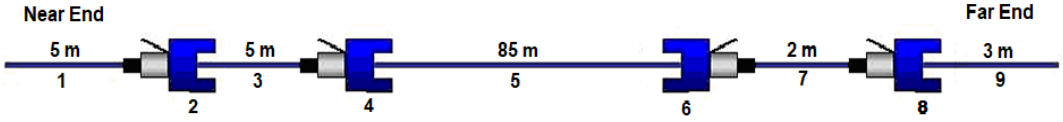
Test Verification of Conformity

On the basis of the tests undertaken, the sample(s) of the below product have been found to comply with the requirements of the referenced standard and sections at the time the tests were carried out. This verification is part of the full test report(s) and should be read in conjunction with them.

Applicant Name & Address:	CommScope, Inc. of North Carolina 3642 US Hwy 70 East Claremont NC 28610 USA
Product Description:	Category 6A (Class E_A), 4-connector shielded channel as illustrated below
Standard(s):	*ANSI/TIA-568.2-D-2018, Balanced Twisted-Pair Telecommunications Cabling and Components Standard, dated September 2018 (Section 6.3: Channel transmission performance, for internal parameters)* *ISO/IEC 11801-1 Edition 1.0, Information technology – Generic cabling for customer premises - Part 1: General requirements, dated November 2017 (Section 6.3: Balanced Cabling Transmission Performance, for internal parameters)* *EN 50173-1, Information technology - Generic cabling systems - Part 1: General Requirements, dated June 2018 (Section 5.2: Channel transmission performance, for internal parameters)*
Verification Issuing Office Name & Address:	Intertek Testing Services NA, Inc. 3933 US Route 11, Cortland, NY 13045
Test Report Number(s):	104599315CRT-001a, 104599315CRT-001b and 104599315CRT-001c



Component Id	Manufacturer	Description	Part number
1	CommScope	S/FTP LSZH modular cord	NPC6ASZDB-BL017
2, 4, 6, 8	CommScope	Modular jack	SLX 6AS
3	CommScope	F/FTP LSZH modular cord	NCC44SZJB
5	CommScope	F/FTP LSZH Horizontal cable	CS44Z3
7	CommScope	S/FTP LSZH modular cord	NPC6ASZDB-BL007
9	CommScope	S/FTP LSZH modular cord	NPC6ASZDB-BL010

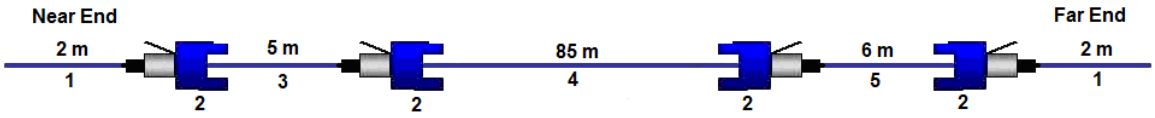
Antoine Pelletier

Signature
Name: Antoine Pelletier
Position: Project Engineer
Date: 25-February-2021

Test Verification of Conformity

On the basis of the tests undertaken, the sample(s) of the below product have been found to comply with the requirements of the referenced standard and sections at the time the tests were carried out. This verification is part of the full test report(s) and should be read in conjunction with them.

Applicant Name & Address:	CommScope, Inc. of North Carolina 3642 US Hwy 70 East Claremont NC 28610 USA
Product Description:	Class E_A 4-connector shielded channel as illustrated below
Standard(s):	*ISO/IEC 11801-1 Information Technology - Generic cabling for customer premises – Part 1: General requirements, First edition dated November 2017* (Section 6.3: Balanced Cabling Transmission Performance, for internal parameters)
Verification Issuing Office Name & Address:	Intertek Testing Services NA, Inc. 3933 US Route 11, Cortland, NY 13045
Test Report Number(s):	103621913CRT-003a



Component Id	Manufacturer	Description	Part number
1	CommScope	2-meter cord	CA111K2-0CM002
2	CommScope	Jack	SLX 6A
3	CommScope	5-meter cord	CA111K2-0CM005
4	CommScope	F/FTP LSZH Horizontal cable	CS44Z3
5	CommScope	6-meter cord	CA111K2-0CM006

Antoine Pelletier

Signature

Name: Antoine Pelletier
Position: Project Engineer
Date: 31-December-2018

Test Verification of Conformity

On the basis of the tests undertaken, the sample(s) of the below product have been found to comply with the requirements of the referenced standard and sections at the time the tests were carried out. This verification is part of the full test report(s) and should be read in conjunction with them.

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Product Description:	Class E_A 4-connector shielded channel as illustrated below
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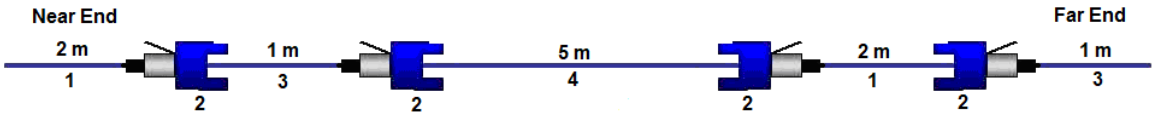
Verification Issuing Office Name & Address:	Intertek Testing Services NA, Inc. 3933 US Route 11, Cortland, NY 13045
Test Report Number(s):	103621913CRT-003c



Component Id	Manufacturer	Description	Part number
1	CommScope	2-meter cord	CA111K2-0CM002
2	CommScope	Jack	SLX 6A
3	CommScope	1-meter cord	CA111K2-0CM005
4	CommScope	F/FTP LSZH Horizontal cable	CS44Z3

Antoine Pelletier

Signature

Name: Antoine Pelletier
Position: Project Engineer
Date: 31-December-2018

Test Verification of Conformity

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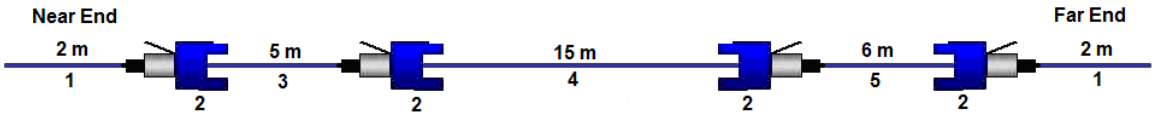
Product Description:	Class E_A 4-connector shielded channel as illustrated below
Standard(s):	*ISO/IEC 11801-1 Information Technology - Generic cabling for customer premises – Part 1: General requirements, First edition dated November 2017* (Section 6.3: Balanced Cabling Transmission Performance, for internal parameters)
Verification Issuing Office Name & Address:	Intertek Testing Services NA, Inc. 3933 US Route 11, Cortland, NY 13045
Test Report Number(s):	103621913CRT-003b



Component Id	Manufacturer	Description	Part number
1	CommScope	2-meter cord	CA111K2-0CM002
2	CommScope	Jack	SLX 6A
3	CommScope	5-meter cord	CA111K2-0CM005
4	CommScope	F/FTP LSZH Horizontal cable	CS44Z3
5	CommScope	6-meter cord	CA111K2-0CM006

Antoine Pelletier

Signature

Name: Antoine Pelletier
Position: Project Engineer
Date: 31-December-2018

Test Verification of Conformity

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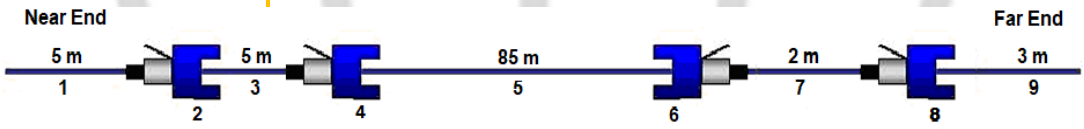
Product Description:	Class E_A, 4-connector shielded channel as illustrated below
Standard(s):	*ISO/IEC 11801-1 Edition 1.0, Information technology – Generic cabling for customer premises - Part 1: General requirements, dated November 2017 (Section 6.3: Balanced Cabling Transmission Performance, for internal parameters)* *EN 50173-1, Information technology - Generic cabling systems - Part 1: General Requirements, dated June 2018 (Section 5.2: Channel transmission performance, for internal parameters)*
Verification Issuing Office Name & Address:	Intertek Testing Services NA, Inc. 3933 US Route 11, Cortland, NY 13045
Test Report Number(s):	104449963CRT-001a and 104449963CRT-001b



Component Id	Manufacturer	Description	Part number
1, 3	CommScope	LSZH modular cord	NPC6ASVDB-BK018F
2, 4, 6, 8	CommScope	Modular jack	SLX 6AS
5	CommScope	F/FTP LSZH Horizontal cable	3296A
7	CommScope	LSZH modular cord	NPC6ASVDB-BK007F
9	CommScope	LSZH modular cord	NPC6ASVDB-BK010F

Antoine Pelletier

Signature
Name: Antoine Pelletier
Position: Project Engineer
Date: 30-September-2020

Test Verification of Conformity

On the basis of the tests undertaken, the sample(s) of the below product have been found to comply with the requirements of the referenced standard and sections at the time the tests were carried out. This verification is part of the full test report(s) and should be read in conjunction with them.

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Product Description:	Class E_A, 4-connector shielded channel as illustrated below
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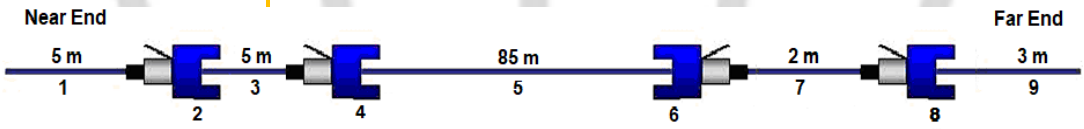
Verification Issuing Office Name & Address:	Intertek Testing Services NA, Inc. 3933 US Route 11, Cortland, NY 13045
Test Report Number(s):	104449963CRT-001c and 104449963CRT-001d



Component Id	Manufacturer	Description	Part number
1, 3	CommScope	LSZH modular cord	NPC6ASVDB-BK018F
2, 4, 6, 8	CommScope	Modular jack	SLX 6AS
5	CommScope	S/FTP LSZH Horizontal cable	1711910-1
7	CommScope	LSZH modular cord	NPC6ASVDB-BK007F
9	CommScope	LSZH modular cord	NPC6ASVDB-BK010F

Antoine Pelletier

Signature
Name: Antoine Pelletier
Position: Project Engineer
Date: 30-September-2020

Test Verification of Conformity

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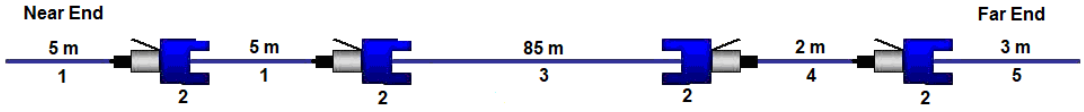
Product Description:	Category 6A (Class E_A) 4-connector shielded channel as illustrated below
Standard(s):	*ANSI/TIA-568.2-D-2018, Balanced Twisted-Pair Telecommunications Cabling and Components Standard, dated September 2018 (Section 6.3: Channel Transmission Performance, for internal parameters)* *ISO/IEC 11801-1 Information Technology - Generic cabling for customer premises – Part 1: General requirements, First edition dated November 2017* (Section 6.3: Balanced Cabling Transmission Performance, for internal parameters)
Verification Issuing Office Name & Address:	Intertek Testing Services NA, Inc. 3933 US Route 11, Cortland, NY 13045
Test Report Number(s):	103976504CRT-001c and 103976504CRT-001d



Component Id	Manufacturer	Description	Part number
1	CommScope	5 m patch cord	NPC6ASZDB-BK005M
2	CommScope	NETCONNECT AMP-TWIST SLX 6AS Jack	2153449-4
3	CommScope	2 m patch cord	NPC6ASZDB-BK002M
4	CommScope	F/UTP CM Horizontal Cable	CS44CM F/UTP
5	CommScope	3 m patch cord	NPC6ASZDB-BK003M

Antoine Pelletier

Signature

Name: Antoine Pelletier
Position: Project Engineer
Date: 21-June-2019

Test Verification of Conformity

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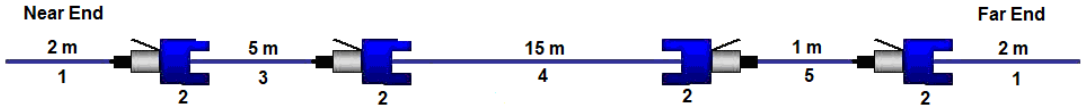
Verification Issuing Office Name & Address:	Intertek Testing Services NA, Inc. 3933 US Route 11, Cortland, NY 13045
Test Report Number(s):	103976504CRT-001k and 103976504CRT-001l



Component Id	Manufacturer	Description	Part number
1	CommScope	2 m patch cord	NPC6ASZDB-BK002M
2	CommScope	NETCONNECT AMP-TWIST SLX 6AS Jack	2153449-4
3	CommScope	5 m patch cord	NPC6ASZDB-BK005M
4	CommScope	F/UTP LSZH Horizontal Cable	CS44Z1 F/UTP
5	CommScope	1 m patch cord	NPC6ASZDB-BK001M

Antoine Pelletier

Signature

Name: Antoine Pelletier
Position: Project Engineer
Date: 21-June-2019

MODULAR RJ45 JACKS – SHIELDED

1 Document Revision History

Revision	Date	Description	Author(s)
A	27-Apr-2018	Initial Release	P. Pepe
B	10May2018	Changes per 40065197CMO	L Smith

2 SCOPE

2.1 Content

This specification covers performance, tests and quality requirements for **AMP-TWIST** 6 and 6A SLX series shielded Modular Jacks for Cat 6 & 6A component, Class E systems and Class EA systems (min length), used to provide a universal connection interface between premise wiring of an office and the user's network of communications equipment (for data and voice networking systems).

