Final draft ETSI ES 202 336-1 V1.3.0 (2025-02)

Environmental Engineering (EE); Monitoring and Control Interface for Infrastructure Equipment (Power, Cooling and Building Environment Systems used in Telecommunication Networks) Part 1: Generic Interface

iTeh Standards
(https://standards.iteh.ai)
Document Preview
ETSI ES 202 336-1 V1.3.0 (2025-02)
https://standards.iteh.ai/catalog/standards/etsi/948bff55-1979-4e4e-a9aa-ae21f99ff08b/etsi-es-202-336-1-v1-3-0-2025-02

Reference
RES/EE-02105

Keywords
control, interface, management, power, system

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° w061004871

Important notice

The present document can be downloaded from the
ETSI Search & Browse Standards application.

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format on ETSI deliver repository.

Users should be aware that the present document may be revised or have its status changed, this information is available in the Milestones listing.

If you find errors in the present document, please send your comments to the relevant service listed under Committee Support Staff.

If you find a security vulnerability in the present document, please report it through our Coordinated Vulnerability Disclosure (CVD) program.

https://standards.iteh.ai/catalog/standards/etsi/948bff55-1979-4c4e-a9aa-ae21f99ff08b/etsi-es-202-336-1-v1-3-0-2025-02

Notice of disclaimer & limitation of liability

The information provided in the present deliverable is directed solely to professionals who have the appropriate degree of experience to understand and interpret its content in accordance with generally accepted engineering or other professional standard and applicable regulations.
No recommendation as to products and services or vendors is made or should be implied.
No representation or warranty is made that this deliverable is technically accurate or sufficient or conforms to any law and/or governmental rule and/or regulation and further, no representation or warranty is made of merchantability or fitness for any particular purpose or against infringement of intellectual property rights.
In no event shall ETSI be held liable for loss of profits or any other incidental or consequential damages.

Any software contained in this deliverable is provided "AS IS" with no warranties, express or implied, including but not limited to, the warranties of merchantability, fitness for a particular purpose and non-infringement of intellectual property rights and ETSI shall not be held liable in any event for any damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or any other pecuniary loss) arising out of or related to the use of or inability to use the software.

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.
The content of the PDF version shall not be modified without the written authorization of ETSI.
The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2025.
All rights reserved.

Contents

Intellectual Property Rights 7
Foreword 7
Modal verbs terminology 8
Executive summary 8
Introduction 8
1 Scope 9
2 References 9
2.1 Normative references 9
2.2 Informative references 10
3 Definition of terms, symbols and abbreviations 12
3.1 Terms 12
3.2 Symbols 14
3.3 Abbreviations 14
4 Monitoring and Control (M&C) overview 16
4.0 General 16
4.1 Infrastructure equipment management network general description 17
4.2 Site Internal Communication Architecture 18
4.3 Infrastructure Equipment Monitoring & Control management network example 21
4.4 Infrastructure Equipment Monitoring & Control management scenario 22
5 Infrastructure equipment monitoring & control management interface and network architecture 25
5.0 General 25
5.1 Distributed intelligence 26
5.2 CU, DGU, LMA management interface 26
5.3 Interface and protocol diversity 26
5.4 Open interface and software 28
5.5 Interface levels 28
5.5.1 Alarm and state loops interface on CU or DGU output 28
5.5.2 Low level protocol equipment CU mediation by DGU 29
5.5.3 CU and DGU high level protocol interface 29
5.6 Transport Control Layer 30
5.7 Physical and network layer 30
5.8 Network Management system upgrade 30
6 Infrastructure equipment monitoring & control main goals 31
6.1 Data in the infrastructure equipment monitoring & control network 31
6.1.0 General 31
6.1.1 Mandatory data in the infrastructure equipment monitoring & control network 32
6.1.2 Optional data in the infrastructure equipment monitoring & control network 33
6.3 High level application and data structure flexibility 33
6.4 Data interface complexity and structure 34
6.4.1 Information 34
6.4.2 Status and event 35
6.4.3 Alarm severity and event class 35
7 Infrastructure equipment monitoring & control management typical content subsets 35
7.0 General 35
7.1 DC power system ETSI ES 202 336-2 38
7.2 AC UPS power system ETSI ES 202 336-3 38
7.3 AC distribution switchboard ETSI ES 202 336-4 38
7.4 AC diesel back-up generator ETSI ES 202 336-5 38
7.5 Thermal environment and cooling system ETSI ES 202 336-6 38
7.6 Other utilities system ETSI ES 202 336-7 38
7.7 Remote power feeding system ETSI ES 202 336-8 38

