



उत्पाद मैनुअल

विद्युत् नियुक्ति के लिए केबल ट्रंकिंग प्रणालियाँ और केबल वाहिनी प्रणालियाँ भाग 2 दीवारों पर अथवा सीलिंग पर लगाने के लिए केबल ट्रंकिंग एवं केबल वाहिनी प्रणालियाँ अनुभाग 1 विवरणात्मक अपेक्षाएं (पहला पुनरीक्षण) आई एस 14927(भाग 2/ अनुभाग 1): 2023/ आईईसी 61084-2-1: 2017 के अनुसार

**PRODUCT MANUAL FOR
CABLE TRUNKING SYSTEMS AND CABLE DUCTING SYSTEMS FOR ELECTRICAL
INSTALLATIONS PART 2 CABLE TRUNKING SYSTEMS AND CABLE DUCTING SYSTEMS
INTENDED FOR MOUNTING ON WALLS AND CEILINGS SECTION 1 PARTICULAR
REQUIREMENTS (FIRST REVISION)
ACCORDING TO IS 14927 (Part 2/ Sec 1): 2023/ IEC 61084-2-1: 2017**

विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो) अनुरूपता मूल्यांकन (विनियम, 2018 की योजना -I के तहत प्रमाणन के संचालन में एकरूपता और पारदर्शिता के लिए इस उत्पाद मैनुअल का उपयोग सभी क्षेत्रीय / शाखा कार्यालयों और लाइसेंसधारियों द्वारा संदर्भ सामग्री के रूप में किया जाएगा। दस्तावेज़ का उपयोग बीआईएस प्रमाणन प्राप्त करने के इच्छुक संभावित आवेदकों द्वारा भी किया जा सकता है।

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure uniformity of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification.

1.	मानक संख्या IS No.	:	IS 14927 (Part 2/ Sec 1): 2023/ IEC 61084-2-1: 2017
	शीर्षक Title	:	Cable Trunking Systems and Cable Ducting Systems for Electrical Installations Part 2 Cable Trunking Systems and Cable Ducting Systems Intended for Mounting on Walls and Ceilings Section 1 Particular Requirements
	संशोधनों की संख्या No. of amendments	:	None
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	-
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	:	Please refer ANNEX – A
c)	नमूने का परिमाण Sample Quantity	:	24 m
3.	परीक्षण उपकरणों की सूची	:	Please refer ANNEX – B

	List of Test Equipment		
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	:	Please refer ANNEX – C
5.	एक दिन में संभावित परीक्षण Possible tests in a day	:	1. Dimension 2. Marking 3. Access to live parts 4. Resistance to Flame Propagation 5. Cover Retention Test 6. External Load Test
6.	लाइसेंस का दायरा /Scope of the Licence:		
“License is granted to use Standard Mark as per <i>IS 14927(Part 2/ Sec1) : 2023/ IEC 61084-2-1 : 2017</i> with the following scope:			
Name of the product		Cable Trunking Systems and Cable Ducting Systems for Electrical Installations Part 2 Cable Trunking Systems and Cable Ducting Systems Intended for Mounting on Walls and Ceilings Section 1 Particular Requirements	
System Type		Cable Trunking Systems (and) / (or) Cable Ducting Systems	
According to resistance to impact for installation and application (Cl. 6.2 of IS 14927-1)		CTS/CDS for impact 0.5J / 0.7J/ 1J/ 2J/ 5J/ 10J/ 20J	
According to resistance to flame propagation (Cl. 6.4 of IS 14927-1)		Flame / Non-flame propagating CTS/CDS	
According to electrical continuity characteristic (Cl. 6.5 of IS 14927-1)		with / without electrical continuity characteristic CTS/CDS	
According to electrical insulating characteristic (Cl. 6.6 of IS 14927-1)		with / without electrical insulating characteristic CTS/CDS	
According to the system access cover retention (Cl. 6.9 of IS 14927-1)		CTS/CDS access cover, which can be opened without a tool / CTS/CDS access cover, which can only be opened with a tool	
According to the type (Cl. 6.103)		Type 1 CTS/CDS / Type 2 CTS/CDS (distribution CTS/CDS) / Type 3 CTS/CDS (installation CTS/CDS)	
According to resistance to compression for CDS (Cl. 6.104)		CDS for compression 125N / 320N/ 750N / 1250N / 4000N	

