ANSI/TIA/EIA-570-A Revisited
Residential Telecommunications Cabling Standard *(Draft 6/22/99)*

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ANSI/TIA/EIA-570-A Revisited

• 1.1 Purpose
  – “...standardize requirements for residential telecommunications cabling.”
  – “The Cabling infrastructure specifications within this Standard are intended to include support for security, audio, television, sensors, alarms and intercom.”
  – “This Standard is intended to be implemented for new construction, additions, and remodeled single and multi-tenant buildings.”
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Terminology

Auxiliary disconnect outlet:
A device usually located with the tenant or living unit used to terminate the ADO or backbone cable
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Terminology

Cross-connect:
A facility enabling the termination of cabling elements and their interconnection or cross-connection
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Terminology

Cross-connection:
A connection scheme between cabling runs, subsystems, and equipment using patch cords or jumpers that attach to connecting hardware on each end.
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Terminology

Demarcation point:
A point where the operational control or ownership changes
Terminology

Distribution device:
A facility located with the building unit for interconnection or cross-connection
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Terminology

Distribution device cord:
A telecommunications cord that extends between the distribution device and the auxiliary disconnect outlet.
Terminology

Entrance bridge:
A terminal strip that is an optional component in a network interface device, and is provided for the connection of ADO cable
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Terminology

Modular plug:
A male telecommunications connector for cable or cords that may be keyed or unkeyed and may have six or eight contact positions—not all the positions need to be equipped with contacts
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Terminology

Network interface device:
The point of connection between networks
Terminology

Outlet adapters:
Adapters mounted externally of the telecommunications outlet, to cause a change of configuration
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Terminology

Passive cross-connect:
A facility enabling the termination of cable elements and their interconnection or cross-connection by means of jumpers or patch cords
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Terminology

Pathway:
A facility for the placement of telecommunications cable
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Terminology

Residential gateway:
A device that enables communication among networks in the residence and between residential networks and service providers’ networks
Terminology

Topology:
The physical or logical arrangement of a telecommunications system
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• Grades of residential cabling
  – Grade 1
    • One (1) 4-pair UTP cable and connectors
      Category 3 or higher
      – Use of Category 5 cabling is recommended to facilitate future upgrading to grade 2
    • One (1) series 6 cable (75Ω RG-6 Coax)
    • One (1) each of the cables to each outlet
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• Grades of residential cabling
  – Grade 2
    • Two (2) 4-pair UTP cable and connectors Category 5 or higher
      – Use of category 5E cabling is recommended
    • Two (2) series 6 cable (75Ω RG-6 Coax)
    • Optional 2-fiber optical fiber cabling
      – 50/125µ or 62.5/125µ MM
    • Two (2) each of the cables to each outlet
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### Recognized residential cabling by grade

<table>
<thead>
<tr>
<th>Cabling</th>
<th>Grade 1</th>
<th>Grade 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-pair UTP</td>
<td>Category 3; Category 5 cable recommended</td>
<td>Category 5; Category 5e cable recommended</td>
</tr>
<tr>
<td>75Ω coax</td>
<td>X</td>
<td>X (optional)</td>
</tr>
<tr>
<td>Fiber</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
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### Typical residential services supported by grade

<table>
<thead>
<tr>
<th>Service</th>
<th>Grade 1</th>
<th>Grade 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Television</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Data</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Multimedia</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
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Typical 2-story home
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Typical single residence cabling system components
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Entrance facility/demarcation point

Typical cabling system components for a single residential unit
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Auxiliary disconnect outlet

Legend:
ADO – Auxiliary Disconnect Outlet

Typical cabling system components for a single residential unit
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Distribution device

Legend:
ADO – Auxiliary Disconnect Outlet
DD – Distribution Device

Typical cabling system components for a single residential unit
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Horizontal cabling

Legend:
ADO – Auxiliary Disconnect Outlet
DD – Distribution Device

Typical cabling system components for a single residential unit
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Work stations and cabling

Legend:
ADO – Auxiliary Disconnect Outlet
DD – Distribution Device

Typical cabling system components for a single residential unit
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Full system installation

Legend:
ADO – Auxiliary Disconnect Outlet
DD – Distribution Device

Typical cabling system components for a single residential unit
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Space allocation for distribution device and associated equipment

