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SERIES L: ENVIRONMENT AND ICTS, CLIMATE
CHANGE, E-WASTE, ENERGY EFFICIENCY;
CONSTRUCTION, INSTALLATION AND PROTECTION
OF CABLES AND OTHER ELEMENTS OF OUTSIDE
PLANT

Power feeding and energy storage

**Specifications of 10 kVAC input and up to
400 VDC output integrated power system in data
centre and telecommunication room**

Recommendation ITU-T L.1230

ITU-T L-SERIES RECOMMENDATIONS

ENVIRONMENT AND ICTS, CLIMATE CHANGE, E-WASTE, ENERGY EFFICIENCY; CONSTRUCTION, INSTALLATION AND PROTECTION OF CABLES AND OTHER ELEMENTS OF OUTSIDE PLANT

OPTICAL FIBRE CABLES	
Cable structure and characteristics	L.100–L.124
Cable evaluation	L.125–L.149
Guidance and installation technique	L.150–L.199
OPTICAL INFRASTRUCTURES	
Infrastructure including node elements (except cables)	L.200–L.249
General aspects and network design	L.250–L.299
MAINTENANCE AND OPERATION	
Optical fibre cable maintenance	L.300–L.329
Infrastructure maintenance	L.330–L.349
Operation support and infrastructure management	L.350–L.379
Disaster management	L.380–L.399
PASSIVE OPTICAL DEVICES	L.400–L.429
MARINIZED TERRESTRIAL CABLES	L.430–L.449
E-WASTE AND CIRCULAR ECONOMY	L.1000–L.1199
POWER FEEDING AND ENERGY STORAGE	L.1200–L.1299
ENERGY EFFICIENCY, SMART ENERGY AND GREEN DATA CENTRES	L.1300–L.1399
ASSESSMENT METHODOLOGIES OF ICTS AND CO2 TRAJECTORIES	L.1400–L.1499
ADAPTATION TO CLIMATE CHANGE	L.1500–L.1599
CIRCULAR AND SUSTAINABLE CITIES AND COMMUNITIES	L.1600–L.1699
LOW COST SUSTAINABLE INFRASTRUCTURE	L.1700–L.1799

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Recommendation ITU-T L.1230

Specifications of 10 kVAC input and up to 400 VDC output integrated power system in data centre and telecommunication room

Summary

With the development of big data and cloud computing technology, the quantity and total capacity of the data centre and telecommunication room as well as information and communication technology (ICT) equipment power density is increasing rapidly. Furthermore, it has been found that the traditional power systems had the disadvantages of low energy efficiency, high energy consumption and maintenance difficulties in existing data centre and telecommunication rooms. It is therefore necessary to develop a new structure of the whole power system which integrates the traditional 10 kVAC voltage distribution equipment, transformer, low voltage distribution equipment and up to 400 VDC equipment. In the new structure the distribution system of each voltage level is simplified, so that the maintenance work is reduced, and the reliability of the whole power system is improved. Recommendation ITU-T L.1230 includes system composition, general requirements, and monitoring system, etc. of 10 kVAC input and up to 400 VDC.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
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10 kVAC, data centre, power system, telecommunication room, up to 400 VDC.

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FOREWORD

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

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Table of Contents

	Page
1 Scope	1
2 References.....	1
3 Definitions	2
3.1 Terms defined elsewhere	2
3.2 Terms defined in this Recommendation.....	2
4 Abbreviations and acronyms	2
5 Conventions	2
6 System composition.....	2
6.1 System composition.....	2
6.2 10 kVAC input cabinet.....	3
6.3 Phase shifting transformer cabinet	3
6.4 Rectifier cabinet.....	3
6.5 Output distribution cabinet	3
6.6 Integrated detection module	3
6.7 System configuration method.....	4
7 General requirements.....	4
7.1 Output voltage range	4
7.2 Safety requirement.....	4
7.3 EMC requirement	4
7.4 Resistibility	4
8 Monitoring system.....	5
Appendix I – Example of conditions for 10 kVAC input and up to 400 VDC output integrated power system efficiency testing.....	6
I.1 Environmental conditions.....	6
I.2 Electrical conditions	6
I.3 Metrology requirements	6
I.4 Test configurations and results	6
Appendix II – Example of operation and maintenance.....	8
II.1 Verification test	8
II.2 Daily routine inspection	8
II.3 Regular maintenance	8
Appendix III – Example of application with 10 kVAC input and up to 400 VDC output integrated power system	11
III.1 Comparison between traditional scheme and this scheme	11
III.2 Project advantages	11
Bibliography.....	14

Recommendation ITU-T L.1230

Specifications of 10 kVAC input and up to 400 VDC output integrated power system in data centre and telecommunication room

1 Scope

This Recommendation specifies the structure of the 10 kVAC input and up to 400 VDC output integrated power system in the data centre and telecommunication room. This Recommendation covers the following items:

- 1) System composition of 10 kVAC input and up to 400 VDC output integrated power system.
- 2) General requirements including output voltage range, safety requirement, electromagnetic compatibility (EMC) requirement, resistibility.
- 3) Monitoring system function of power system.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

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| [ITU-T K.20] | Recommendation ITU-T K.20 (2021), <i>Resistibility of telecommunication equipment installed in a telecommunication centre to overvoltages and overcurrents.</i> |
| [ITU-T K.21] | Recommendation ITU-T K.21 (2019), <i>Resistibility of telecommunication equipment installed in customer premises to overvoltages and overcurrents.</i> |
| [ITU-T K.44] | Recommendation ITU-T K.44 (2019), <i>Resistibility tests for telecommunication equipment exposed to overvoltages and overcurrents – Basic Recommendation.</i> |
| [ITU-T K.85] | Recommendation ITU-T K.85 (2011), <i>Requirements for the mitigation of lightning effects on home networks installed in customer premises.</i> |
| [ITU-T K.151] | Recommendation ITU-T K.151 (2022), <i>Electrical safety and lightning protection of medium voltage input and up to ± 400 VDC output power system in ICT data centres and telecommunication centres.</i> |
| [ITU-T L.1200] | Recommendation ITU-T L.1200 (2012), <i>Direct current power feeding interface up to 400 V at the input to telecommunication and ICT equipment.</i> |
| [ITU-T L.1201] | Recommendation ITU-T L.1201 (2014), <i>Architecture of power feeding systems of up to 400 VDC.</i> |
| [ITU-T L.1206] | Recommendation ITU-T L.1206 (2017), <i>Impact on ICT equipment architecture of multiple AC, -48VDC or up to 400 VDC power inputs.</i> |
| [ITU-T L.1320] | Recommendation ITU-T L.1320 (2014), <i>Energy efficiency metrics and measurement for power and cooling equipment for telecommunications and data centres.</i> |
| [IEC 62477-2] | IEC 62477-2 Ed 1.0 (2018), <i>Safety requirements for power electronic converter systems and equipment – Part 2: Power electronic converters from 1 000 V AC or 1 500 V DC up to 36 kV AC or 54 kV DC.</i> |