These assemblies are designed for installation into various outlet faceplates, surface mount boxes, panels, and other similar type fittings. Jacks incorporate IDC terminal for terminating twisted pair communications cable. Jacks will accommodate:

Solid conductor Cable range (AWG)	**Stranded** conductor Cable range (AWG)	**Conductor insulation** Diameter (mm)	**Cable diameter** Range (mm)
22-23-24-26	24-26	0.8 -1.60	5.0 – 8.5

Table 1: Cable types accommodated by jack connector

2.2 Qualification

When tests are performed on the subject product line, procedures specified in Table 2 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

3 APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

3.1 CommScope® Documents

- 501-93052: Qualification Test Report
- 860638777: Instruction sheet

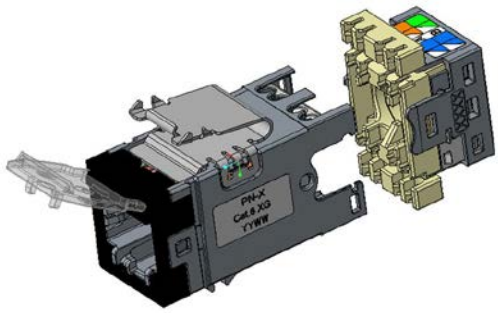
3.2 Industry Documents

- ISO/IEC 11801: Edition 2.2: Generic Cabling for Customer Premises
- ISO/IEC 60603-7 Edition 3.1: Detail Specification for 8-way, Unshielded, Free and Fixed Connectors
- ISO/IEC 60603-7-1 Edition 3.0: Detail Specification for 8-way, Shielded, Free and Fixed Connectors
- ISO/IEC 60603-7-5 Edition 3.0: Detail Specification for 8-way, Shielded, Free and Fixed Connectors, for data transmission up to 250MHz
- ISO/IEC 60603-7-51 Edition 3.0: Detail Specification for 8-way, Shielded, Free and Fixed Connectors, for data transmission up to 500MHz
- ANSI/TIA-568-C.2: Balanced Twisted-Pair Telecommunications Cabling and Components Standards
- IEC 60352-4 Edition 1.0: Solderless non-accessible insulation displacement Connections- General Requirements, Test Methods and Practical Guidance
- IEC 60512: Basic Testing Procedures and Measuring Methods for Electromechanical Components for Electronic Equipment (as indicated in Table 2)
- IEC 60068: Basic Environmental Testing Procedures (as indicated in Table 2)
- UL1863 4th Edition: Communications-Circuit Accessories, Current Carrying Parts.

4 REQUIREMENTS

4.1 Design and Construction

Product shall be of the design, construction and physical dimensions specified on the applicable product drawing.



Product view: *Product Part Number 2153365-x, for reference only*

4.2 Materials

Materials used in the construction of this product shall be as specified on the applicable product drawing.

4.3 Wire Range

- See specific Product Specification sheet for appropriate cable dimensions compatibility.

4.4 Ratings

- Voltage: 150 volts AC maximum
- Current: Signal application only, 0.75 ampere maximum
- Testing Temperature: -40 to 70°C
- Operating Temperature: -10 to 60°C.

4.5 Tooling

Connectors shall be terminated using tooling shown in the application specification and instruction sheets appropriate for each part number.

4.6 Performance and Test Description

Product is designed to meet the electrical, mechanical, and environmental performance requirements specified in Table 2.
Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

<table>
<tr><th>Test description</th><th>Requirement</th><th>Procedure</th></tr>
<tr><td colspan="3">EXAMINATION</td></tr>
<tr><td>Visual examination of product</td><td>ISO/IEC 11801, Annex C
There shall be no defect that would impair normal operation.</td><td>IEC 60512-1-1
Visual inspection.</td></tr>
<tr><td colspan="3">ELECTRICAL</td></tr>
<tr><td>Contact resistance, Plug/Jack interface</td><td>IEC 60603-7, Section 6.4.4
IEC 60603-7-1, Section 6.4.4
Initial:
Signal contacts (R_B): 20 mΩ max.
Shield contacts: 20 mΩ max.

Change from initial after conditioning:
Signal contacts (ΔR_{AD}): 20 mΩ max.
Shield contacts (ΔR_{AD}): 20 mΩ max.</td><td>IEC 60512-2-1
Derived by measuring the total voltage drop of the mated connectors and terminated wire, then subtracting the average bulk resistance of these components. Test voltage shall not exceed 20 mV d.c. or peak voltage a.c. and test current shall not exceed 100 mA, a.c. or d.c.</td></tr>
<tr><td>Contact resistance, IDC/wire interface</td><td>IEC 60352-4, Section 3, Table 2

A = initial max resistance mΩ
B = max change allowed mΩ
<table>
<tr><th colspan="2">Wire</th><th>A</th><th>B</th></tr>
<tr><td rowspan="2">Solid</td><td>Plated</td><td>5</td><td>1</td></tr>
<tr><td>Un-plated</td><td>10</td><td>1</td></tr>
<tr><td rowspan="2">Stranded</td><td>Plated</td><td>10</td><td>2</td></tr>
<tr><td>Un-plated</td><td>10</td><td>5</td></tr>
</table>
IDCs plated</td><td>IEC 60512-2-1
Derived by measuring the voltage drop between the IDC contact and terminated wire.
Test voltage shall not exceed 20 mV d.c. or peak voltage a.c. and test current shall not exceed 100 mA, a.c. or d.c.</td></tr>
<tr><td>Input to output DC resistance</td><td>IEC 60603-7, Section 6.4.5.
TIA-568-C.2, Section 6.8.1.
Signal conductors (R_{AD}): 200 mΩ max.

IEC 60603-7-1, Section 6.4.5
Shield (R_{AD}): 100 mΩ max.</td><td>IEC 60512-2-1.
Derived by measuring the total voltage drop of terminated plugs mated to the cable terminated in the jacks.</td></tr>
<tr><td>Input to output DC resistance for mechanical test in sequence B6 (Shield).</td><td>Shield delta resistance 100 m ohm max.
delta R = | R(initial) - R(test) |</td><td>IEC 60512-2-1
Derived by measuring the total voltage drop of terminated
plug mated to the cable terminated in the jack.</td></tr>
<tr><td>Input to output DC resistance unbalance</td><td>IEC 60603-7, Section 6.4.6.
Difference between all signal conductors (R_{AD}): 50 mΩ max.</td><td>IEC 60512-2-1.</td></tr>
</table>

		Derived by calculating the maximum difference between input to output DC resistance measurements.
Insulation Resistance	IEC 60603-7, Section 6.4.7 500 megaΩ minimum	IEC 60512-3-1, Method A. 100 volts DC, 1 minute hold.
Voltage proof	IEC 60603-7, Section 6.4.2 One minute hold with no breakdown or flashover. Max leakage current 2mA	IEC 60512-4-1, Method A. 1000 volts DC or AC peak. Terminated jack with mated plug. One contact to all other contacts connected together. All contacts bundled to shield, 1500 volts DC or AC peak.
Current carrying capacity (All contacts) (Shield)	IEC 60603-7 Section 6.4.3. All contacts, connected in series. The current carrying capacity of connectors in accordance with the requirements of 2.5 of IEC 61076-1:2006 shall comply with de-rating curve. IEC 60603-7-1 Section 6.4.3. The current carrying capacity of the screen shall be two times the current carrying capacity of the signal contacts per IEC 60603-7 Clause 6.	IEC 60512, Test 5b
Signal continuity and short to shield	Continuity of all signal paths and no shorts to the shield	Using a continuity tester ensure that there are no discontinuities between the free end of the cable and the jack signal contacts. Ensure that there are no shorts between the cable wires and the jack body (shield).
Current-carrying parts (UL 1863)	Product shall withstand for period of time require per a and b, without breakdown accordance with UL 1863	a) An open-circuit test voltage of 600 volts AC, 50-60 hertz, with a short circuit current level of 2,2 amperes, is to be applied for a period of 30 minutes. b) An open-circuit test voltage of 600 volts AC, 50-60 hertz, with a short circuit current level of 7.0 amperes, is to be applied for a period of 5 seconds. Shall be in accordance with UL 1863.
Dielectric Voltage-Withstand (UL 1863)	Product shall withstand for 1 minute, without breakdown accordance with UL 1863	b) 100 volts rms (1414 volts, when a DC potential is used) - for a unit rated between 31 and 250 vols AC rms. Shall be in accordance with UL 1863.
MECHANICAL		
Gauging continuity test	All signal contacts and screen 10µS max	IEC 60603-7 1(Annex A)
Plug insertion/withdrawal forces	30N max	IEC 60512-1 Test 13b. Latch inoperative. Max rate of load application 25mm/min
Plug retention in jack (effectiveness of connector coupling device)	IEC 60603-7, Section 6.6.2. No discontinuities greater than 10 µs. Shall remain mated and show no evidence of physical damage.	IEC 60512-15-6. Apply an axial load of 50 N to plug mated to jack with latch engaged and hold for 60±5 seconds. Load shall be applied at a maximum rate of 44.5 N per second.
Jack retention in panel/faceplate	50N & visual	Mount jack in panel/faceplate and via plug/patch cord apply 50N pull for 1 minute and then a push for 1 minute.

		Jack shall remain in panel/faceplate with no damage. Any salient observations from the mounting of the jack to the end of the test shall be recorded. A range of panels and faceplates suitable for the jack shall be used. Keystone and SL mounting apertures shall be covered.
Mating durability	IEC 60603-7-1, Section 6.5.1. (Performance level 1 – 750 cycles in total)	IEC 60512-9-1. Mate and un-mate plug to jack interface with locking device inoperative for 375 cycles at a maximum rate of 10mm per second.
Mating durability under electrical load (PSE 30 W)	IEC60512-99-001 (IEEE 802.3at Type 2; 2-Pair PoE Plus)	Mate and un-mate plug to jack interface with locking device inoperative for 25 cycles per polarity at a maximum rate of 10mm per second for total of 50 cycles. Max current 0.6A (600mA) Open voltage 60V d.c. RCL circuit loading (see IEC60512-9-3) Contacts to be in parallel.
Mating durability under electrical load (PSE 100 W)	IEC60512-99-001 (IEEE 802.3bt Type 4; 4-Pair PoE)	Mate and un-mate plug to jack interface with locking device inoperative for 25 cycles per polarity at a maximum rate of 10mm per second for total of 50 cycles. Max current 1A (960mA) per pair Open voltage 60V d.c. RCL circuit loading (see IEC60512-9-3) Contacts to be in parallel.
Vibration	IEC 60603-7-1 No discontinuities greater than 10 µs. including shield. There shall be no evidence of damage.	IEC 60512-6-4. Subject mated plug & jack to: Frequency: 10 to 500 Hz. Displacement Amplitude (peak): 0.35 mm Acceleration: 5g (50 m/s^2) 10 sweep cycles per axis of 3 mutually perpendicular planes. Sweep rate: 1 octave per minute. Monitor contact disturbance per IEC 60512-2-5.
IDC Re-termination	Samples to meet contact resistance requirements	IEC 60352-4 12.2.3 1 group 4 terminations with 22awg solid, 5^{th} termination with 24awg solid, 6^{th} termination with 26awg solid. 1 group 5 terminations with 24awg stranded. 1 group 5 terminations with 26awg stranded.
Bending of the wire/cable (IDC)	No discontinuities greater than 10 µs. Termination shall not be damaged and conductors shall not be broken.	IEC 60352-4, Section 12.2.1. Apply a 50 N axial load to the free end of the terminated cable. Bend cable α = 30 degrees in both directions from vertical position for 5 cycles each direction (10 cycles total). Monitor contact disturbance per IEC 60512-2-5.
Cable clamp resistance to torsion	There shall be no defect that would impair normal operation.	Based upon concept of IEC 60512-17-4 Test 17d

	Shield delta resistance 100 m ohm max	Axial load 10N, cable terminated to IDCs. At 300mm twist cable +180° and hold for 1 min. Return to rest and twist to -180°, hold for 1 min. Return to rest
Cable clamp robustness	There shall be no defect that would impair normal operation. Shield delta resistance 100 m ohm max	IEC 60512-17-1 Test 17a Load 10N. Applied at 300mm. Hold at each bend for 1 minute. A cycle consists of 1 bend to 90° in each of the 4 axes with the jack horizontal Number of cycle = 5
Cable clamp resistance to cable rotation	There shall be no defect that would impair normal operation. Shield delta resistance 100 m ohm max	IEC 60512-17-2 Test 17b Load sufficient to just maintain the alignment. Deflect the cable 45° to the axis at point of entry and rotate 360°, speed of rotation 5s, number rotations = 5 in each direction
Cable clamp resistance to cable pull	There shall be no defect that would impair normal operation. The cable shall not have moved by more than 1mm. Shield delta resistance 100 m ohm max	IEC 60512-17-3 Test 17c Mount sample vertically and apply 10N axially for 1 minute.
ENVIRONMENTAL		
Rapid change of temperature, Plug/Jack interface	IEC 60603-7-1, Section 7.7.2.3.	IEC 60068-2-14, Test Na or Nb Subject mated connectors to 25 cycles between -40°C & 70°C with 30 minute dwells at temperature extremes. 2 hour recovery time.
Rapid change of temperature, IDC/wire interface	IEC 60352-6, Section 12.4.1	IEC 60068-2-14, Test Na or Nb Subject terminated jacks to 5 cycles between -40°C & 70°C with 30 minute dwell at temperature extremes. 2 hour recovery time.
Cyclic damp heat	IEC 60603-7-1, Section 7.7.2.7.	IEC 60068-2-38. Subject connectors to 21 cycles (21 days) between 25°C & 65°C at 93% RH with 5 sub-cycle shocks at -10°C in the 1st 9 cycles. Half specimens mated, the remaining half unmated.
Climatic sequence (IDC)	60352-4 Section 12.4.2	IEC 60068-2-61, Method 1 Subject terminated plugs to dry heat +70°C & cold -40°C with a total of 6 damp heat cycles.
Electrical load & temperature	IEC 60603-7 & 7-1 Section 7.7.2.6	IEC 60068-2-2, Tests Bd & Be Temperature: 70°C, RH: uncontrolled Test Time: 500 hours & 2 hours recovery Test Currents: Signal contacts: 0.8A d.c. per contact Shield contacts: 1.6A d.c. Half the specimens energized [test Bd], the remaining half not energized [test Be].
High temperature	IEC 60603-7-1	IEC 60068-2-2, Tests B Temperature: 70°C, RH: uncontrolled Test Time: 500 hours & 2 hours recovery All specimens mated.
Flowing mixed gas corrosion	IEC 60603-7, Section 7.7.2.4 IEC 60603-7-1, Section 7.7.2.4	IEC 60512-11-7, Method 1 H_2S: 100 ± 20 (10^{-9} vol/vol), SO_2: 500 ± 100 (10^{-9} vol/vol), Temp.: 25 ± 1°C, RH: 75 ± 3%, Test time: 4 days, Half the specimens mated, the remaining half unmated.
TRANSMISSION		

Transfer Impedance (shielded only)	60603-7-1, per 6.4.7	IEC 60512-26-100, test 26e Mated connectors.
Coupling Attenuation (shielded only)	60603-7-1, per 6.4.8	EN 50289-1-14 Mated connectors.
Transmission performance (Cat6 or 6a) IL,NEXT, RL, FEXT, TCL, TCTL Channel & permanent link For Cat6a only PSANEXT & PSAFEXT	The most onerous limits from ISO11801 TIA568-C-2 IEC60603-7-5 (Cat 6) IEC60603-7-51 (Cat 6a)	IEC60512-25-x IEC60512-27-x Where x depends upon the actual test ISO11801 TIA568-C-2