iTeh Standards
(https://standards.iteh.ai)
Document Preview

7.8 Alternative power systems ETSI ES 202 336-9 38
7.9 AC inverter power system ETSI ES 202 336-10 38
7.10 Battery system with integrated control and monitoring information model ETSI ES 202 336-11 38
7.11 ICT equipment power, energy, and environmental parameters monitoring information model ETSI ES 202 336-12 38

8 Principle of Power, Energy, Environmental parameters (PEE) measurement 39
8.0 General 39
8.1 Power and energy consumption measurement 39
8.2 Voltage, current measurement 40
8.3 Accuracy of PEE measurement 40
8.3.1 Electrical measurement accuracy 40
8.3.2 Compatibility with IEC standard 41
8.4 Local acquisition record 42
8.5 Accuracy verification 42
8.6 Data transmission period 43
8.7 Local record saving 43

9 Supervisor functions and performance 43
9.0 General 43

10 Data structure format for exchange between CU or DGU and LMA or RMA by infrastructure equipment monitoring & control agent 44
10.0 General 44
10.1 Standard elements of any equipment, system or subsystem 45
10.1.1 Standard elements 45
10.1.2 Alarm and event message 45
10.1.3 The <description_table> element 46
10.1.4 The <alarm_table> element 48
10.1.5 The <event_table> element 49
10.1.6 The <data_table> element 50
10.1.7 The <data_record_table> element 51
10.1.8 The <config_table> element 53
10.1.9 The <control_table> element 53
10.2 The <site> element 54
10.2.0 General 54
10.2.1 Recommendation about the <description_table> of the <site> element 54
10.3 The <energy_system> element 55

Annex A (informative): Communication between LMA/RMA and infrastructure equipment monitoring & control agent using YANG/NETCONF and REST 57

A.0 Introduction 57

A.1 Communication initiated by the LMA/RMA 58
A.1.0 Introduction 58
A.1.1 The GET method 58
A.1.2 The POST method 60

A.2 Communication initiated by DGU/CU 60

Annex B (informative): Data Coherence and reliability for infrastructure equipment monitoring & control 61

B.0 Introduction 61

B.1 Data integrity, coherence and management network reliability 61

B.2 Application data coherence and integrity 61

B.3 Naming and data origin 62

B.4 CU, DGU reliability 62

B.5 LMA reliability 62

iTeh Standards
(https://standards.iteh.ai)
Document Preview
https://standards.iteh.ai/catalog/standards/etsi/9488b155-9979-4e4e-a9aa-ae21f99ff08b/etsi-es-202-336-1-v1.3.0-2025-02

B.6 RMA reliability 63
B.7 Ethernet and IP network reliability 63
B.8 Computer and OS reliability 63
B.9 Application reliability 63

Annex C (informative): Network element functions and software architecture and choices 65
C.1 General description 65
C.2 Functions of the RMA 66
C.3 Data analysis 66
C.4 Safety monitoring input provision 67
C.5 Software working and development environment 67

Annex D (informative): Network capacity and timing 68
D.0 Introduction 68
D.1 Management and Network Capacity 68
D.2 Memory capacity 68
D.3 Timing performance 68

Annex E (informative): Overview of the XML format 70
E.0 Introduction 70
E.1 XML 70
E.2 XML declaration 70
E.3 XML element, XML root element and XML child element 70
E.4 XML document 71
E.5 XML Attribute 71
E.6 XML Schema 71
E.7 XML Schema Datatypes 71
E.8 XSL Languages 72
E.9 XSLT 73
E.10 XPath 73