ANNEX -A

Grouping Guidelines

1. Manufacturer shall submit the declaration for each of the parameters as specified in scope of the licence (as per Sl. No. 6 above) of each variety of 'Cable Trunking Systems (and / or) Cable Ducting Systems Intended for Mounting on Walls and Ceilings' they intend to cover in the scope of licence.
2. Cable Trunking Systems and Cable Ducting Systems Intended for Mounting on Walls and Ceilings as per IS 14927 (Part 2/ Sec 1): 2023/ IEC 61084-2-1: 2017 are classified based on the following:
 - i. According to resistance to impact for installation and application (Cl. 6.2 of IS 14927-1) - CTS/CDS for impact 0.5J / 0.7J/ 1J/ 2J/ 5J/ 10J/ 20J
 - ii. According to resistance to flame propagation (Cl. 6.4 of IS 14927-1) – Flame / Non-flame propagating CTS/CDS
 - iii. According to electrical continuity characteristic (Cl. 6.5 of IS 14927-1) - CTS/CDS with / without electrical continuity characteristic
 - iv. According to electrical insulating characteristic (Cl. 6.6 of IS 14927-1) - CTS/CDS with / without electrical insulating characteristic
 - v. According to the system access cover retention (Cl. 6.9 of IS 14927-1) –
 - a) CTS/CDS access cover, which can be opened without a tool
 - b) CTS/CDS access cover, which can only be opened with a tool
 - vi. According to the type (Cl. 6.103) –
 - a) Type 1 CTS/CDS
 - b) Type 2 CTS/CDS (distribution CTS/CDS)
 - c) Type 3 CTS/CDS (installation CTS/CDS)
 - vii. According to resistance to compression for CDS (Cl. 6.104) - CDS for compression 125N / 320N/ 750N / 1250N / 4000N
3. For considering GoL / CSoL, CTS/CDS for each of the parameter defined at Sl. No. 2 above shall be tested to cover all the variety under the scope of licence. However, the following relaxations may be considered:
 - i. In case of CTS/CDS:
 - a) If CTS/CDS of maximum resistance to impact for installation and application (i.e. 20J) is tested, CTS/CDS of lower resistance to impact for installation and application (i.e 0.5J / 0.7J/ 1J/ 2J/ 5J/ 10J) may be covered.
 - b) If CTS/CDS access cover, which can only be opened with a tool is tested, then CTS/CDS access cover, which can be opened without a tool may be covered.
 - ii. In case of CDS (only):
 - a) If CDS is tested for maximum compression (i.e 4000 N), then CDS for lower compression (i.e.125N / 320N/ 750N / 1250N) may be considered.
4. Firm shall declare the varieties of CTS/CDS intended to be covered in the Licence. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.
5. During the operation of the Licence, BO shall ensure that all the varieties covered in the Scope of the Licence are tested in rotation to the extent possible.

6. In addition, the manufacturers shall also submit the declarations for following parameters for each of the CTS / CDS as specified below:
- i. According to temperatures (Cl. 6.3 of IS 14927-1)
 - a) Minimum storage and transport temperature - -45°C / -25°C / -15°C / -5°C
 - b) Minimum installation and application temperature - -25°C / -15°C / -5°C / $+5^{\circ}\text{C}$ / $+15^{\circ}\text{C}$
 - c) Maximum application temperature - $+60^{\circ}\text{C}$ / $+90^{\circ}\text{C}$ / $+105^{\circ}\text{C}$ / $+120^{\circ}\text{C}$
 - ii. According to degrees of protection provided by enclosure according to IEC 60529:1989 (Cl. 6.7 of IS 14927-1)
 - a) According to protection against ingress of solid foreign object (Cl. 6.7.1)
 - b) According to protection against ingress of water (Cl. 6.7.2)
 - c) According to protection against access to hazardous parts (Cl. 6.7.3)
 - iii. According to the intended installation positions (Cl. 6.101)
 - a) CDS embedded in the wall or ceiling
 - b) CTS/CDS flush in the wall or ceiling - CTS/CDS flush in the wall / CTS/CDS flush in the ceiling
 - c) CTS/CDS semi-flush or surface-mounted on the wall or ceiling - CTS/CDS semi-flush or surface-mounted on the wall / CTS/CDS semi-flush or surface-mounted on the ceiling / CTS/CDS wall fixed and supported by the floor
 - d) CTS/CDS wall fixed and supported by a horizontal surface other than the floor
 - iv. According to the prevention of contact between liquids and insulated conductors and live parts in case of CTS/CDS mounted in a skirting position and wet-treatment of floor (Cl. 6.102):
 - a) Not declared
 - b) Relying completely on manufacturer's instructions restricting the installation position of the CTS/CDS
 - c) Relying on manufacturer's instructions allowing all installation positions of the CTS/CDS but restricting the position of insulated conductors and live parts in CTS/CDS
 - d) Relying on manufacturer's instructions allowing all installation positions of CTS/CDS and all positions of insulated conductors and live parts in CTS/CDS

