements.

3.2 The Standard also identifies optional data elements for both the primary and secondary labels. In all cases, all labels shall utilize the schema and its requirements as defined in the project documentation.

3.3 A defined schema shall be used to coordinate the informational content of all labels within a system. The Standard does not prescribe a specific schema to allow for meeting unique schema requirements of an entity. An informative example of possible key data points that may be included in a schema is provided in Annex 2 and additional data elements are shown in 3.7.1.

3.4 A defined schedule shall be used to store the information content of all labels within a system. The Standard does not prescribe a specific schedule. An informative example is provided in Annex 3.

3.5 Any temporary labeling shall be removed.

Cable Identification

3.6 Required Primary Data Element: Unique Identifier

3.6.1 The primary data element consists of a mandatory unique identifier and optional prefix/suffix information, providing the basis for identification of the cable.

3.6.2 Each cable shall have a unique identifier that shall be in alphanumeric format and readable without the aid of a machine. This identifier is determined by the schema identified in the project documentation. The numbering system should contain a consistent number of digits.

![Cable Numbering Schema](image)

*Figure 1 Example of labeling schema*

3.6.3 This unique identifier (primary data element) shall be placed on the first/top row of the label closest to the connector or cut end of the cable. The primary data element may be duplicated on subsequent rows to aid in legibility.
3.7 Unique Identifier Prefix and Suffix (optional)

3.7.1 Each unique identifier (primary data element) should have a prefix and/or suffix determined by the accompanying project documentation.

Examples:
- Signal type
- Cable type designation
- Room/floor/building number
- Location designation if cables extend to different locations
- Core/conductor designation

3.8 Optional Secondary Data Elements

Although not required by this Standard, secondary data elements provide additional information about the cable. If optional secondary data elements are used, they should be placed on subsequent rows or additional labels following the primary data elements.

3.8.1 Source-to-Destination Identifier
Source-to-Destination labeling aids identification of the signal path without requiring reference to other project documentation. Identifiers should contain unique, short elements for each location, piece of equipment, and/or I/O port.

3.8.2 User-Accessible Identifier
Cables that are intended to be accessible by the user of the system should have an additional identifier that assists the user in selecting the correct cable and connecting it to the required device.

3.8.3 The User-Accessible Identifier shall be placed anywhere within 75mm (2.95in) of the connector body and should feature one or more of the following elements to assist the user's selection:
- Color-coded band or bobble
- Icon relating to control system buttons/user interface
- Text describing connector function (e.g., HDMI, Laptop 1, or similar)

3.8.4 The User-Accessible Identifier font properties (e.g., font type, font size) do not need to be consistent with the Primary Cable Identifier font characteristics as defined in Section 3.9.3, but all User-Accessible Identifiers shall be consistent with one another.

3.8.5 Bar Code/Machine-Readable Identifier
Inclusion/addition of machine-readable identifiers is optional.

![Figure 2 Example of machine-readable label](AVC02471)

3.9 Characteristics of the Cable Labeling System
The cable labeling system shall feature specific characteristics for the following criteria:

3.9.1 Durability: The labeling system shall have a design life equal to or greater than the cable to which it is attached. The labeling system shall be capable of withstanding moisture, heat, ultraviolet light, chemical elements, scratches, abrasions, and other impacts that may routinely occur at the point of the cable installation.
3.9.2 Material: The labeling system shall be capable of receiving (or inherently include) machine-printed letters, numbers, and symbols and shall be installed according to the label manufacturer’s instructions to ensure the design life is achieved.

3.9.3 Legibility:
3.9.3.1 Text margins shall be a minimum of 1mm in the printable area.

3.9.3.2 Text shall not be obscured by any part of the labeling system.

3.9.3.3 Text on the label shall be machine-printed and shall meet the following requirements:

3.9.3.4 Text Height:
3.9.3.4.1 Primary data element: Text height shall be no less than 2.5mm
3.9.3.4.2 Secondary data elements: Text height shall be no less than 2.1mm

3.9.3.5 Text Characteristics:
3.9.3.5.1 Primary data element: Text shall be all capitals, non-italic. Bold is permitted.
3.9.3.5.2 Secondary data elements: Text shall be all capitals, non-bold, non-italic.

3.9.3.6 Text Color:
3.9.3.6.1 Text color shall present a high contrast to the background color of the label. See section 3.10.1.6 below.