<table>
<thead>
<tr>
<th>Number Of Outlet/connectors</th>
<th>Grade 1</th>
<th>Grade 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 8</td>
<td>410 mm (16 in) wide 610 mm (24 in) high</td>
<td>815 mm (32 in) wide 915 mm (36 in) high</td>
</tr>
<tr>
<td>9 to 16</td>
<td>410 mm (16 in) wide 915 mm (36 in) high</td>
<td>815 mm (32 in) wide 915 mm (36 in) high</td>
</tr>
<tr>
<td>17 to 24</td>
<td>410 mm (16 in) wide 1220 mm (48 in) high</td>
<td>815 mm (32 in) wide 1220 mm (48 in) high</td>
</tr>
<tr>
<td>More than 24</td>
<td>410 mm (16 in) wide 1525 mm (60 in) high</td>
<td>815 mm (32 in) wide 1525 mm (60 in) high</td>
</tr>
</tbody>
</table>
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• Electrical power requirements
  – Grade 1
    • Recommended
  – Grade 2
    • Required
      – 15 A, 120 VAC, non-switchable duplex receptacle
      – Mounted within 1.5 m (5 ft) of the distribution device
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- Recognized cables
  - 100Ω 4-Pair UTP ANSI/TIA/EIA-568-A (A-5)
  - 50/125 µm multimode fiber
  - 62.5/125 µm multimode fiber
  - Singlemode fiber (for special applications only)
  - Series 6 coaxial
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• Topology
  – Outlet cabling shall be a star topology
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• Topology, fixed devices
  – Devices such as intercom, security system
    keypads, sensors, and smoke detectors
  – May be wired in a star, loop, or daisy-chain
    • Per equipment manufacturer’s instructions
  – Can be hard wired
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• Outlet locations
  – A minimum of one (1) outlet to:
    • Kitchen
    • Each bedroom
    • Family/great room
    • Den/study
  – Additional outlets should be provided on:
    • walls exceeding 3.7 m (12 ft) or more
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- Telecommunications outlet/connector
  - Compatible with the media provided
  - Application-specific electrical components (e.g. splitters, amplifiers, impedance matching devices) shall be placed external to the telecommunications outlet/connector
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Multitenant campus infrastructure
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Multistory with floor serving terminals
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Campus backbone
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Multitenant cabling system components
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### Floor serving terminal requirements

<table>
<thead>
<tr>
<th></th>
<th>Grade 1</th>
<th>Grade 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum space for first five tenant units</td>
<td>370 mm (14.5 in) wide 610 mm (24 in) high</td>
<td>775 mm (30.5 in) wide 610 mm (24 in) high</td>
</tr>
<tr>
<td>Minimum additional space per tenant unit</td>
<td>32270 sq. mm (50 sq.in)</td>
<td>64540 sq. mm (100 sq.in)</td>
</tr>
</tbody>
</table>
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• Modular connectors
  – Eight-position modular outlet/connector
    • Must comply with ANSI/TIA/EIA-568-A
    • Designation is T568A
  – Six-position modular connector (plug only)
    • Shall be 6 mm (0.238 in) to 6.2 mm (0.243 in) to prevent damage to the eight-position outlet/connector
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8-pin modular jack/plug
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Coax connectors

<table>
<thead>
<tr>
<th>Cable Type</th>
<th>Backbone cable</th>
<th>Outlet cable</th>
<th>Connector type</th>
<th>Patch/Equipment cord</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series 59</td>
<td>No</td>
<td>No</td>
<td>F</td>
<td>Yes</td>
</tr>
<tr>
<td>Series 6</td>
<td>Yes</td>
<td>Yes</td>
<td>F</td>
<td>Yes</td>
</tr>
<tr>
<td>Series 11</td>
<td>Yes</td>
<td>Yes</td>
<td>F</td>
<td>No</td>
</tr>
<tr>
<td>Hard-line</td>
<td>Yes</td>
<td>No</td>
<td>F or N</td>
<td>No</td>
</tr>
</tbody>
</table>
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• Grounding and bonding
  – Must comply with all local, state, and federal codes
  – ANSI/TIA/EIA-607
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Grounding and bonding
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• 100Ω UTP cable testing
  – Category 5 cable
    • Meet requirements of TIA/EIA TSB-67
      – Wire map
      – Length
      – Attenuation
      – Near-end crosstalk (NEXT) loss
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• 100Ω UTP cable testing
  – Category 5e cable
    • Additional field tests for Category 5e cable
      – Power sum near-end crosstalk (PSNEXT) loss
      – Power sum equal level far-end crosstalk (PSELFEXT)
      – Return loss
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Basic link test

Basic link test configuration

NOTE - Test cords are up to 2 m (79 in) in length.
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Channel test
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- Optical fiber testing
  - Shall meet the requirements specified in ANSI/EIA/TIA-526-14A
  - Shall be completed using method B, one jumper reference
    - Length
    - Polarity
    - Attenuation
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• 75Ω coaxial cable testing
  – Continuity for center conductor and shield
  – Attenuation
  – Length
  – Any local, state, and federal required testing
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Auxiliary disconnect outlet
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Auxiliary disconnect outlet
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Auxiliary disconnect outlet
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Distribution device (coax)
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Distribution device
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Distribution device (100Ω UTP)
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Distribution device (100Ω UTP)
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Distribution device cable
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Wall mounted rack
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Pre-manufactured solutions
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Pre-manufactured solutions
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Pre-manufactured solutions
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Outlets
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Surge, lightning, and spike protection
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Surge, lightning, and spike protection
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