Table 2

4.7 Product Qualification and Requalification Test Sequence

Test or Examination	Test Sequence												
	IDC / Wire Interface		Plug/Jack										Jack
	A1	A2	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	C1
Visual examination of product	1, 7	1, 5	1, 14, 20	1, 18	1, 11	1, 12	1	1, 5, 9, 13, 17	1,5	1	1, 11	1, 11	1, 4
Contact resistance, Plug/Jack interface incl shield			2, 11, 17	2, 8, 11, 14	2, 9	2, 11	2			2	2, 9, 12	2, 9, 12	
Contact resistance, IDC/wire interface	2, 6	2, 4											
Input to output DC resistance incl shield			3, 9, 16	3, 9, 12, 15	3, 8	3, 10	3	shield only 3		3	3	3	
Input to output DC resistance for mechanical test in sequence B6 (Shield).								7, 11, 15, 19					
Input to output DC resistance unbalance			4	4	4	4	4				4	4	
Signal continuity and short to shield								2, 6, 10, 14, 18					
Insulation Resistance			5, 12	5, 16	5, 10	5, 8	5				5, 13	5, 13	
Voltage proof			6, 13	6, 17	6	6, 9	6				6, 14	6, 14	
Current carrying capacity - shield									2				
Current carrying capacity									3				
IDC Re-termination		3											
Vibration,					7								
Gauging continuity test						13							
Plug insertion and withdrawal forces			7, 18										
Plug retention in jack			8, 19										
Panel Housing retention									4				
Mechanical operation durability				7, 13									
Mechanical operation durability with power (PSE 30 W)											7, 10		
Mechanical operation durability with power (PSE 100 W)												7, 10	
Bending of the wire/cable (IDC)	3												
Cable clamp resistance to torsion								16					
Cable clamp robustness								4					
Cable clamp resistance to cable rotation								8					
Cable clamp resistance to cable pull								12					
Rapid change of temperature, Plug/Jack interface			10										
Rapid change of temperature, IDC/wire interface	4												
Cyclic damp heat			15				8						
Climatic sequence	5												
Electrical load & temperature						7							
High temperature							7						
Flowing mixed gas corrosion				10							8	8	
Transfer Impedance							9						
Coupling Attenuation							10						
Transmission performance (NEXT, RL etc.)										4			
Transmission performance (Channel etc.)										5			
Fault Current Test “a and b” Per UL 1863													2
Dielectric Voltage – Withstand Test “b” Per UL 1863													3

Table 3

5 Quality Assurance Provisions

5.1 Qualification Testing

A. Specimen Selection

Modular Jacks: Specimens shall be selected at random from current production and prepared in accordance with applicable instruction sheets.

Sample numbers: The number of samples required for each test group are defined in Table 4.
Note: for each test group or specific combination (e.g. cable type) within a test group, the default number of samples is 5.

Cable: Engineering discretion, customer drawings and product specifications shall be used to choose cables to qualify/requalify new products and design changes. Cables may be chosen with minimum and maximum conductor sizes, insulations sizes and jacket sizes commonly available in the industry.

B. Test Sequence

Product qualification shall be verified by testing specimens per test sequence defined in Table 3.

5.2 Requalification Testing

If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

5.3 Acceptance

Acceptance is based on verification that the product meets the requirements of Table 2. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify the product. If product failure occurs, corrective action shall be taken and specimens resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

5.4 Quality Conformance Inspection

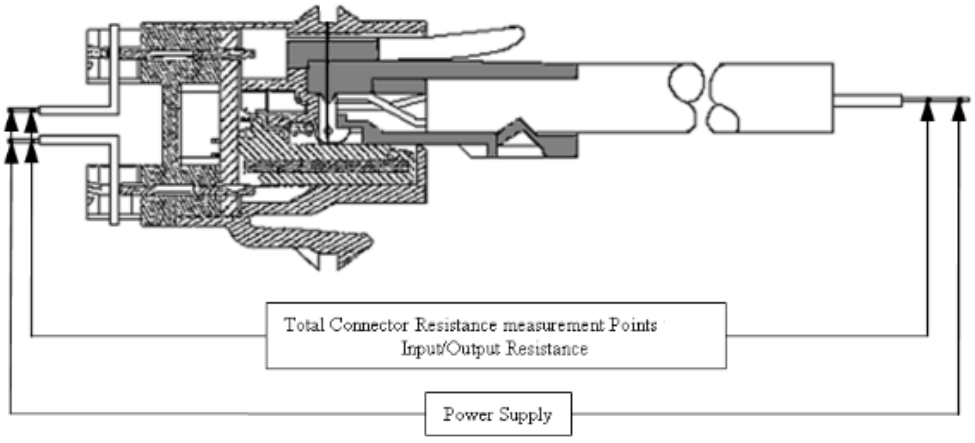
The applicable quality inspection plan shall specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the application product drawing and this specification.

Group	No jacks required	Cable																	
		F/UTP						S/FTP											
		Solid Wire						Solid Wire						Stranded Wire					
		Cable diameter			AWG			Cable diameter			AWG			Cable diameter			AWG		
		min	max	nom	min	max	nom	min	max	nom	min	max	nom	min	max	nom	min	max	nom
A1	20	X	X				X	X	X				X						
A2	15										X	X					X	X	
B1	10									X			X			X			X
B2	10			X			X			X			X						
B3	15			X			X			X			X			X			X
B4	10			X			X			X			X						
B5	10			X			X			X			X						
B6	20	X	X				X	X	X				X						
B7	10			X			X			X			X						
B8	37 MIN (a)									X			X						
B9	10			X			X			X			X						
B 10	10			X			X			X			X						
C1	10			X			X			X			X						

(a) The number required for group B8 depends upon the amount of re-use of jacks in the various configurations. The minimum number given is based upon 28 for alien (Cat 6A only), 5 for hardware testing and 4 for channel/link tests.

Table 4

FIGURES RELATED TO TEST PROCEDURES



Resistance of Connector Assembly
(Example of RJ45 Jack/outlet and RJ45 plug)
Figure 1

6 Trade–marks

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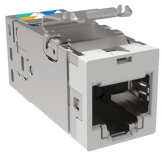
7 Contact information

Visit our website or contact your local CommScope representative for more information.

For technical assistance, customer service, or to report any missing/damaged parts, visit us at: http://www.commscope.com/SupportCenter

This product is covered by one or more U.S. patents or their foreign equivalents. For patents, see www.commscope.com/ProductPatent/ProductPatent.aspx

2153449-4 | SLX-6AS-GY



SL-Series Modular Jack, RJ45, Cat6A Shielded, Gray

Product Classification

Regional Availability	Asia | Australia/New Zealand | EMEA | Latin America
Portfolio	NETCONNECT®
Product Type	Modular jack
Product Series	SLX Series

General Specifications

ANSI/TIA Category	6A
Cable Type	Shielded
Color	Gray
Conductor Type	Solid | Stranded
Integrated Dust Cover Type	None
Mounting	SL Series faceplates and panels
Mounting Note	Color matches with SL-style Gray Faceplates and Surface Mount Boxes
Outlet Type	Standard
Termination Punchdowns, minimum	5 times
Termination Tool	SL Termination tool
Termination Type	IDC
Transmission Standards	ANSI/TIA-568.2-D | ISO/IEC 11801 Class EA
Wiring	T568A | T568B

Dimensions

Panel Cutout, recommended	14.78 x 20.07 mm (0.58 x 0.79 in)
Panel Thickness, recommended	1.6 mm | 0.063 in
Height	16.13 mm | 0.635 in
Width	14.44 mm | 0.569 in

Depth	36.8 mm | 1.449 in
Compatible Cable Diameter, maximum	8.5 mm | 0.335 in
Compatible Insulated Conductor Diameter, maximum	1.6 mm | 0.063 in
Contact Plating Thickness	1.27 µm
Compatible Conductor Gauge, solid	26–22 AWG
Compatible Conductor Gauge, stranded	26–24 AWG

Electrical Specifications

Remote Powering	Fully supports the safe delivery of power over LAN cabling described by IEEE 802.3bt (Type 4) and complies with the unmating under electrical load requirements prescribed by IEC 60512-99-002
PoE Durability	Supports IEEE 802.3bt Type 4 (90 W) applications after 3000 plug to jack mating cycles

Material Specifications

Contact Base Material	Beryllium copper
Contact Plating Material	Gold
Material Type	Polycarbonate | Zamak

Mechanical Specifications

Plug to Jack Mating Cycles	Complies to IEC 60603-7 series

Environmental Specifications

Operating Temperature	-10 °C to +60 °C (+14 °F to +140 °F)
Flammability Rating	UL 94 V-0

Packaging and Weights

Packaging Material	Standard
Packaging quantity	24
Packaging Type	Bag | Box

Regulatory Compliance/Certifications

Agency	Classification
CHINA-ROHS	Below maximum concentration value
RCM	Compliant to electrical safety & telecommunications requirements
REACH-SVHC	Compliant as per SVHC revision on www.commscope.com/ProductCompliance

2153449-4 | SLX-6AS-GY

ROHS	Compliant
UK-ROHS	Compliant/Exempted

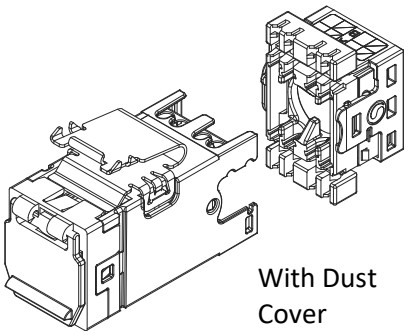
COMMSCOPE®

Instruction Sheet

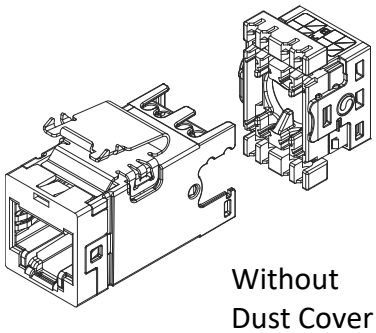
6S and 6AS SLX Shielded Jacks

860638777
Rev E 26JUL2021
commscope.com

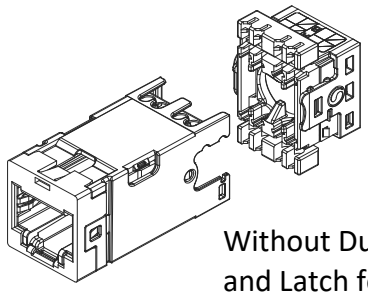
Instructional Video: https://video.commscope.com/watch/BPJDMaJSX1KBXxY74stVr8



With Dust Cover

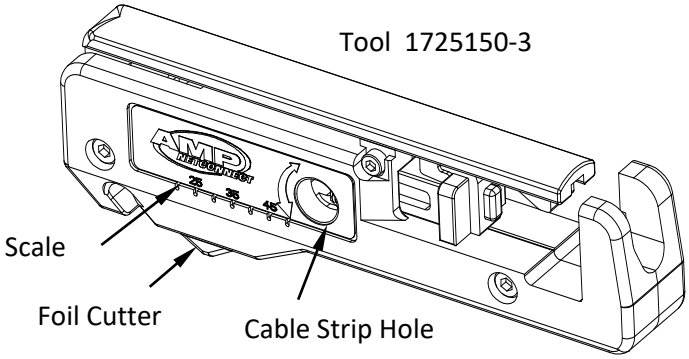


Without Dust Cover

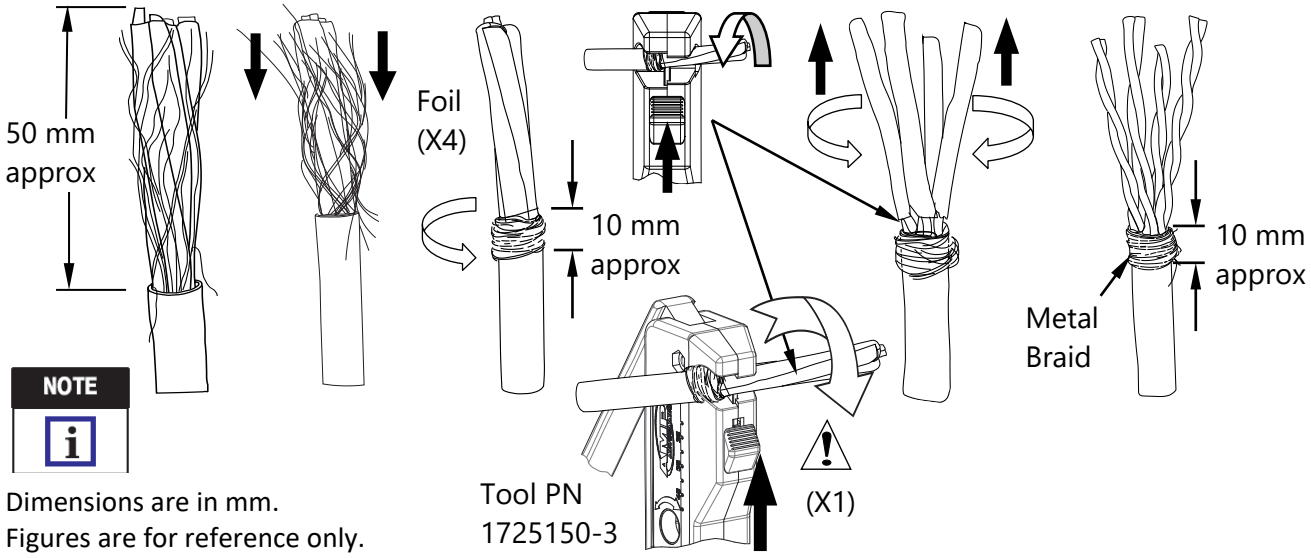


Without Dust Cover and Latch for HD applications

CABLE REQUIREMENTS	
Solid Conductor Range	22 – 26 AWG
Stranded Conductor Range	24 – 26 AWG
Max. Insulation Diameter	1.60 mm
Total Cable Diameter Range	5.0 – 9.0 mm