3.9.3.7 Font:
3.9.3.7.1 Font shall be sans-serif.
3.9.3.7.2 Font width shall not be compressed or expanded.
3.9.4 Orientation:

3.9.4.1. The label text shall be parallel or perpendicular to the axis of the cable jacket and shall present the text so that it can be read from any angle without having to touch or twist the cable.

3.9.4.2. Text shall be in a continuous straight line with no variations in height, size, or angle as compared to the axis of the cable.

3.9.4.3. Labels consisting of multiple rings or parts shall be applied so that the text is aligned.

Location on cable:

3.9.5.1. The label(s) shall be located within a minimum of 25mm (approximately 1in) and a maximum of 300mm (12in) distance from the point where:

- the cable exits the connector or strain relief
- the outer jacket is removed
- a cut end of an unterminated cable exists

Figure 5 Placement of labels

3.9.5.2. Consideration shall be given to cable bundling and tie-bar mounting when placing the cable label in order to provide maximum visibility of the cable label on each cable.

3.9.5.3. Where a label positioned within 300mm (12in) of the connector cannot be easily viewed due to rack depth or other visual impediments, a second cable label with identical information shall be placed at a point on the cable where it is visible. Where multiple labels are required due to secondary data elements, the label closest to the connector shall provide the primary data elements and all other labels shall be positioned sequentially away from the first label, ensuring that all text shall be in the same alignment and orientation.

3.10 Consistency of the Cable Labels

3.10.1 Label Consistency:

3.10.1.1. All labels shall be constructed of a consistent material for primary data and consistent material for optional secondary data. The primary data material and optional secondary data materials are not required to be identical with one another, but primary elements shall all be consistent with one another, and secondary shall all be consistent with one another.

3.10.1.2. All primary labels shall be constructed with a single width. All secondary labels shall be a single width, but that width may differ from the primary label width as long as it is consistent within all secondary labels.

3.10.1.3. All labels shall be of sufficient height for the outer dimensions to meet the installation guidelines provided by the manufacturer.
3.10.1.4. In environments and applications where additional physical protection is required to preserve label integrity and readability for the specified design life, additional protective materials should be applied. In such cases, the additional materials shall be consistently applied to every label in the system.

3.10.1.5. All primary labels shall utilize the same font type, font size, font spacing, and margin spacing except in the case of user-accessible cable labeling. All secondary labels shall utilize the same font type, font size, font spacing, and margin spacing. The properties of the primary labels may differ from the secondary labels, but they shall be consistent within each label type.

3.10.1.6. Unless defined otherwise within the labeling schema, all text shall be the same color. Text color shall present a high contrast to the background color of the label. Black text on a white background is preferable, but where any other color scheme is used, a contrast of no less than 3:1 shall be achieved.

3.10.2 Label Application Consistency:
For each given application in the system, the cable label shall be applied:

3.10.2.1. At a consistent distance from the connector or blunt cut end of the cable (if intentionally left unterminated).

3.10.2.2. At a consistent orientation with respect to the direction of the text relative to the closest connector or blunt cut end.

3.10.2.3. Without any creasing, bubbling, smearing, distortion, misalignment, gaps or overlaps, and free from the presence of dust, dirt, or debris within the label or its protective materials.

Figure 6 Example of label consistency

3.11 All labels shall be applied according to the label manufacturer’s guidelines.

4 Referenced Publications


ISO 9241 Ergonomics of human-system interaction

5 Annexes

ANNEX 1 Example of Power Cables Covered by the Standard (informative)
ANNEX 2 Example Data Elements and Schedule for Labeling Schema (informative)

<table>
<thead>
<tr>
<th>Label-ID</th>
<th>CODE</th>
<th>APP</th>
<th>SIGNAL</th>
<th>TYPE</th>
<th>RATING</th>
<th>AWG</th>
<th>COND</th>
<th>COLOR</th>
<th>MANU</th>
<th>Model</th>
<th>PART#</th>
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<td>SPEAKER</td>
<td>Speaker</td>
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<td>Plenum</td>
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<td>Non-Plenum</td>
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</table>

In this example, the “Label-ID” column is the prefix for the Primary Data Element. For example, the label on the “first” speaker cable in the system could be “S2P-0001”, indicating that it is a 2 conductor, 16 gauge, plenum rated UTP cable referencing the manufacturer, model and part number (links to cutsheet).

ANNEX 3 Example of Font Sizes (informative)

This is a comparison of the text density for 2 common wrap-around label sizes using CLAS guidelines.

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Please direct any questions or comments to standards@avixa.org. For addenda or errata please visit avixa.org/standards.