Annex F (informative): Hints about the choice of OSI or IP models, physical network layers and intranet-Ethernet access protocols 74
F.0 Introduction 74
F.1 OSI and IP models 74
F.2 Details on IP layers 75
F.2.1 Application Layer 75
F.2.2 Transport Layer 76
F.2.3 Network Layer 76
F.2.4 Link Layer 76
F.3 Internet- Ethernet access protocol PPPoE, PPPoA, PoS 77
F.3.1 PPPoE 77
F.3.2 PPP service 78
F.3.3 Other PPP 78

iTeh Standards
(https://standards.iteh.ai)
Document Preview
ETSI ES 202 336-1 V1.3.0 (2025-02)
https://standards.iteh.ai/catalog/standards/etsi/948bff55-1979-4e4e-a9aa-ae21f99ff08b/etsi-es-202-336-1-v1-3-0-2025-02

Annex G (informative): Common API 79

Annex H (informative): State of the art of power, energy measurement and monitoring systems 81

H.0 Introduction 81

H.1 Acquisition and remote metering principles 81

H.2 General description of measurement 83

H.2.1 General principle 83

H.2.2 Measurement sensors 83

Annex I (informative): Bibliography 88

Annex (informative): Change history 89

History 90

iTeh Standards
(https://standards.iteh.ai)
Document Preview
ETSI ES 202 336-1 V1.3.0 (2025-02)
https://standards.iteh.ai/catalog/standards/sist/...

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The declarations pertaining to these essential IPRs, if any, are publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI IPR online database.

Pursuant to the ETSI Directives including the ETSI IPR Policy, no investigation regarding the essentiality of IPRs, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™**, **LTE™** and **5G™** logo are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners. **oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners. **GSM**® and the GSM logo are trademarks registered and owned by the GSM Association.

iTeh Standards
(https://standards.iteh.ai)
Document Preview

Foreword

This final draft ETSI Standard (ES) has been produced by ETSI Technical Committee Environmental Engineering (EE), and is now submitted for the ETSI Membership Approval Procedure.

ETSI ES 202 336-1 V1.3.0 (2025-02)

The present document is part 1 of a multi-part deliverable covering Environmental Engineering (EE); Monitoring and Control Interface for Infrastructure Equipment (power, cooling and building environment systems used in telecommunication networks), as identified below:

https://standards.iteh.ai/catalog/standards/sist/[illegible]/etsi-es-202-336-1-v1-3-0-2025-02

Part 1: "Generic Interface";

Part 2: "DC power system control and monitoring information model";

Part 3: "AC UPS power system control and monitoring information model";

Part 4: "AC distribution power system control and monitoring information model";

Part 5: "AC diesel back-up generator system control and monitoring information model";

Part 6: "Air Conditioning System control and monitoring information model";

Part 7: "Other utilities system control and monitoring information model";

Part 8: "Remote Power Feeding System control and monitoring information model";

Part 9: "Alternative Power Systems";

Part 10: "AC inverter power system control and monitoring information model";

Part 11: "Battery system with integrated control and monitoring information model";

Part 12: "ICT equipment power, energy and environmental parameters monitoring information model".

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Executive summary

The present document will describe the generic monitoring and control interface for infrastructure equipment. The present document should follow a two-stage approach:

a) protocol-independent information modelling;

b) protocol-specific data modelling e.g. in YAML/JSON.

The present document applies to monitoring and control of Infrastructure Environment i.e. power, cooling and building environment systems for telecommunication centres and access network locations; also the monitoring energy and environmental parameters for Information Communication Technology (ICT) equipment in telecommunications sites or datacenter or customer premises are considered.

Interoperability of heterogeneous management interfaces and systems with multi-vendor equipment is the key issue. The present document gives a general approach from equipment to management system.

The multi-part deliverable is composed of a generic core part (the present document) and several specific parts for equipment category.

The present document defines:

- The site equipment maps and its division in functional subsets e.g. DC system which introduces part 2 and following parts of this multi-part deliverable.
- The generic set of exchanged information required at the interface of equipment, which is instanced for each equipment subset in part 2 and following parts of this multi-part deliverable.
- The minimum requirement for network architecture allowing some compatibility with old existing interface and the mechanism to exchange data between network elements.
- The data interface protocol for remote or local site management (Machine to Machine Interface MMI) and Human Machine Interface HMI for monitoring and controlling.
- Recommendations for a management network such as dependability, data back-up, data coherence and synchronization all along the management network, response time, fault detection and partial service in case of failure.
- The Measurement accuracy of Power, Energy and Environmental parameters (PEE).