ANNEX- B
LIST OF TEST EQUIPMENTS
(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. No.	Tests used in with Clause Reference	Test Equipment
1.	Cl. 9 - Construction	Finger Test Apparatus Digital Compression Test Apparatus Torque Meter Force meter (Axial) Deep freezer Measuring tape / steel scale Test probe B & Test probe 11 of IEC 61032 Stopwatch
2.	Cl. 10 – Mechanical Properties	Travelling Microscope with magnifying glass Ball Pressure Test Apparatus Impact Test Apparatus Conditioning chamber with digital temperature controller Air Oven Stopwatch Load arrangement / weights Increasing vertical compression force
3.	Cl. 11 – Electrical characteristics	Electrical continuity test apparatus AC High Voltage Tester Million Mega ohm meter Water Bath with digital temperature controller Humidity chamber with timer AC source Impedence meter
4.	Cl. 12 – Thermal properties	Heating oven Finger Test Apparatus Digital Compression Test Apparatus Torque Meter Force meter (Axial) Deep freezer Measuring tape / steel scale Test probe B & Test probe 11 of IEC 61032 Stopwatch
5.	Cl. 13 – Fire Hazards	Flame Test Apparatus (Burner specified in IEC 60695-11-2) Glow Wire Test Apparatus with Timer
6.	Cl. 14 – External Influences	Heating Chamber with timer Arrangement for checking no ingress to dust and water

ANNEX C
SCHEME OF INSPECTION AND TESTING

1. QUALITY ASSURANCE PLAN

- 1.1. It is expected that manufacturers (licensees/applicants) will implement a Quality Assurance Plan i.e. a plan of regular testing and in-process controls, designed to ensure that the product bearing the Standard Mark conforms to all requirements of the Indian Standard.
- 1.2 The manufacturers shall define a Quality Assurance Plan defining the control unit (i.e. lot/batch etc.) and the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and submit the same to BIS Branch Office for information. The manufacturer shall comply with the same and maintain test records in accordance with para 2.4.

1.3 RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT:

- 1.3.1 For the guidance of manufacturers, the recommended definition of control unit is: CTS/CDS having same classification manufactured in a day under similar conditions shall constitute a control unit.
- 1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in Table 1.
- 1.3.3 The manufacturer shall ensure inspection and testing as per the Quality Assurance Plan submitted by them on the whole production of the factory which is covered by this plan. Alternatively, the manufacturer has the option of adherence to the quality plan as per levels of control recommended in column 3 of Table 1.
- 1.4 However, all manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard.

2. ENSURING COMPLIANCE THROUGH TESTING- It is expected that manufacturers (licensees/applicants) will establish a suitably equipped and staffed in house laboratory (In house testing facility) for testing at least those parameters of the Indian Standard which require routine testing for ensuring quality of the product. This includes in-process controls as may be defined and put in place by the manufacturer and testing parameters/requirements which can only be performed in the factory.

- 2.1 For the guidance of manufacturers, Table 1 giving the recommended levels of control is given below. Column 2 of Table 1 indicates routine tests where test equipment is required in house as “R” or other tests which can be subcontracted as “S”. Subcontracting is permitted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.2 For MSME manufacturers, the requirement of maintaining a laboratory/in-house testing facility for routine tests (indicated as “R” in Column 2 of Table 1) is also optional.

- 2.2.1 MSME manufacturers may utilize common cluster based facilities as per guidelines for the utilization of cluster based test facilities by MSMEs or the provisions of Sharing of testing facilities or get testing done from BIS recognized/empaneled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.3 Large Scale manufacturers shall maintain an in-house laboratory equipped at least with test facilities for routine tests (indicated as “R” in Column 2 of Table 1), where different tests given in the specification shall be carried out in accordance with the method given in the specification. They shall also implement a calibration plan for the in-house test equipment.

2.3.1 Alternatively, in lieu of an in-house laboratory, large scale manufacturers can also utilize the provisions of Sharing of testing facilities as per the Guidelines for Grant of Licence available on BIS website www.bis.gov.in. (Under Conformity Assessment>Product Certification Process). Even for subcontracted tests, provisions for sharing of testing facilities can be utilized.