S/FTP — CABLE PREPARATION: S/FTP *("PiMF")*

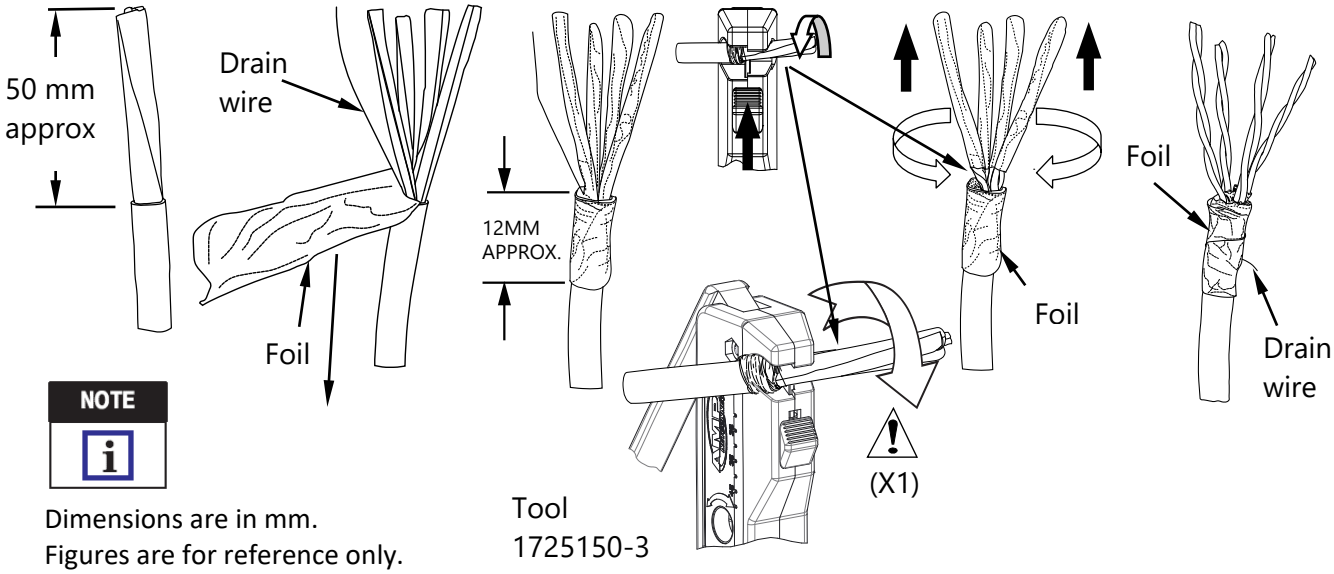


NOTE

Dimensions are in mm.
Figures are for reference only.

F/FTP

CABLE PREPARATION: F/FTP *("Compact")*

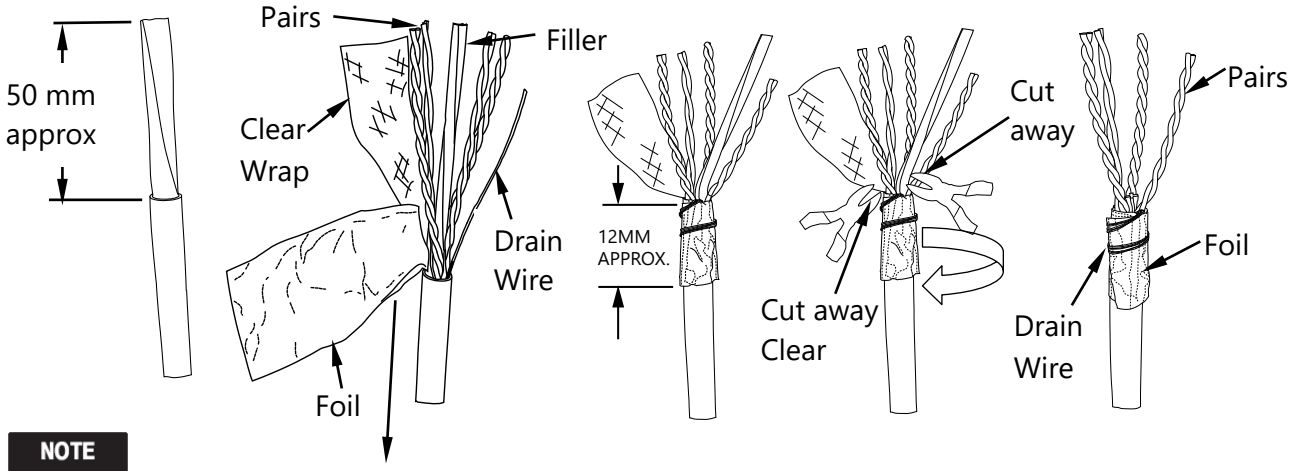


NOTE

Dimensions are in mm.
Figures are for reference only.

F/UTP

CABLE PREPARATION: F/UTP

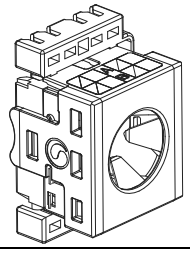


NOTE

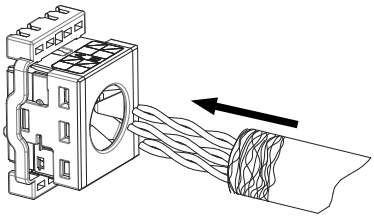
Dimensions are in mm.
Figures are for reference only.

ASSEMBLY INSTRUCTIONS

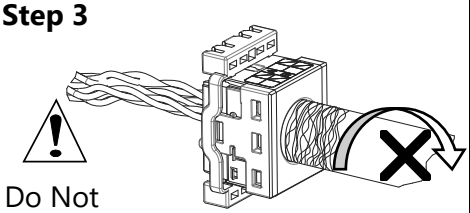
Step 1 (ALIGN COLOR CODING)



Step 2

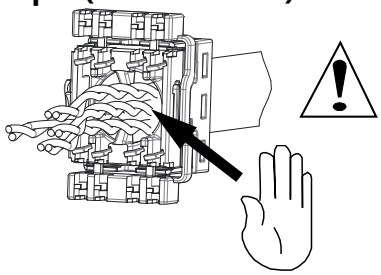


Step 3

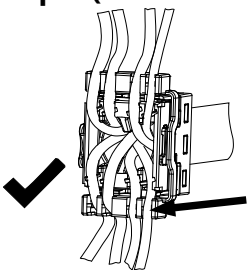


Do Not
Rotate Cable

Step 4 (CABLE DEPTH)

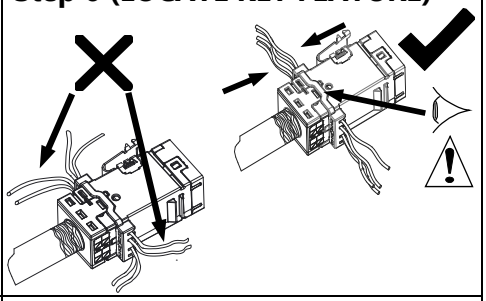


Step 5 (LACING WIRES)

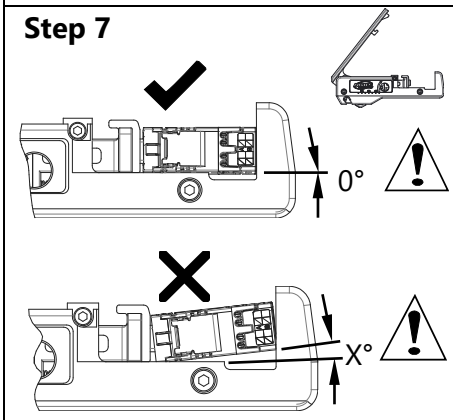


Laced wires must be fully seated.

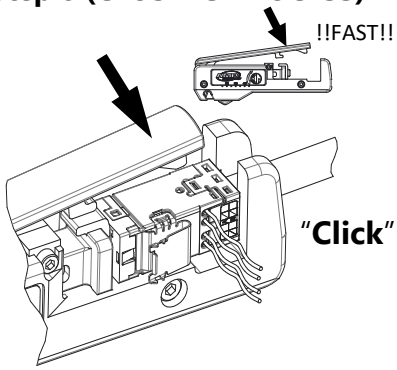
Step 6 (LOCATE KEY FEATURE)



Step 7



Step 8 (CLOSING PROCESS)



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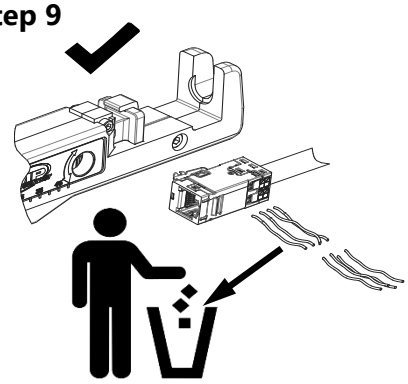
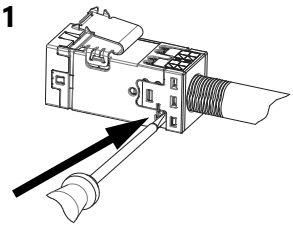
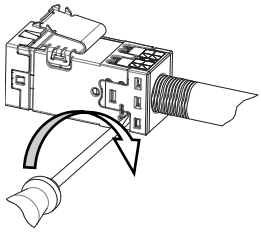


REOPENING AND CABLE EXTRACTION INSTRUCTIONS

Step 1



Step 2



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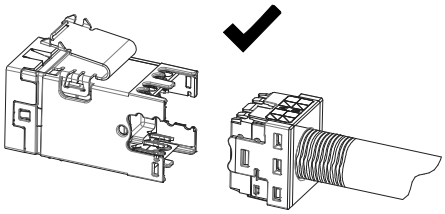

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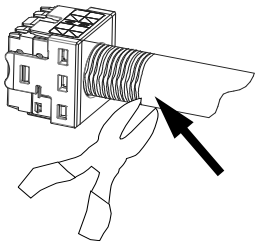
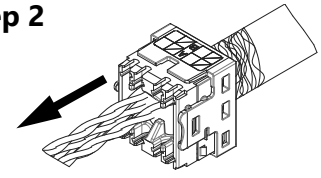
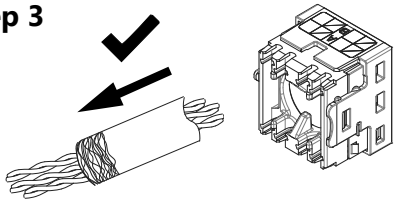


Step 2



EXTRACT CUT CABLE
THIS DIRECTION

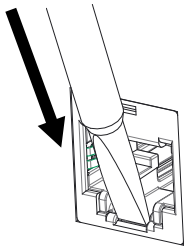
Step 3



REMOVE CABLE AND DISPOSE

COLOR CAP REMOVAL/REPLACEMENT

Step 1



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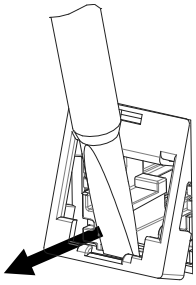

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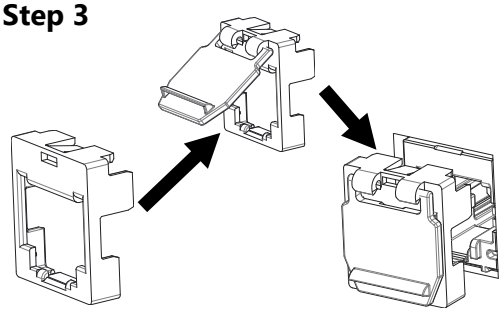
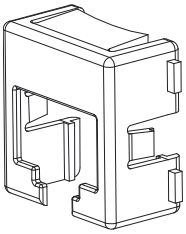


M SERIES ADAPTER

Step 1



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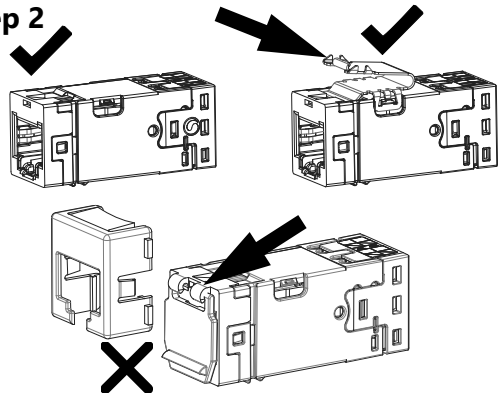

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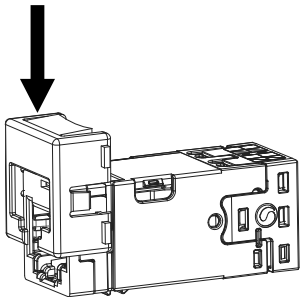
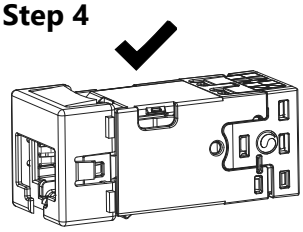
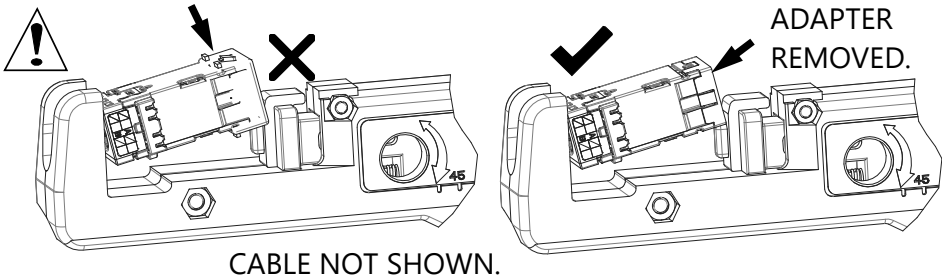


Step 4





CABLE NOT SHOWN.

Trade–marks

All trademarks identified by ® or ™ are registered trademarks or trademarks, respectively, of CommScope, Inc. This document is for planning purposes only and is not intended to modify or supplement any specifications or warranties relating to CommScope products or services. CommScope is committed to the highest standards of business integrity and environmental sustainability, with a number of CommScope's facilities across the globe certified in accordance with international standards, including ISO 9001, TL 9000, and ISO 14001.

Further information regarding CommScope's commitment can be found at

www.commscope.com/About-Us/Corporate-Responsibility-and-Sustainability.