An architecture for monitoring Power, Energy and Environmental parameters (PEE) for data originated by different types of site infrastructure equipment is defined.

iTeh Standards
(https://standards.iteh.ai)
Document Preview
ETSI ES 202 336-1 V1.3.0 (2025-02)
https://standards.iteh.ai/catalog/standards/etsi/948bf55-1979-4e4e-a9aa-ae21199ff08b/etsi-es-202-336-1-v1-3-0-2025-02

Introduction

The present document was developed jointly by ETSI TC EE and ITU-T Study Group 5. It is published respectively by ITU and ETSI as Recommendation ITU-T L.MCI Gen [i.33] and ETSI ES 202 336-1 (the present document), which are technically equivalent.

1 Scope

The present document applies to monitoring and control of Infrastructure Environment i.e. power, cooling and building environment systems for telecommunication centres and access network locations; also, the monitoring of energy and environmental parameters: Power Energy Environmental (PEE) parameters for ICT equipment in telecommunications sites or datacenter or customer premises are considered.

Interoperability of heterogeneous management interfaces and systems with multi-vendor equipment is the key issue. The present document gives a general approach from equipment to management system.

The multi-part deliverable is composed of a generic core part (the present document) and several specific parts for equipment category.

The present document defines:

- The site equipment maps and its division in functional subsets e.g. DC system which introduces following parts of this multi-part deliverable.
- The generic set of exchanged information required at the interface of equipment, which is instanced for each equipment covered by following parts of this multi-part deliverable.
- The minimum requirement for network architecture allowing some compatibility with old existing interface and the mechanism to exchange data between network elements.
- The data interface protocol for remote or local site management (Machine to Machine Interface MMI) and Human Machine Interface HMI for monitoring and controlling.
- Recommendations for a management network such as dependability, data back-up, data coherence and synchronization all along the management network, response time, fault detection and partial service in case of failure.
- The Measurement accuracy of Power, Energy and Environmental Parameters (PEE).

iTeh Standards
(https://standards.iteh.ai)
Document Preview

2 References

ETSI ES 202 336-1 V1.3.0 (2025-02)
https://standards.iteh.ai/catalog/standards/etsi/948bff55-1979-4e4e-a9aa-ae21f99ff08b/etsi-es-202-336-1-v1-3-0-2025-02

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found in the ETSI docbox.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

[1] Recommendation ITU-T M.3010: "Principles for a Telecommunications management network".

[2] Recommendation ITU-T M.3100: "Generic network information model".

[3] Recommendation ITU-T X.733: "Information technology - Open Systems Interconnection - Systems Management: Alarm reporting function".

[4] IEC 60839-5-1: "Alarm and electronic security systems – Part 5-1: Alarm transmission systems – General requirements".

[5] Void.

[6] IETF RFC 7540: "Hypertext Transfer Protocol Version 2 (HTTP/2)".

[7] ISO/IEC 7498: "Open Systems Interconnection (OSI) — Basic Reference Model".

[8] IEEE 802™ series (all parts): "IEEE Standard for Telecommunications and Information Exchange Between systems - Local and metropolitan area networks".

[9] IETF RFC 8259: "The JavaScript Object Notation (JSON) Data Interchange Format".

[10] IETF RFC 7950: "The YANG 1.1 Data Modeling Language".

[11] ETSI EN 300 019-1-3: "Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 1-3: Classification of environmental conditions; Stationary use at weatherprotected locations".

[12] ETSI TS 132 130: "Universal Mobile Telecommunications System (UMTS); LTE; Telecommunication management; Network sharing; Concepts and requirements(3GPP TS 32.130)".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

iTeh Standards
(https://standards.iteh.ai)
Document Preview

[i.1] ETSI TR 102 336: "Environmental Engineering (EE); Power and cooling system control and monitoring guidance".

[i.2] Void.