2.4 TEST RECORDS- The manufacturers maintaining an in-house laboratory or utilizing common cluster based facilities or shared test facilities shall maintain test records for the tests carried out to establish conformity. For the tests being subcontracted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025, test reports issued by the laboratories shall be available for inspection by BIS.

3. PACKING AND MARKING - The Standard Mark as given in the Schedule of the licence shall be incorporated legibly and indelibly on each CTS/CDS (System component) provided always that the CTS/CDS so marked conforms to each requirement of the specification.

3.1 Marking on each CTS/CDS shall be done as per Cl. 7.1 & 7.2 of IS 14927 (Part 2 / Sec 1): 2023.

3.2 **Additional Marking requirements:** CTS/CDS shall also be marked with the following additional requirement on each packaging:

a) “For BIS certification details please visit www.bis.gov.in”

3.3 The manufacturer shall also provide documentation containing all the information necessary for the proper and safe installation and use for each of the CTS/CDS (System component).

3.4 All the production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark.

4. HYGIENIC CONDITIONS (if applicable) – NA.

5. REJECTION - Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act,2016.

TABLE-1

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S:Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Methods			No. of Sample	Frequency	Remarks
		Clause	Reference				
7	Marking and Documentation	7.1 to 7.4	IS 14927 (Part 1)	R	Each CTS / CDS		
9	Construction						
	Sharp edges	9.1	IS 14927 (Part 1)	R	As per Cl. 5 of IS 14927 (Part 1)	Firm to have adequate in-process controls to check compliance of this parameter. However, appropriate records shall be maintained by the manufacturer for evidence of conformity.	
	Apparatus mounting	9.2					
		10.5					
	Means for protective separation and/or retention	9.3					
	Mechanical connections	9.4.1					
		9.4.2					
		9.4.3					
		9.4.4					
	Accessible conductive parts	9.5.2					
		9.5.3					
	Access to live parts	9.7.1					
		9.7.2					
		9.7.3					
		9.7.4					
	Inlet openings	9.8					
	Membranes	9.9.1					
		9.9.2					
		9.9.3					
9.9.4							
9.9.5							
Cable restrainer	9.10						
Cable anchorage	9.11						
Assembling	9.101	IS 14927 (Part 2 / Sec 1)			Firm to have adequate in-process controls to check compliance of this parameter. However, appropriate records shall be maintained by the manufacturer for		

	Contact between liquids and insulated conductors and live parts	9.102				evidence of conformity.	
						Each Control Unit	
10	Mechanical Properties						
	Cable support test	10.2	IS 14927 (Part 2 / Sec 1)	R	As per Cl. 5 of IS 14927 (Part 1)	Once in a month	For each of the variety of CTS/ CDS manufactured during that month
	Impact test	10.3		R			
	Linear deflection test	10.4		R			
	External load test	10.5	IS 14927 (Part 1)	R			
	System access cover retention	10.6	IS 14927 (Part 2 / Sec 1)	R			
	Compression test for CDS	10.101		R			
11	Electrical properties						
	Electrical continuity	11.1.1 to 11.1.3	IS 14927 (Part 1)	R	As per Cl. 5 of IS 14927 (Part 1)	Once in a month	For each of the variety of CTS/ CDS manufactured during that month
	Electrical insulation	11.2.1 to 11.2.4		R			
12	Thermal properties						
	Resistance to heat	12.1.1 to 12.1.3	IS 14927 (Part 1)	R	As per Cl. 5 of IS 14927 (Part 1)	Once in a month	For each of the variety of CTS/ CDS manufactured during that month
13	Fire Hazards						
	Reaction to fire	13.1.1 to 13.1.4	IS 14927 (Part 1)	R	As per Cl. 5 of IS 14927 (Part 1)	Once in a month	For each of the variety of CTS/ CDS manufactured during that month
14	External influences						
	Degree of protection provided by enclosure	14.1.1 to 14.1.4	IS 14927 (Part 1)	S	As per Cl. 5 of IS 14927 (Part 1)	Once in a month	For each of the variety of CTS/ CDS manufactured during that month
15	Electromagnetic compatibility						
		15	IS 14927 (Part 1)	S	As per Cl. 5 of IS 14927 (Part 1)	Once in a year	Tests to be carried only if the installed CTS / CDS as part of a wiring installation, can emit or can be influenced by electromagnetic signals