Contact information

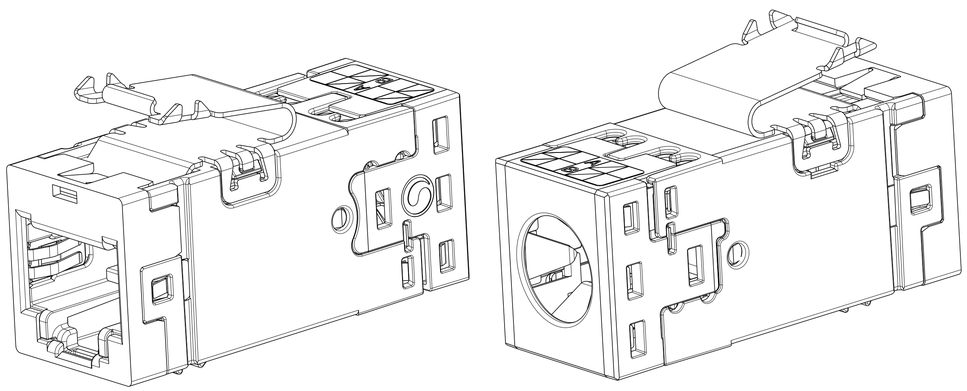
Visit our website or contact your local CommScope representative for more information.

For technical assistance, customer service, or to report any missing/damaged parts, visit us at:

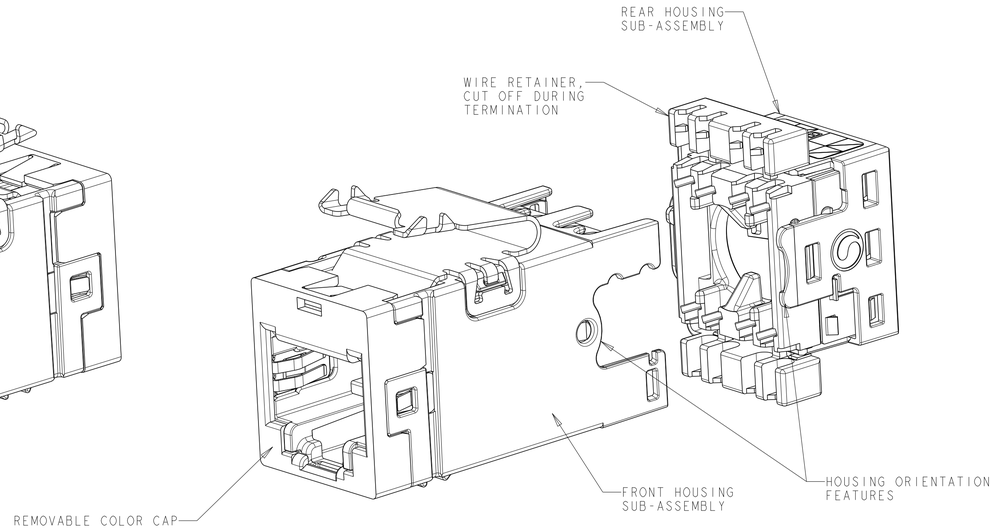
http://www.commscope.com/SupportCenter

This product is covered by one or more U.S. patents or their foreign equivalents. For patents, see www.commscope.com/ProductPatent/ProductPatent.aspx

REVISIONS			
REV	CMO	DATE	APPROVED
A	40105374CMO	03-FEB-20	JH

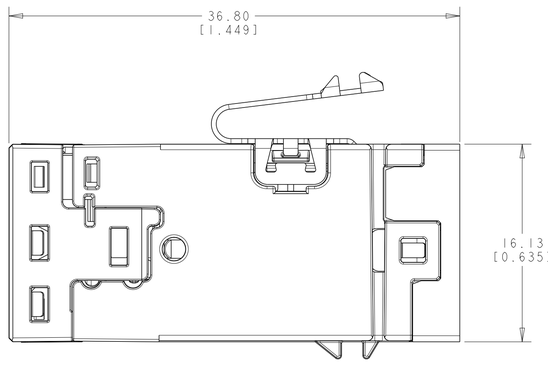


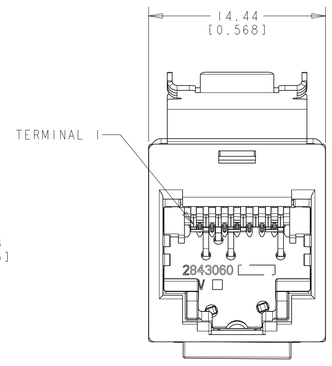
ASSEMBLED VIEW SHOWN

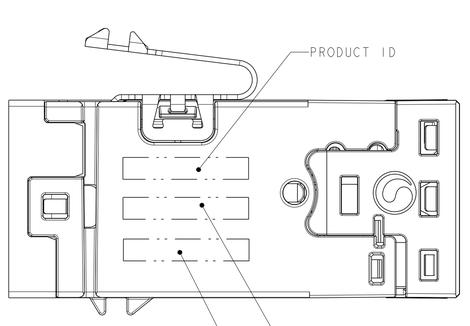


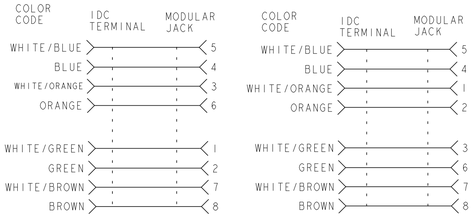
EXPLODED VIEW AS SHIPPED

1. MATERIAL:
   - JACK HOUSING - ZINC ALLOW (ZAMAK 2)
   - IDC BLOCK AND LACING FIXTURE - POLYCARBONATE
   - ARRAY TRAY - PBT POLYESTER
   - JACK CONTACTS ARRAY - BERYLLIUM COPPER, PLATED WITH 1.27µm [.000050] MINIMUM THICK GOLD IN LOCALIZED AREA AND 3.81µm [.000150] MINIMUM THICK MATTE TIN IN BOARD INTERFACE AREA OVER 1.27µm [.000050] MINIMUM THICK NICKEL UNDERPLATE.
   - IDC TERMINALS - PHOSPHOROUS BRONZE, PLATED WITH 3.81µm [.00015] MINIMUM THICK MATTE TIN OVER 1.27µm [.00005] MINIMUM THICK NICKEL UNDERPLATE
2. SLX JACK WILL TERMINATE 22-26 AWG SOLID OR 24-26 AWG STRANDED CONDUCTORS, 1.60 [0.063] MAXIMUM INSULATION DIAMETER.
3. MOUNTING PANEL THICKNESS 1.47 - 1.60 [.058 - .063].
4. THESE TWO SUGGESTED CUTOUT OPENINGS ARE USED IN TANDEM WITH DUAL FRONT AND BACK CUTOUTS.
5. ONE MODULAR JACK ASSEMBLY PER POLYBAG.
6. REFER TO 860638777 FOR TERMINATION INSTRUCTIONS.
7. REFER TO PRODUCT SPEC 108-93052.



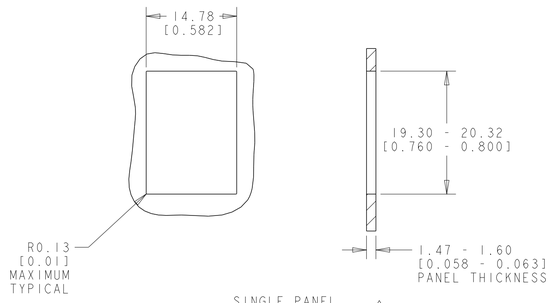




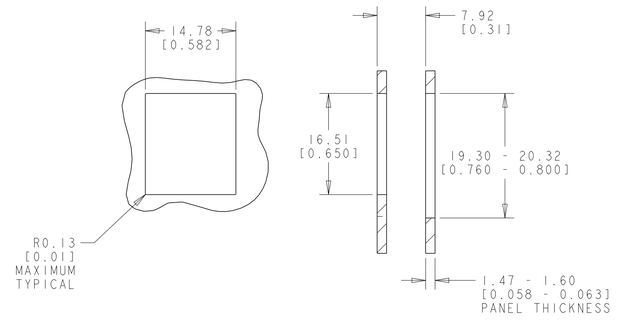


ELECTRICAL SCHEMATIC 568A

ELECTRICAL SCHEMATIC 568B



SINGLE PANEL APPLICATION CUTOUT 4



FLUSH MOUNT PANEL APPLICATION CUTOUT 4

COLOR	CATEGORY 6		CATEGORY 6A	
	NO DUST COVER	DUST COVER	NO DUST COVER	DUST COVER
ALMOND	2153448-1	2153364-1	2153449-1	2153365-1
BLACK	2153448-2	2153364-2	2153449-2	2153365-2
GRAY	2153448-4	2153364-4	2153449-4	2153365-4
ORANGE	2153448-5	2153364-5	2153449-5	2153365-5
BLUE	2153448-6	2153364-6	2153449-6	2153365-6
RED	2153448-7	2153364-7	2153449-7	2153365-7
YELLOW	2153448-8	2153364-8	2153449-8	2153365-8
GREEN	2153448-9	2153364-9	2153449-9	2153365-9
WHITE	1-2153448-3	1-2153364-3	1-2153449-3	1-2153365-3

UNITS	mm [INCHES]
TOLERANCE	VALUE
0 PLC	-
1 PLC	-
2 PLC	-
3 PLC	-
4 PLC	-
ANGLE TOL	-
SURFACE TOL	-

COMMSCOPE, INC.

DRAFTER: G. GARRETT	TITLE: AMP-TWIST SLX, 6S		
ENGINEER: J. HIGGINS	SIZE: A1	SCALE: 4:1	DOCUMENT NO: A20102281
CUSTOMER DRAWING		REVISION: A	SHEET: 1 OF 1

CERTIFICATE

Certificate Number: 111045.000
Including Seven Page Addendum

The Quality Management System and implementation of:

CommScope, Inc.

With Virtual Central Function at:
1100 CommScope Place SE
Hickory, NC 28602
United States

meets the requirements of the standard:

ISO 9001:2015

Scope:

The sales, marketing, design, manufacture, test, repair, support, service, and distribution of telecommunications products, components, and services for the telecommunications, wireless, and broadcast networks industries

Certificate Expires: January 04, 2026
Certificate Issued: January 05, 2023
Certified Since: January 10, 2001

Business Segments	Exceptions
Connectivity and Cable Solutions (CCS)	None
Networking, Intelligent Cellular & Security Solutions (NICS)	None
Outdoor Wireless Networks (OWN)	None
Access Network Solutions (ANS)	None

Dr. Cem O. Onus
Managing Director

DEKRA Certification, Inc.
1945 The Exchange SE #300
Atlanta, GA 30339 USA
(215) 997-4519
https://www.dekra.us/en/audits/

ANAB ANSI National Accreditation Board ACCREDITED ISO/IEC 17021-1 MANAGEMENT SYSTEMS CERTIFICATION BODY

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

CERTIFICATE ADDENDUM

Certificate Number: 111045.000
ADDENDUM Page One of Seven

The Quality Management System and implementation of:

CommScope, Inc.

meets the requirements of the standard:

ISO 9001:2015

Site Activities Legend:	HQ = Headquarters	MFG = Manufacturing	SER = Services (Professional Services and/or Technical Support)
	HW DE= Hardware Development	REP = Repair	SC = Purchasing, Supplier Management, Manufacturing Support, Repair Support
	SW DE= Software Development	SAL = Sales, Marketing	DIST = Distribution

Site Address	**Site Activities**
CommScope Inc 1100 CommScope Place SE Hickory, NC 28602 United States	HQ (Virtual)
ARRIS Technology, Inc. 3871 Lakefield Drive Suwanee, GA 30024 United States	HW & SW DE, SAL, SER, SC
ARRIS Technology, Inc. 101 Tournament Dr. Horsham, PA, 19044 United States	HW & SW DE, SAL, SER, SC
ARRIS Technology, Inc. 6450 Sequence Drive San Diego, CA 92121 United States	SW DE, SER
ARRIS Technology, Inc. 900 Chelmsford St. Lowell, MA 01851 United States	HW & SW DE, SER, SC

Certificate Expires: January 04, 2026
Certificate Issued: January 05, 2023
Certified Since: January 10, 2001

Dr. Cem O. Onus
Managing Director

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CERTIFICATE ADDENDUM

Certificate Number: 111045.000
ADDENDUM Page Two of Seven

The Quality Management System and implementation of:

CommScope, Inc.

meets the requirements of the standard:

ISO 9001:2015

Site Address	Site Activities
ARRIS Solutions, Inc. 2400 Ogden Ave., Suite 180 Lisle, IL 60532 United States	HW & SW DE, SAL, SER, SC
ARRIS 15 Sterling Drive Wallingford, CT 06492 United States	HW & SW DE, SER, SC
ARRIS Technology, Inc. 2450/2500 Walsh Avenue Santa Clara, CA 95051 United States	HW & SW DE, SAL, SER
Ruckus Wireless International Inc. 350 West Java Dr. Sunnyvale, CA 94089 United States	HW & SW DE, SER
Ruckus Wireless Network Technology (Shenzhen) Co. Ltd. Units C&D, 5th Floor, No. 2 Finance base, 8 KeFa Road, Shenzhen, China	SW DE, SC, HW DE

Certificate Expires: January 04, 2026
Certificate Issued: January 05, 2023
Certified Since: January 10, 2001

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CERTIFICATE ADDENDUM

Certificate Number: 111045.000
ADDENDUM Page Three of Seven

The Quality Management System and implementation of:

CommScope, Inc.

meets the requirements of the standard:

ISO 9001:2015

Site Address	Site Activities
Site Address	**Site Activities**
CommScope Asia (Suzhou) Technologies Co., Ltd. 77 Qiming Road, Suzhou Industrial Park Suzhou,Jiangsu 215121 Peoples Republic of China	MFG, SC
Ruckus Wireless International Inc., Taiwan Branch @ Neihu District, Taipei City, Rui Road 411, 10th floor, Taipei	SW DE
ARRIS Group India Pvt Limited (AGIPL) Salarpuria Supreme, Ground Floor West Wing &First Floor Munnekolalu Village, Varthur Hobli, Outer Ring Road, Bangalore-560037	SW DE
ARRIS Group de Mexico S.A. de C.V. Av. La Paz 11721 Parque Industrial Pacifico Tijuana, BC 22643 Mexico	MFG, REP, SC
ARRIS Communications Ireland Limited Building 4300, Cork Airport Business Park Kinsale Road Cork County Ireland	HW & SW DE
ARRIS Group India Private Limited "The Senate" No:33/1, Ulsoor Road, Bangalore - 560 042 India	HW & SW DE

Certificate Expires: January 04, 2026
Certificate Issued: January 05, 2023
Certified Since: January 10, 2001

Dr. Cem O. Onus
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CERTIFICATE ADDENDUM

Certificate Number: 111045.000
ADDENDUM Page Four of Seven

The Quality Management System and implementation of:

CommScope, Inc.

meets the requirements of the standard:

ISO 9001:2015

Site Address	Site Activities
ARRIS Group, Inc. 50 Stranmillis Embankment Belfast, BT95FL Northern Ireland	SW DE
CommScope Czech Republic, s.r.o Turanka 856/98B 627 00 Brno Czech Republic	HW DE,
CommScope CZ, spol. s.r.o. U Morusi 888, 53006 Pardubice Czech Republic Czech Republic	HW DE,
CommScope Connectivity UK Limited Units 1 and 4 Kinmel Park Industrial Estate Bodelwyddan, Denbighshire, LL18 5TZ United Kingdom	HW DE, MFG, SAL
CommScope Design & Integration UK Ltd. Unit 5 & 6 Eden Business Park Eden House Drive Old Malton, Malton, North Yorkshire YO17 6AE United Kingdom	HW DE, MFG, SC

Certificate Expires: January 04, 2026
Certificate Issued: January 05, 2023
Certified Since: January 10, 2001

Dr. Cem O. Onus
Managing Director

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CERTIFICATE ADDENDUM

Certificate Number: 111045.000
ADDENDUM Page Five of Seven

The Quality Management System and implementation of:

CommScope, Inc.

meets the requirements of the standard:

ISO 9001:2015

Site Address	Site Activities
CommScope Design & Integration UK Limited 412 The Quadrant, Birchwood Park Warrington, WA3 6FW United Kingdom	SER
CommScope EMEA Ltd. Corke Abbey Avenue Bray, Co. Dublin Ireland	MFG, SAL
CommScope EMEA Ltd. Diestsesteenweg 692 3010 Kessel-Lo, Belgium	HW DE, MFG, SAL
CommScope Italy Srl Via Archimede, 22/24 Agrate Brianza (MB) 20864 Italy	HW DE, REP, SW DE
Telecom Networks Americas AV. HIPOLITO YRIGOYEN 2999, DEPOSITO 6 EL TALAR, TIGRE Buenos Aires B1618AXD Argentine Republic	SAL, DIST
Commscope Networks India Private Limited Salarpuria Softzone, A Block, 1st Floor Survey No 80/1, 81/1, 81/2, B Wing, Belandur Village, Varthur Hobli, Outer Ring Bangalore – Karanataka 560103 India	SW DE
ADC India Communications Ltd. No 10 C , 2nd Phase Peenya Industrial Area Bangalore – Karnataka 560058 India	MFG, SC

Certificate Expires: January 04, 2026
Certificate Issued: January 05, 2023
Certified Since: January 10, 2001

Dr. Cem O. Onus
Managing Director

DEKRA Certification, Inc.
1945 The Exchange SE #300
Atlanta, GA 30339 USA
(215) 997-4519
https://www.dekra.us/en/audits/

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CERTIFICATE ADDENDUM

Certificate Number: 111045.000
ADDENDUM Page Six of Seven

The Quality Management System and implementation of:

CommScope, Inc.

With site at:

CommScope Asia (Suzhou) Technologies Co.,Ltd.

77 Qiming Road, Suzhou Industrial Park
Suzhou,Jiangsu 215121
Peoples Republic of China

meets the requirements of the standard:

ISO 9001:2015

The validity of this certificate depends on the validity of the main certificate.

Scope:
Production of network cable, fiber cable and communication equipment component (copper patch cords, copper panel, accessories etc.)

Certification Structure: Multi-site

Certificate Expires:	January 04, 2026
Certificate Issued:	January 05, 2023
Certified Since:	January 10, 2001

Dr. Cem O. Onus
Managing Director

DEKRA Certification, Inc.
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Atlanta, GA 30339 USA
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IAF

证 书 附 录

证书编号: 111045.000

附录第7页,共7页

质量管理体系和实施:

CommScope, Inc.

其场所:

康普科技（苏州）有限公司

中国江苏省苏州工业园区启明路77 号,邮编215121

符合以下标准要求:

ISO 9001:2015

本证书的有效性取决于主证书的有效性。

范围:

网络线、光缆、通信系统设备材料（网络跳线、配线装置等）的生产。

认证结构: **多场所**

证书有效期: 2026.01.04

发证日期: 2023.01.05

首次发证日期: 2001.1.10

Dr. Cem O. Onus
Managing Director

DEKRA Certification, Inc.
1945 The Exchange SE #300
Atlanta, GA 30339 USA
(215) 997-4519
https://www.dekra.us/en/audits/

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MANAGEMENT SYSTEMS CERTIFICATION BODY

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT
IAF

Certificate of Registration

ENVIRONMENTAL MANAGEMENT SYSTEM - ISO 14001:2015

This is to certify that:

CommScope, Inc. of North Carolina
1100 CommScope Place SE
Hickory
North Carolina
28603-0339
USA

Holds Certificate No: **EMS 648387**

and operates an Environmental Management System which complies with the requirements of ISO 14001:2015 for the following scope:

The environmental management system to control the risks associated with the manufacture, distribution, field support and central function of telecommunication products and services.

For and on behalf of BSI:

Carlos Pitanga, Chief Operating Officer Assurance – Americas

Original Registration Date: 2016-03-01
Effective Date: 2022-03-15
Latest Revision Date: 2022-04-21
Expiry Date: 2025-03-14

...making excellence a habit.™

Certificate No: **EMS 648387**

Location	Registered Activities
Andrew Telecommunications de Reynosa S. de R.L. de C.V. Av. Industrial Reynosa Lte 2 al 5 Parque Industrial Center Reynosa Tamaulipas 88780 Mexico	Manufacture and distribution of telecommunication products including antenna and cable.
CommScope Asia (Suzhou) Technologies Co., Ltd. EPZ II, 77 Qiming Road Suzhou Industrial Park Suzhou Jiangsu 215121 China	Manufacture and distribution of telecommunication products, including cable.
Andrew Telecommunications India Pvt. Ltd. Plot No. N-2, Phase IV Verna Industrial Estate Verna Salcette Goa 403 722 India	Manufacture and distribution of telecommunication products, including antenna and cable.
CommScope EMEA Ltd. Corke Abbey Avenue Bray County Dublin A98FY03 Ireland	Manufacture and distribution of telecommunication products, including cable and connectors.
CommScope Telecommunications (China) Co., Ltd. 68 West Su Hong Xi Lu Suzhou Industrial Park Suzhou Jiangsu 215021 China	Manufacture and distribution of telecommunication products, including antenna and cables.

Original Registration Date: 2016-03-01
Effective Date: 2022-03-15
Latest Revision Date: 2022-04-21
Expiry Date: 2025-03-14

Certificate No: **EMS 648387**

Location	Registered Activities
Andrew Wireless Systems GmbH Industriering 10 Buchdorf 86675 Germany	Manufacture and distribution of telecommunication products, including amplifiers and antenna systems.
CommScope, Inc. of North Carolina 1100 CommScope Place SE Hickory North Carolina 28603-0339 USA	Corporate headquarters responsible for management system oversight of all locations listed on this certificate.
CommScope Inc. 6519 CommScope Road Catawba North Carolina 28609-0199 USA	Manufacture and distribution of telecommunication products, including cable.
CommScope Inc. 3642 US Hwy 70 East Claremont North Carolina 28610-0879 USA	Manufacture and distribution of telecommunication products, including cable.
CommScope Czech Republic s.r.o. Turanka 98B Brno 62700 Czech Republic	Manufacture and distribution of telecommunication products, including connectors and terminations.
CommScope Inc. of North Carolina 1100 CommScope Place SE Hickory North Carolina 28603-0339 USA	Customer care, facility maintenance, and administrative functions.
ADC de Delicias, S. de R.L. de C.V. Blvd. Fernando Baeza No. 1301 Sur Delicias Chihuahua 33000 Mexico	Manufacturing and distribution of telecommunication products.

Original Registration Date: 2016-03-01

Effective Date: 2022-03-15

Latest Revision Date: 2022-04-21

Expiry Date: 2025-03-14

Certificate No: **EMS 648387**

Location	Registered Activities
ADC de Juarez S. de R.L. de C.V. Parque Industrial Antonio J Bermudez Ciudad Juarez Chihuahua 32470 Mexico	Manufacturing and distribution of telecommunication products.
CommScope Connectivity Belgium bvba Diestsesteenweg 692 Kessel-lo 3010 Belgium	Manufacture and distribution of telecommunication products.
CommScope Technologies de Juarez S. de R.L. de C.V. Santiago Troncoso 331 Praderas del Sur, Ciudad Juarez Chihuahua 32575 Mexico	Manufacture of Fiber Optic Splice Closures (FOSC), Fiber Guide Systems (FGS), Hardened Connectivity and Molding-Gel Filling, including: plastic injection molding, plastic extrusion, plastic and metal machining, and assembly operations.
CommScope Connectivity UK Limited Unit 1 Kinmel Park Bodelwyddan Rhyl, Denbighshire LL18 5TZ United Kingdom	Fibre optic cable manufacturing, termination and design of other telecommunication products and services.
CommScope 11312 S. Pipeline Road Euless Texas 76040 USA	Manufacture, distribution, field support and central function of telecommunication products.
ARRIS GROUP DE MEXICO SA DE CV Av. De la Paz, #11721 Parque Industrial Pacifico Tijuana Baja California 22643 Mexico	Manufacture, repair, support, repair service, distribution of products and components for telecommunications that provide integrated solutions for voice, video and data through the processes of SMT, manual and mechanical assembly, soldering (manual, selective, printed, wave) electrical testing and packaging.

Original Registration Date: 2016-03-01
Effective Date: 2022-03-15
Latest Revision Date: 2022-04-21
Expiry Date: 2025-03-14

Certificate No: **EMS 648387**

Location	Registered Activities
CommScope Design & Integration UK Ltd Unit 5 & 6, Eden Business Park Edenhouse Drive Old Malton Malton YO17 6AE United Kingdom	Manufacture and distribution of telecommunications products including cabinets.
Arris Indústria Eletrônica do Brasil Ltda. CNPJ: 09.154.836/0001-15 Avenida Torquato Tapajós, 9475 Tarumã Manaus Amazonas 69041-025 Brasil	Manufacturer and distribution of Receivers, Television signal Decoders and Modulator/Router.
CommScope Design and Integration UK Ltd. Lovell House, 412 The Quadrant Birchwood Park Warrington WA3 6FW United Kingdom	Telecommunications project management, site surveys, installations commissioning and rigging.

Original Registration Date: 2016-03-01
Effective Date: 2022-03-15
Latest Revision Date: 2022-04-21
Expiry Date: 2025-03-14

LIMITED WARRANTY

1. **Definitions.** For purposes of this Warranty, (i) "Buyer" shall mean the individual or entity identified on the applicable purchase order or supply agreement (or, if different, on Seller's quotation, order acknowledgement or statement of work), (ii) "Seller" shall mean the CommScope entity identified on such entity's quotation, order acknowledgement, statement of work or supply agreement, (iii) "Hardware" means equipment designed and manufactured by or on behalf of Seller, or any third-party manufacturer's equipment offered for sale by Seller to Buyer, (iv) "Product" shall mean a product manufactured by or on behalf of Seller pursuant to the applicable supply agreement, quotation or order acknowledgement, and includes any combination of Hardware and Software, (v) "Services" means site engineering, system integration, product installation, implementation, training, maintenance and technical support services for Products, or other professional services provided by Seller to Buyer. Services exclude managed services and hosted cloud services provided by Seller, (vi) "Software" means Seller-licensed software, either embedded or standalone, including any updates provided, and any other enhancements, modifications, and bug fixes provided thereto, in object code form only (unless otherwise specified), and any full or partial copies thereof. Software does not include software created or owned by third parties, including but not limited to MediaKind Software, Google's Android Software or any third party application software, and (vii) "Warranty Period" means, unless a different time period is set forth in **Exhibit A,** (a) for Hardware, one year from date of original shipment from Seller's facility, (b) for Software-only Products, ninety (90) days from the date such Software is first made available to Buyer, or for Software embedded in a Hardware Product, ninety (90) days from date of original shipment of the Product from Seller's facility, and (c) for Services, thirty (30) days from the date the performance of such Services has been rendered.

2. **Limited Warranty.** Seller warrants that, as of the date of delivery, Seller has good title to the Product, free from any lawful security interest or other lien or encumbrance unknown to Buyer. In addition, during the Warranty Period, the Product and Services will be free from defects in materials or workmanship arising under proper and normal use. This Warranty shall apply only to the Products and Services and shall not apply to any other goods or materials, parts or components of a system or any system as a whole. This Warranty does not cover ordinary wear and tear. Seller does not warrant (i) Products not purchased from Seller or its authorized resellers; (ii) that the operation of the Product will be uninterrupted or error-free; (iii) that the Product will operate in combination with other third-party products selected by Buyer; or (iv) any products manufactured by third parties; provided that Seller will, to the extent permitted by the manufacturer, assign third-party warranties to Buyer. Seller gives no warranty for, and shall have no liability with respect to, any defects arising from any software (other than the Software), including, but not limited to MediaKind Software, Android Software or any third-party application software, downloaded to or otherwise used in conjunction with the Product. Seller further warrants to Buyer that during the Warranty Period, all Services performed by Seller for Buyer will be provided in a workmanlike manner.

3. **Disclaimers.** EXCEPT AS EXPRESSLY SET FORTH IN THIS LIMITED WARRANTY OR IN A SEPARATE, APPLICABLE SOFTWARE LICENSE AGREEMENT, ALL SOFTWARE IS LICENSED ON AN "AS IS" BASIS WITHOUT WARRANTY.

4. **Inspection and Return Authorization**. Buyer must promptly notify Seller of any claimed defect in the Product and/or Services. If Buyer claims that a Product is defective in materials or workmanship, Seller shall have the right to either examine the Product where it is located or, in its sole discretion, issue shipping instructions for return of the Product. Seller's inspection in response to a warranty claim shall not constitute acceptance or acknowledgment of the claim's validity. Except as otherwise agreed to in writing, Products may not be returned to Seller without prior authorization. Buyer must contact Seller to obtain an authorization number and return the Products to the location designated by Seller. Any Products returned to Seller without proper authorization will be returned to Buyer at Buyer's expense. Risk of loss, damage and insurance responsibilities for the Products shall not pass from Buyer to Seller until delivery of the Products to Seller's designated location. Buyer shall prepay all transportation charges for such return.

5. **Remedies.** Seller's sole and exclusive obligation and Buyer's exclusive remedy under this Warranty is Seller's repair or replacement of the defective Product or re-performance of Services or issuance of a credit for the net book value of the purchase price of the defective Product. Seller shall have sole discretion as to which of these remedies Seller will provide. Seller is not liable for any repair or maintenance costs incurred by Buyer, unless Seller authorizes such charges in writing in advance of the commencement of the work. If Seller elects to replace or repair the defective Product, the replaced or repaired Product will be warranted for the remainder of the Warranty Period applicable to the originally shipped Product, but the Warranty shall not be extended beyond the original Warranty Period. Replacement Products may be new, refurbished or contain refurbished materials.