[i.3] IETF RFC 2516: "A Method for Transmitting PPP Over Ethernet (PPPoE)".

https://standards.iteh.ai/catalog/standards/etsi/948bff55-1979-4e4e-a9aa-ae21f99ff08b/etsi-es-202-336-1-v1-3-0-2025-02

[i.4] IETF RFC 1191: "Path MTU discovery".

[i.5] IETF RFC 871: "Perspective on the ARPANET reference model".

[i.6] IETF RFC 1662: "PPP in HDLC-like Framing".

[i.7] IETF RFC 1994: "PPP Challenge Handshake Authentication Protocol (CHAP)".

[i.8] IETF RFC 2364: "PPP Over AAL5".

[i.9] IETF RFC 2615: "PPP over SONET/SDH".

[i.10] IETF RFC 1661: "The Point-to-Point Protocol (PPP)".

[i.11] ISO/IEC 8327: "Information technology — Open Systems Interconnection — Connection-oriented Session protocol: Protocol specification".

[i.12] ETSI ES 202 336-2: "Environmental Engineering (EE); Monitoring and control interface for infrastructure equipment (Power, Cooling and environment systems used in telecommunication networks); Part 2: DC power system control and monitoring information model".

[i.13] ETSI ES 202 336-3: "Environmental Engineering (EE); Monitoring and Control Interface for Infrastructure Equipment (Power, Cooling and Building Environment Systems used in Telecommunication Networks); Part 3: AC UPS power system control and monitoring information model".

[i.14] ETSI ES 202 336-4: "Environmental Engineering (EE); Monitoring and Control Interface for Infrastructure Equipment (Power, Cooling and Building Environment Systems used in Telecommunication Networks); Part 4: AC distribution power system control and monitoring information model".

[i.15] ETSI ES 202 336-5: "Environmental Engineering (EE); Monitoring and Control Interface for Infrastructure Equipment (Power, Cooling and Building Environment Systems used in Telecommunication Networks); Part 5: AC diesel back-up generator system control and monitoring information model".

[i.16] ETSI ES 202 336-6: "Environmental Engineering (EE); Monitoring and Control Interface for Infrastructure Equipment (Power, Cooling and Building Environment Systems used in Telecommunication Networks); Part 6: Air Conditioning System control and monitoring information model".

[i.17] ETSI ES 202 336-7: "Environmental Engineering (EE); Monitoring and Control Interface for Infrastructure Equipment (Power, Cooling and Building Environment Systems used in Telecommunication Networks); Part 7: Other utilities system control and monitoring information model".

[i.18] ETSI ES 202 336-8: "Environmental Engineering (EE); Monitoring and Control Interface for Infrastructure Equipment (Power, Cooling and Building Environment Systems used in Telecommunication Networks); Part 8: Remote Power Feeding System control and monitoring information model".

[i.19] ETSI ES 202 336-9: "Environmental Engineering (EE); Monitoring and Control Interface for Infrastructure Equipment (Power, Cooling and Building Environment Systems used in Telecommunication Networks); Part 9: Alternative Power Systems".

[i.20] ETSI ES 202 336-10: "Environmental Engineering (EE); Monitoring and Control Interface for Infrastructure Equipment (Power, Cooling and Building Environment Systems used in Telecommunication Networks); Part 10: AC inverter power system control and monitoring information model".

[i.21] ETSI ES 202 336-11: "Environmental Engineering (EE); Monitoring and control interface for infrastructure equipment (Power, Cooling and environment systems used in telecommunication networks); Part 11: Battery system with integrated control and monitoring information model".

[i.22] ETSI ES 202 336-12: "Environmental Engineering (EE); Monitoring and control interface for infrastructure equipment (power, cooling and building environment systems used in telecommunication networks); Part 12: ICT equipment power, energy and environmental parameters monitoring information model".

[i.23] ETSI EN 300 132-1: "Equipment Engineering (EE); Power supply interface at the input to Information and Communication Technology (ICT) equipment; Part 1: Alternating Current (AC)".

[i.24] ETSI EN 300 132-2: "Environmental Engineering (EE); Power supply interface at the input of Information and Communication Technology (ICT) equipment; Part 2: -48 V Direct Current (DC)".