6. **Notice and Waiver**. If Buyer discovers any defect in the Product, Buyer must provide prompt (and in no case later than thirty (30) days after discovery) written notice to Seller of the claimed defect. Such notice shall describe, in reasonable detail, the symptoms of such defect. The notice must be received by Seller during the Warranty Period for such Product. Failure to give timely notice of a claim shall result in Buyer's waiver of such claim.

7. **Transfer of Ownership.** This Warranty is not transferable unless Buyer is expressly authorized by Seller in writing to resell the Product. In addition, Buyer must notify Seller on or before the fifteenth (15^{th}) day after the date on which it transfers ownership of the warranted Product. Any transfers in violation of this Section shall invalidate this Warranty. Notice of the transfer of ownership must be in writing and shall include the name and address of the new owner.

8. **Exclusions from Warranty.** This Warranty shall not apply to problems attributable to, or as a result of:

(a) improper installation or misapplication of parts;
(b) chain or system failures induced by other products or components;
(c) lack of proper inspection or maintenance or failure to provide a suitable operating environment;
(d) any consumables provided with the Product, including but not limited to batteries and other accessories, and any other materials, components or products manufactured by a third party;
(e) power surges, fire, unusual mechanical, physical or electrical stress, severe weather conditions or acts of nature, including but not limited to, lightning or floods;
(f) usage or operation not in accordance with published ratings, specifications or instructions, including but not limited to environmental specifications identified by Seller;
(g) any adjustment, modification, alteration, removal or repair of any part of the Product, including but not limited to removal or alteration of serial numbers or other identifying marks not expressly authorized by Seller in writing;
(h) accidental damage, misuse, abuse, neglect or unauthorized access of the Product or of any system of which the warranted Product is a part;
(i) any type of aesthetic changes due to oxidation or corrosion occurring on stainless steel or galvanized steel parts installed in unusually corrosive marine and industrial atmospheres (in which case Seller's only obligation shall be to ensure that Product complies with Seller's published material specifications);
(j) use of the Product for purposes other than that for which it was designed; or
(k) mishandling during shipment of the Product.

LIMITED WARRANTY

This Warranty is for Products installed and used in accordance with Seller's design, installation and operating parameters. Buyer's failure to ensure conformity with such parameters will void all warranties. Under no circumstance shall Seller have any liability or obligation with respect to expenses, liabilities or losses associated with the installation or removal of any Product or the installation or removal of any components for inspection, testing or redesign occasioned by any defect or by any repair or replacement of a Product.

9. **Limitation on Liability.** THE WARRANTIES SET FORTH IN SECTION 2 HEREOF ARE EXCLUSIVE AND ARE MADE ONLY TO BUYER. SELLER MAKES NO OTHER REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, AND SPECIFICALLY DISCLAIMS AND EXCLUDES ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY, NONINFRINGEMENT OR FITNESS FOR A PARTICULAR PURPOSE AND ANY REPRESENTATION OR WARRANTY ARISING BY USAGE OF TRADE, COURSE OF DEALING OR COURSE OR PERFORMANCE. No person is authorized to give any additional warranties on Seller's behalf or to assume for Seller any other liability, except in a writing signed by an authorized officer of Seller. SELLER'S TOTAL LIABILITY FOR ANY CLAIM OR DAMAGE ARISING OUT OF AND/OR IN CONNECTION WITH THE MANUFACTURE, SALE, DELIVERY OR USE OF THE PRODUCTS OR SERVICES WILL BE LIMITED TO PROVEN DIRECT DAMAGES, NOT TO EXCEED (I) FOR PRODUCTS, THE DEPRECIATED VALUE OF THE PURCHASE PRICE OF SUCH PRODUCTS OR (II) FOR SERVICES, THE ACTUAL AMOUNT PAID TO SELLER FOR SERVICES DURING THE 12 MONTH PERIOD IMMEDIATELY PRIOR TO THE EVENT (OR SERIES OF EVENTS) GIVING RISE TO THE LIABILITY. IN NO EVENT WILL SELLER BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTIAL, CONSEQUENTIAL OR PUNITIVE DAMAGES, INCLUDING, WITHOUT LIMITATION, ANY CLAIM FOR LOSS OF ACTUAL OR ANTICIPATED DATA, USE, REVENUES OR PROFITS. The Products are not specifically designed, tested, manufactured or intended for operation or use in any inherently dangerous, life endangering or life support applications where any failure of the Products could lead to death, personal injury or significant physical or environmental damage (High Risk Activities). If Buyer uses the Products in High Risk Activities, including but not limited to nuclear facilities or the flight, navigation or communication of aircraft, Buyer agrees that neither Seller nor its third party licensors are liable in whole or in part, for any claims or damages arising from such use, and that Buyer shall indemnify and hold Seller and its third party licensors harmless from any and all claims for loss, cost, damage, expense or liability arising out of or in connection with any use of the Products in High Risk Activities. These limitations on liability will apply regardless of the form of action, whether in contract, tort, strict liability or otherwise, and whether damages were foreseeable and will survive failure of any exclusive remedies provided in Section 4 hereof.

10. **Choice of Law.** The terms and conditions contained herein and the rights of the parties to any transaction to which they relate shall be governed by and construed in accordance with the laws of the State of North Carolina, U.S.A. The United Nations Convention on Contracts for the International Sale of Goods shall not apply.

LIMITED WARRANTY

Exhibit A

Product Categories	Warranty Period from Original Shipment Date*
Category A Products E6000® Converged Edge Router (CER); E6000n™ Remote PHY Devices (RPDs); E6000r™ Remote PHY Shelves; E6000n™ Remote MACPHY Devices (RMDs); vManager; Remote OLT (R-OLT); associated power supplies and accessories. FLX PON OLT portfolio including vOLT. CherryPicker products, Encoder products including ME-7000, SE-6000; DSR-4xxx, DSR-6xxx and DSR-7xxx series IRD products, and Uplink systems including TME-2020, VDP-1000, BNC, DEM, and SEM; All APEX Universal EQAM including APEX1000 and APEX3000; All Aloha interactive products including OM2000, ARPD, ADM4000 and NC1500 4.0. All SDM products. All VUE and VTM Software Products. All STDC products.	Hardware One (1) Year Software Ninety (90) Days
Category B Products All High and Standard Definition Transport Adapter MS4000™ Media Streamer	Hardware One (1) Year Software Ninety (90) days ** For certain CPE, option for 1% overship in lieu of Hardware warranty is standard
Category C Products Intentionally left blank.	
Category D Products All Third Party OEM Products: power meters; All VUE and VTM hardware platforms; NC1500 4.0 hardware platform; LQA256 Legacy QAM Adapter; Elemental Products including Live, Server, Delta, Conductor and StatMux; DC2180 Cabinet Node. Cooling Systems	Pass Through from OEM: Hardware One (1) Year Software Ninety (90) Days
Category E Products Intentionally left blank	
Category F Products All OM and SG optical node platforms, Flex Max® and Starline® amplifier platforms, RF Taps & Passives, and Optical Passives	Hardware Five (5) Years within the United States and Canada Hardware Three (3) Years outside United States and Canada Software Ninety (90) Days
Category F1 Products All CHP Headend Optical (HEO) Elements	Hardware Three (3) Years Software Ninety (90) Days
Category G1 Products All NC optical node platforms and Optical Passives, including OP/NP/DP/DC models.	Hardware Five (5) Years Software Ninety (90) Days
Category G2 Products All CH3 Headend (HEO) Elements	One (1) year
Category G3 Products All EPON and GPON ONUs, RFoG/HPON R-ONUs, including, CP8 models and associated power supplies and accessories	Hardware Three (3) Years Software Ninety (90) Days

Category H Products All ConvergeMedia™ Distribution Platforms and Management Suite, AdManager™ including SkyVision Ad Management and EMP solutions CVEx™, SVA, all Vertasent products including SVOM, SVM and ERM, AdEdge™ COM and AdEdge APS,VMS, Manifest Delivery Controller (MDC), ARRIS Video Content Manager (AVCM) and Next Generation Insertion (NGI) and Multicast ABR.	Hardware One (1) Year Software Ninety (90) Days
Category I Products ServAssure® Advanced, ServAssure® NXT - Alarm Central, ServAssure® NXT - Analyze, ServAssure Domain Manager and EventAssure™. WorkAssure™® Workforce Management, Mobile TV, SecureMedia and Titanium	Hardware One (1) Year Software Ninety (90) Days
Category J Products Intentionally left blank	
Category K Products Intentionally left blank.	
Category L Products Intentionally left blank	
Category M Products Intentionally left blank.	
Category N Products Intentionally left blank.	
Category O Products All CAS Products including DAC, CASMR (and associated plug-ins), CAST, Advisor, CSS, OLL, CSS-Lite, KLS, DKS, CPMS	DAC, CASMR, CAST, Advisor, CSS Hardware Three (3) Years OLL, CSS-Lite, KLS, DKS, OLES, CPMS Hardware One (1) Year Software Ninety (90) Days
Category P Products Intentionally left blank.	
Category P1 Products Intentionally left blank	
Category Q Products Intentionally left blank	
Category R Products Intentionally left blank	
Category R1 Products Intentionally left blank	
Category S Products Intentionally left blank	
Category S1 Products Intentionally left blank	

LIMITED WARRANTY

Category T Products RUCKUS Wi-Fi	Hardware: - Indoor Access Points and Wall Plate Access Points – Limited Lifetime Warranty,** except for access points with an "e" suffix (e.g., R350e), for which the HW warranty period is one (1) year. - Outdoor Access Points – One (1) Year - Controllers – One (1) Year, except ZoneDirector controllers are covered by the Limited Lifetime Warranty** Software Ninety (90) Days
Category T1 Products RUCKUS ICX Switches	- ICX Switches (including switch modules, PSUs, and Fans, but excluding removable optics/transceivers and LEDs) – Limited Lifetime Warranty,** except for ICX 7150- C08PT, for which the HW warranty period is 13 months. - LEDs – 12 months - Removable Optics/Transceivers – 60 months (13 months if shipped from Seller prior to June 1, 2021) Software: Limited lifetime access to defect repairs, and software maintenance updates through end of support date of product
Category T2 Products Intentionally left blank	
Category U Products Other OSP Cable Products (P3®, Drop Coax, Fiber Cable, Fiber Drop Cable, CIC) NovuX Products Prodigy Products FDH Products Multiservice terminals (MST), Open Terminals (OTE) and Hardened Drop Cable Assemblies OSP "Box" Products Mini-RDTs and RDTs FOSC™, FIST™ and Tenio™ OSP Copper Connect and Closure Products HELIAX® FiberFeed® Products, including FiberFeed® hybrid and fiber cables and assemblies, power cables and junction boxes Fiber Optic Panels, including Accessories, Mounting Hardware, Modules Fiber Optic Field Terminated Connectors, Kits, Tools, Consumables, Accessories Indoor Fiber Cable, Patch Cords, Cable Assemblies, Fiber Trunks Passive Optical Components and Value Added Modules (VAMs) FiberGuide® : Fiber cable Management System Optical Distribution Frames, including Modules, Blocks, Accessories and Hardware Cabinets Cable and Apparatus Products Alifabs™ Cabinets & Ancillary Products Alifabs™ Telecommunications Towers and Accessories Metro Cell Products, including Enclosures; Integrated Pole; Standard Poles; Accessories; and Wood Pole Brackets	One (1) year

LIMITED WARRANTY

Category V Products ValuDAS® Passive Products, including Air Directional Couplers, Hybrid Couplers, High Power Splitters, and Cell-Max™ Antennas Standard Tower Mounted Amplifier, Bias Tee and Power Distribution Unit Products Standard Filter & Combiner Products Electronic Enclosure Products (Cabinets) Alifabs™ Free Cooling Products and Accessories and Spare Parts, including Monitor All-In-One FLX (Active Passive Cabines) PowerShift™ & Power Products	Two (2) years
Category W Products ValuSite® Products I-Line Accessory Products Microwave Antennas Terrestrial Microwave System Products (including Microwave System Flex-Twist, Coupler, Filter and Diplexer Products)	Three (3) years
Category X Products Broadband RF Connectivity Products Premium Passive Products, including In-Building Directional Couplers, Hybrid Matrices, Tappers, Power Splitters, Terminations, Attenuators and CMAX Antenna Products	Five (5) years
Category Y Products QR® Coaxial Cable	Five (5) years
Category Z Products Standard RADIAX® Cable, Connector, Accessory and Cable Assembly* Products * RADIAX® Cable Assembly Product means any RADIAX® coaxial cable that has been fitted with Seller's connectors in accordance with the installation instructions.	One (1) year
Category AA Products Standard CNT® Cable, Connector, Accessory and Cable Assembly* Products * CNT® Cable Assembly Product means any CNT® coaxial cable that has been fitted with Seller's connectors by Seller or its certified distributor	Five (5) years; except that the Warranty Period for Products purchased for resale purposes shall be one (1) year.
Category BB Products Standard HELIAX® Cable, Connector, Accessory and Cable Assembly* Products * HELIAX® Cable Assembly Product means any HELIAX® coaxial cable or elliptical waveguide that has been fitted with Seller's connectors by Seller or its certified distributor.	Ten (10) years; except for the following: (i) three (3) years for weatherproofing kits (including SureGuard boots); (ii) one (1) year for cable preparation tools (excluding blades); (iii) one year for single click-on hanger kits; and (iv) two (2) years for surge arrestors.
Category CC Products Standard ERA/ION-E®, ION-M®, ION-U®, MR, CMR, i-POI®, e-POI™, and Node Repeater Products	Hardware, the earlier of: (i) one (1) year from the date of installation; or (ii) fifteen (15) months from the date of shipment. Software Ninety (90) Days
Category DD Products In- Building and Fixed Subscriber Antennas	The earlier of: (i) three (3) years from the date of installation or (ii) thirty-nine (39) months from the date of original shipment

LIMITED WARRANTY

Category EE Products OneCell® Powered Fiber Cable Solution: Hybrid Copper and Fiber Cables, Class 2 Power Supplies, Indoor/Outdoor POE Extenders, Field Terminated Outlets, Consolidation Boxes and Related Passive Components	Hardware, the earlier of: (i) one (1) year from the date of installation; or (ii) fifteen (15) months from the date of original shipment Software Ninety (90) Days
Category FF Products Small Cell Device Management System (DMS) Software DAS Device Management System (AIMOS) Software	Ninety (90) days
Category GG Products Base Station Antenna, Small Cell Antenna & Mosaic™ Products	Two (2) years for all base station antennas except base station antennas incorporating N-type connectors, which shall have a warranty of one (1) year
Category HH Products DryLine® Dehydrator Systems and Line Monitoring Systems	Three (3) years or 3,000 hours of actual run time, whichever occurs first; except the Warranty Period for the compressor is only one (1) year or 1,000 hours of actual run time, whichever occurs first.
Category II Products SiteRise™ Solutions	One (1) year on workmanship for the Solution.
Category JJ Products Copper Structured Cabling Products Other Enterprise Products (Coax, Automotive Cables, Enterprise Enclosures and miscellaneous items) (excluding software)	One (1) year from the date of Installation
Category KK Products Alifabs™ Services (power upgrades, enablements, installation and decommission work, rigging, and fault management)	One (1) year from the date of completion of the work.
Category LL Products imVision Overlays and Controllers	Three (3) years

** For Category H and Category I Products only, if Seller is engaged by Buyer to provide Services for the implementation of the purchased Products, warranty period for such Products shall commence upon Buyer's acceptance of the Products and Services.*

** For Category T Products only, "Limited Lifetime Warranty" means the period beginning on the Product shipment date and continuing for as long as the original end user of the Product continues to own and use the Product. For Category T1 Products only, "Limited Lifetime Warranty" means the period beginning on the Product shipment date and continuing (i) for as long as the original end user of the Product continues to own and use the Product or (ii) through the End of Support date, as defined in the RUCKUS End of Life Policy, whichever is earlier.