[i.25] ETSI EN 300 132-3: "Environmental Engineering (EE); Power supply interface at the input of Information and Communication Technology (ICT) equipment; Part 3: Up to 400 V Direct Current (DC)".

[i.26] Recommendation ITU-T X.25: "Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit".

[i.27] LT0511 RevB datasheet: "Linear Technology LTC 1966 precision micropower RMS to DC converter".

[i.28] Mark Strzegowski: "Realizing the Full Potential of Your AMI Deployment with Meter Diagnostic Data", Analog Device.

iTeh Standards
(https://standards.iteh.ai)
Document Preview
https://standards.iteh.ai/catalog/standards/etsi/948bff55-1979-4e4e-a9aa-ae21f99ff08b/etsi-es-202-336-1-v1-3-0-2025-02

[i.29] ETSI EN 300 019-1-4: "Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 1-4: Classification of environmental conditions; Stationary use at non-weatherprotected locations".

[i.30] ETSI ES 203 700: "Environmental Engineering (EE); Sustainable power feeding solutions for 5G network".

NOTE: ETSI ES 203 700 is technically equivalent to Recommendation ITU-T L.1210: "Sustainable power-feeding solutions for 5G networks".

[i.31] Recommendation ITU-T L.1382: "Smart energy solution for telecommunication rooms".

[i.32] IEC 61557-12: 2018 /AMD (2021): "Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC. - Equipment for testing, measuring or monitoring of protective measures - Part 12: Power metering and monitoring devices".

[i.33] Recommendation ITU-T L.MCI Gen: "Monitoring and Control Interface for Infrastructure Equipment (Power, Cooling and Building Environment Systems used in Telecommunication Networks) Part 1: Generic Interface".

[i.34] W3C®: "XML Schema Part 2: Datatypes Second Edition".

3 Definition of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the following terms apply:

alarm: any information signalling abnormal state, i.e. different to specified normal state of hardware, software, environment condition (temperature, humidity, etc.)

NOTE: The alarm signal can be understood by itself by an operator and have at least one severity qualification or codification (colour, level, etc.).

alarm loop: electrical loop which open or closed state correspond to alarm start (set) or end (clear) state

alarm message: text parts of the alarm structure

alarm structure: organized set of information fields in an alarm data frame (time stamp, set/clear, text, etc.)

client post: any device (laptop, PDA, console, etc.) connected to servers via the operation system networks to perform maintenance or supervision operations

NOTE: It is independent of object class and object properties. The most common functions are GET and SET, equivalent to monitor and control.

Control Unit (CU): integrated unit in an equipment to monitor and control this equipment through sensors and actuators

Data Gathering Unit (DGU): functional unit used for several functions:

- collect serial, digital, and analogue data;
- option to send (output) serial or digital commands;
- forward/receive information to/from the Local/Remote Management Application via agreed protocols;
- mediation between interfaces and protocols.

NOTE: This functional unit may be integrated as part of specific equipment.

iTeh Standards (https://standards.iteh.ai) Document Preview
ETSI ES 202 336-1 V1.3.0 (2025-02)
https://standards.iteh.ai/catalog/standards/etsi/948b1f55-1979-4e4e-a9aa-ae21499f08b/etsi-es-202-336-1-v1-3-0-2025-02

Dynamic Host Configuration Protocol (DHCP): protocol used for self configuration of TCP/IP parameters of a workstation assigning IP address and a sub-network mask

NOTE: DHCP may also configure DNS.

Dynamic Name Server (DNS): server that associates a single domain name to an IP address

dynamic synoptic: dynamic display of geographical maps, networks, installations and equipment

event: any information signalling a change of state which is not an alarm: e.g. battery test, change of state of battery charge

NOTE: The alarm signal can be understood by itself by an operator and have at least one severity qualification or codification (colour, level, etc.). It is transmitted in a formatted structure with text message and other fields like for alarm, e.g. an event can be coded as an alarm with severity "0".

eXtended HTML (XHTML): stricter and cleaner version of HTML

NOTE 1: XHTML consists of all the elements in HTML 4.01 combined with the syntax of XML.

NOTE 2: It can be read by all XML browser (see W3C).

eXtensible Style sheet Language (XSL): language for expressing style sheets

NOTE: It consists of two parts, a language for transforming XML documents, and an XML vocabulary for specifying formatting semantics. An XSL style sheet specifies the presentation of a class of XML documents by describing how an instance of the class is transformed into an XML document that uses the formatting vocabulary.

Guidelines for Definition of Managed Objects (GDMO): syntax specification for the classification of objects and properties

NOTE: Associated to ASN.1 language for object definition.

infrastructure equipment: power, cooling and building environment systems used in telecommunications centres and Access Networks locations

EXAMPLE: Cabinets, shelters, underground locations, etc.

Intranet: internal company network generally using Ethernet protocol and extended IP addresses

logbook: chronological file that contains alarm and event messages may be paper or electronic

Management Information Base (MIB): dynamic data base that gathers all objects and should evolve to include automatic and manual configuration tools with self coherence tests

menu: list of possible input command choices that may be presented in different ways on a display

NOTE: Selection is normally made by a keyboard, a pointing device, a mouse or directly by finger on a sensitive screen.

object: class description of items that accept a set of properties or functions

NOTE: Generic objects can include more specific items and inherit from their properties. If correctly structured, object programming can allow the system to evolve, i.e. be more future-proof. The code should intrinsically be open and structured.

pop-up: information or command screen that appears when a menu choice is selected

NOTE: For example this may be a pop-up menu when the pointer is on a title button.

REpresentational State Transfer (REST): way to build an application for distributed system as www

warning: low severity alarm

iTeh Standards
(https://standards.iteh.ai)
Document Preview
ETSI ES 202 336-1 V1.3.0 (2025-02)
https://standards.iteh.ai/catalog/standards/sist/[illegible]-202-336-1-v1-3-0-2025-02

3.2 Symbols

For the purposes of the present document, the following symbols apply:

Tacq	Voltage and Current acquisition period

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

A/D	Analog to Digital
AC	Alternating Current
ADSL	Asynchronous Digital Subscriber Line
AFP	Advanced Function Presentation
API	Application Programming Interface
ARPANET	Advanced Research Projects Agency Network
ASAP	Application Specific Access Profile
ASN.1	Abstract Syntax Notation One
ASP	Abstract Service Primitive
ATM	Asynchronous Transfer Mode
ATP	Access Transport Protocol
BNC	Bayonet Nut Connector
BS	Base Station
CAN	Controller Area Network
CHAP	Challenge-Handshake Authentication Protocol
CIM	Common Information Model
CM	Configuration Management
CRC	Cycle Redundancy Check
CSMA/CD	Carrier Sense Multiple Access with Collision Detection
CSV	Comma Separated Values
CU	Control Unit
DC	Direct Current
DCF	Data Communication Function in TMN
DCU	Data Control Unit
DGU	Data Gathering Unit
DHCP	Dynamic Host Configuration Protocol
DNS	Dynamic Name Server
DSL	Digital Subscriber Line
EEPROM	Electrically Erasable and Programmable Read Only Memory
ENRP	Endpoint Name Resolution Protocol
EP	Exploitation Post
FCS	Frame Check Sequence
FIFO	First In First Out
FM	Fault Management
FTP	File Transfer Protocol
GDMO	Guidelines for Definition of Managed Objects
GPS	Global Positioning Systems
GSM	Global System for Mobile
HDLC	Hierarchical Data Link Control
HMI	Human-Machine Interface
HTML	HyperText Transfer Mark up Language
HTTP	HyperText Transfer Protocol
HTTPS	HyperText Transfer Protocol Secure
HW	Hardware
ICT	Information and Communication Technology
ID	Identifier
IEM&C	Infrastructure Equipment Monitoring & Control (mediation agent)
IP	Internet Protocol
IPCP	Internet Protocol Control Protocol
ISDN	Integrated Service Digital Network
ISP	Internet service Provider

iTeh Standards
(https://standards.iteh.ai)
Document Preview
ETSI ES 202 336-1 V1.3.0 (2025-02)
https://standards.iteh.ai/catalog/standards/etsi/948bff55-1979-4e4e-a9aa-ae21f99ff08b/etsi-es-202-336-1-v1-3-0-2025-02