RoHS Certificate of Compliance

COMMSCOPE®

Product Name: AMP-TWIST SLX,6AS,GY

Product Number: 2153449-4

Company Name: CommScope
3642 E US Highway 70
Claremont, NC 28610 USA

Contact: ProductCompliance@Commscope.com

Generated on: May 02, 2024

Certified by:

Vinatha Viswanathan, Director Product Compliance

Disclaimer

This information is provided based on reasonable inquiry of our suppliers and represents our current actual knowledge based on the information they provided and our analysis and assessment of the risks. This information is subject to change and if a change occurs which affects compliance, then this Statement will be updated. Compliance to EU ROHS 2011/65 amended by EU RoHS 2015/863 means the part numbers have a maximum concentration of no more than 0.1% by weight in homogenous materials for lead, hexavalent chromium, mercury, PBB, PBDE, and 0.01% for cadmium, or qualify for an exemption to these limits as defined in the Annexes of Directive 2011/65/EU (RoHS2). These parts also have a maximum concentration of no more than 0.1% by weight in homogenous materials for DEHP, BBP, DBP and DIBP (substances that are restricted starting from July 22, 2019). Finished electrical and electronic products will be CE marked as required by Directive 2011/65/EU. Components may not be CE marked.

Compliance Status	Regulation	Revision	RoHS exemptions if any
Compliant	ROHS	EU RoHS - 2011/65/EU	

COMMSCOPE®

CommScope Network Infrastructure System

25 Year Extended Product and Application Warranty ("System Warranty")

Terms and Conditions

Extended Product Warranty. CommScope warrants, for a period of twenty-five (25) years from the Certification Date (the "Warranty Period"), that Products in the Registered System shall be free from defects in materials or workmanship subject, to the terms and conditions below and the terms, conditions and limitations of CommScope's Limited Product Warranty in effect at the date of sale (available at http://www.commscope.com/Resources/Warranties/).

Application Warranty. During the Warranty Period, the Registered System will meet or exceed the specifications set forth in the System Specification and support Applications as documented therein.

System Warranty Requirements. The System Warranty applies only to Products that are: (i) installed by an Authorized Partner, at the location listed on the System Warranty Certificate; (ii) installed in compliance with CommScope's written design, engineering and installation procedures, and the specifications for the Application and the System Specification; (iii) designed, installed, and maintained in compliance with the applicable industry standards as set forth in the System Specification; (iv) not subject to conditions that exceed the individual Product Specification(s); (v) used at the original site of installation; (vi) tested pursuant to industry standards and applicable CommScope testing requirements and satisfactorily pass such tests; and (vii) not otherwise expressly excluded or invalidated under the System Warranty Terms and Conditions. To qualify for a System Warranty, all documents, including the prescribed System test results, must be submitted to CommScope for review within sixty (60) days of installation, and registration for the System Warranty must be applied for with CommScope within ninety (90) days from the date the installation is complete. CommScope, in its sole judgment, shall determine if the System Warranty Requirements have been met. CommScope's approval of a System Warranty shall be evidenced by a numbered registration System Warranty Certificate issued by CommScope. In the event a System Warranty Certificate is issued and CommScope subsequently discovers that any of the System Warranty requirements were not met, then the System Warranty shall be void.

Beneficiary and Warranty Transfer. CommScope will only honor System Warranty claims made by the person or entity to which the System Warranty Certificate is issued. The System Warranty may, upon prior written approval from CommScope, be transferred to a successor in interest to the site where the Registered System was originally installed.

Modifications. Moves, repairs, alterations, additions, or changes to the Registered System ("Change(s)") are only covered by the System Warranty if: (i) performed by an Authorized Partner; (ii) installed in compliance with CommScope's written design, engineering and installation procedures, and the specifications for the Application and the System Specification, and (iii) designed, installed, and maintained in compliance with the applicable industry standards as set forth in the System Specification. Day-to-day administration and maintenance of the Registered System by the End-Customer will not void the System Warranty if performed in compliance with applicable CommScope system design and installation guidelines using CommScope approved products. All test results shall be sent for approval to CommScope along with a detailed description of the Change(s) and bill of materials within thirty (30) days of installation. If the Change(s) are approved, CommScope shall update the System Warranty registration to indicate the Change(s). Failure to comply with the foregoing relating to Change(s) shall void the System Warranty.

Exclusions from Warranty and Limitations on Liability. The "Exclusions from Warranty" and "Limitations on Liability" in the Limited Product Warranty shall apply to the System Warranty. The occurrence of an Exclusion from Warranty in the Limited Product Warranty shall void the System Warranty. The System Warranty shall also be void if any Product in the Registered System has been (i) removed from the original site of installation, (ii) altered, repaired or disassembled by a non-Authorized Partner, or (iii) exposed to, or has outside materials applied to it, including but not limited to paint, water, chemicals, solutions, cleaning supplies and lubricants ("Contamination"). End-Customer must notify an Authorized Partner or CommScope within 24 hours of any Contamination.

Outside Plant Cable is excluded from and will void the System Warranty when installed above ground and exposed to the outside environment, including but not limited to, an aerial installation. Outside Plant Cable installed underground, either by direct burial or in conduit, is not excluded from the System Warranty.

Failure of the End-Customer to submit any System Warranty claim to the authorized CommScope office as designated by CommScope within thirty (30) days following expiration of the System Warranty shall be an admission by the End-Customer and conclusive proof that the Registered System and Product(s) are in every respect as warranted and shall release CommScope and the Authorized Partner from any and all claims for damage or loss sustained by the End-Customer.

Any violation or non-compliance with the System Warranty Terms and Conditions will void the System Warranty.

Remedies. If during the Warranty Period, the End-Customer experiences problems with a Registered System or a Product in a Registered System ("Problem") and suspects there is a potential warranty claim hereunder, the End-Customer must first reasonably investigate potential causes of the suspected Problem that are not CommScope related and reasonably determine that none of these potential causes were responsible for the Problem. Once the End-Customer reasonably believes that all non-CommScope causes for the Problem are ruled out, but in no event more than thirty (30) days after the End-Customer knew or should have known of the Problem, the End-Customer must contact the Authorized Partner that installed the Registered System to report the Problem. If the Authorized Partner is unable to resolve the Problem, then the Authorized Partner will contact CommScope and make a claim under the System Warranty for further investigation and resolution.

If CommScope determines that a Problem is due to a breach of the System Warranty, CommScope will repair or replace Product as CommScope deems necessary to correct the Problem, including the provision of reasonable labor and removal and reinstallation of such Product at CommScope's discretion. CommScope shall only be responsible for costs that have received the prior written authorization of CommScope. If CommScope chooses to repair Product, CommScope may use new or reconditioned replacement parts. If CommScope chooses to replace Product, CommScope may replace with new or reconditioned products of the same or similar design. Any repair or replacement will be warranted for either (a) 90 days or (b) the remainder of the original Warranty Period, whichever is longer. If the Problem is found by CommScope or an Authorized Partner not to be related to a Product or any warranty exclusions, then End-Customer will be responsible for any costs incurred related to the Problem claim.

Choice of Law. The System Warranty shall be governed by and construed in accordance with the laws of the State of North Carolina, U.S.A. The United Nations Convention on Contracts for the International Sale of Goods shall not apply. The End-Customer acknowledges that as a condition to receiving the System Warranty, End-Customer unconditionally submits to the jurisdiction of the North Carolina state and federal courts. If any portion of the System Warranty is not enforceable due to local legal requirements, then such specific language shall be modified to meet local legal requirements consistent with CommScope's intent.

Definitions

The following definitions shall apply to the System Warranty:

CommScope shall mean CommScope Technologies LLC.

Application shall mean a standardized set of network technologies, protocols, and hardware for enabling communication over the prescribed System as documented by CommScope.

Authorized Partner shall mean a party that is certified by CommScope as a CommScope installation partner and that is in good standing with CommScope at the time of installation.

Authorized Reseller shall mean a party that is authorized in writing by CommScope to sell Products and that is in good standing with CommScope at the time of sale.

Certification Date shall mean the earlier of the registration date on the face of the System Warranty Certificate or the Original Installation Completion Date.

End-Customer shall mean the end-user who has the Products installed at its premises by an Authorized Partner.

Original Installation Completion Date shall mean the date that the Authorized Partner completed the installation and testing of the Registered System at the End-Customer's site being submitted for System Warranty eligibility.

Outside Plant Cable shall mean all cabling located between demarcation points in buildings, switching and data centers and the demarcation point in another such facility.

Passive shall mean signal-carrying components that exhibit no gain or contribute no energy.

Product(s) shall mean Passive products manufactured by CommScope that are contained in the bill of materials, for an end-to-end SYSTIMAX®, UNIPRISE®, or NETCONNECT® system, which were filed with the registration for the System Warranty and which were purchased from an Authorized Reseller.

Product Specification shall mean CommScope's published specification(s), in effect at the time of sale, which defines the optical and/or electrical capabilities of the individual Products.

Registered System shall mean the System designated on the System Warranty Certificate.

System refers to the end-to-end SYSTIMAX®, UNIPRISE®, or NETCONNECT® system, comprised entirely of Products approved by CommScope for the respective System and that meet all of the conditions in the "System Warranty Requirements" Section of these System Warranty Terms and Conditions.

System Specification shall mean CommScope's published specification(s) in effect at the time of sale, which describes the optical and/or electrical capabilities of the System as a whole.

System Warranty shall mean the Extended Product and Application Warranty.

System Warranty Certificate shall mean the certificate issued by CommScope evidencing CommScope's approval and issuance of a System Warranty and identifying the covered System.

Precedence. In the event of any conflict between the terms of the System Warranty and CommScope's Limited Product Warranty and/or a System Specification, the terms of the System Warranty shall control.

COMMSCOPE®

commscope.com

Visit our website or contact your local CommScope representative for more information.

BR-111043.1-EN (06/18)

COMMSCOPE®

Technical bulletin

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Use of CommScope NETCONNECT cabling for PoE applications

Early versions of the IEEE 802.3 standard covered the powering of remote devices over Type 1 (IEEE 802.3af) and Type 2 (IEEE 802.3at) systems. The IEEE 802.3bt standard covering the use of Type 3 and Type 4 power sourcing equipment (PSE) was published in January of 2019. A Type 4 PSE provides the maximum power to remote devices by supporting 0.86 Amps per pair (0.43 Amps per conductor) across all four pairs of the cabling. The standard recommends that Class D cabling (or better) be used to support Type 4 remote powering. In addition to the IEEE standard, the EN 50174-2: 2018 standard provides guidance on the bundling of cables supporting remote powering and recommends limiting bundle sizes to 24 cables taking care to include air gaps between bundles. These recommendations are consistent with those from CommScope and are in line with those contained in TIA TSB-184A aimed at limiting the temperature rise in bundled cabling[1].

In addition to the structured cabling standards, there are additional requirements imposed on the connector contacts that ensure they do not corrode or suffer degradation due to arcing when unplugged while under load. The applicable test standard for Types 1 and 2 is IEC 60512-99-001 while Types 3 and 4 are covered by the IEC 60512-99-002 standard.

CommScope has performed the full complement of IEC 60512-99-001/002 testing on its products and can assure customers that the NETCONNECT connectivity including the KJ, SL and SLX family of modular jacks, NPP panels, NPC, NCC, MiNo6, and MiNo6A patch cords, fully comply with the requirements set forth in the IEC 60512-99-001 and IEC 60512-99-002 standards.

Further, CommScope has carried out extensive testing confirming that existing and legacy NETCONNECT Class D (Cat 5e) or higher cable fully complies with the recommendations contained in the IEEE 802.3af, IEEE 802.3at, and IEEE 802.3bt standards.

CommScope recommends that customers follow the CommScope installation guidelines when installing their cabling products. These guidelines were developed to ensure that the temperature rise of cable bundles used for PoE applications is limited to 15 ℃. This is most easily accomplished by limiting the number of cables in a bundle to 24 for horizontal cable and to 12 for 28 AWG cords.

References

IEEE P802.3bt-2018 Standard for Ethernet Amendment 2: Power over Ethernet over 4 Pairs
EN 50174-2: 2018 Information technology - Cabling installation - Part 2: Installation planning and practices inside buildings
IEC 60512-99-001:2012 Connectors for electronic equipment - Tests and measurements - Part 99-001: Test schedule for engaging and separating connectors under electrical load - Test 99a: Connectors used in twisted pair communication cabling with remote power
IEC 60512-99-002:2019 Connectors for electrical and electronic equipment - Tests and measurements - Part 99-002: Endurance test schedules - Test 99b: Test schedule for unmating under electrical load
TIA TSB-184-A Guidelines for Supporting Power Delivery Over Balanced Twisted-Pair Cabling

Visit our website or contact your local CommScope representative for more information.

For technical assistance or customer service, visit us at:
http://www.commscope.com/SupportCenter

The products referenced by this bulletin may be covered by U.S. patents or their foreign equivalents. For patents, see www.commscope.com/ProductPatent/ProductPatent.aspx

[1] CommScope does not endorse the use of 30 AWG cables for use in PoE applications.