

---

---

**Information technology — ASN.1  
encoding rules —**

**Part 3:  
Specification of Encoding Control  
Notation (ECN)**

*Technologies de l'information — Règles de codage ASN.1 —*

*Partie 3: Spécification de la notation de contrôle de codage (ECN)*

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

[ISO/IEC 8825-3:2021](https://standards.iteh.ai/catalog/standards/iso/a698e1af-c7ed-4f2f-ad74-7a3b14672e1b/iso-iec-8825-3-2021)

<https://standards.iteh.ai/catalog/standards/iso/a698e1af-c7ed-4f2f-ad74-7a3b14672e1b/iso-iec-8825-3-2021>



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

[ISO/IEC 8825-3:2021](https://standards.iteh.ai/catalog/standards/iso/a698e1af-c7ed-4f2f-ad74-7a3b14672e1b/iso-iec-8825-3-2021)

<https://standards.iteh.ai/catalog/standards/iso/a698e1af-c7ed-4f2f-ad74-7a3b14672e1b/iso-iec-8825-3-2021>



**COPYRIGHT PROTECTED DOCUMENT**

© ISO/IEC 2021

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier; Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

## Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives) or [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs))

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)) or the IEC list of patent declarations received (see [patents.iec.ch](http://patents.iec.ch)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html). In the IEC, see [www.iec.ch/understanding-standards](http://www.iec.ch/understanding-standards).

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 6, *Telecommunications and information exchange between systems*, in collaboration with ITU-T. The identical text is published as ITU-T X.692 (02/2021).

This fourth edition cancels and replaces the third edition (ISO/IEC 8825-3:2015), which has been technically revised.

A list of all parts in the ISO/IEC 8825 series can be found on the ISO and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html) and [www.iec.ch/national-committees](http://www.iec.ch/national-committees).



## CONTENTS

	<i>Page</i>
Introduction .....	x
1 Scope .....	1
2 Normative references .....	1
2.1 Identical Recommendations   International Standards .....	1
2.2 Additional references .....	2
3 Definitions .....	2
3.1 ASN.1 definitions .....	2
3.2 ECN-specific definitions .....	2
4 Abbreviations .....	5
5 Definition of ECN syntax .....	5
6 Encoding conventions and notation .....	5
7 The ECN character set .....	5
8 ECN lexical items .....	6
8.1 Encoding object references .....	6
8.2 Encoding object set references .....	6
8.3 Encoding class references .....	6
8.4 Reserved word items .....	7
8.5 Reserved encoding class name items .....	7
8.6 Non-ECN item .....	7
9 ECN Concepts .....	7
9.1 Encoding Control Notation (ECN) specifications .....	8
9.2 Encoding classes .....	8
9.3 Encoding structures .....	9
9.4 Encoding objects .....	9
9.5 Encoding object sets .....	9
9.6 Defining new encoding classes .....	9
9.7 Defining encoding objects .....	11
9.8 Differential encoding-decoding .....	11
9.9 Encoders options in encodings .....	12
9.10 Properties of encoding objects .....	12
9.11 Parameterization .....	12
9.12 Governors .....	13
9.13 General aspects of encodings .....	13
9.14 Identification of information elements .....	13
9.15 Reference fields and determinants .....	14
9.16 Replacement classes and structures .....	14
9.17 Mapping abstract values onto fields of encoding structures .....	15
9.18 Transforms and transform composites .....	15
9.19 Contents of Encoding Definition Modules .....	16
9.20 Contents of the Encoding Link Module .....	17
9.21 Defining encodings for primitive encoding classes .....	17
9.22 Application of encodings .....	19
9.23 Combined encoding object set .....	19
9.24 Application point .....	19
9.25 Conditional encodings .....	20
9.26 Other conditions for applying encodings .....	20
9.27 Encoding control for the open type .....	21
9.28 Changes to ASN.1 Recommendations   International Standards .....	21
10 Identifying encoding classes, encoding objects, and encoding object sets .....	21
11 Encoding ASN.1 types .....	24
11.1 General .....	24



21.12	The Comparison type.....	65
21.13	The SizeRangeCondition type .....	66
21.14	The ReversalSpecification type .....	66
21.15	The ResultSize type .....	67
21.16	The HandleValueSet type.....	67
21.17	The IntegerMapping type .....	68
22	Commonly used encoding property groups.....	68
22.1	Replacement specification.....	68
22.1.1	Encoding properties, syntax and purpose.....	68
22.1.2	Specification restrictions .....	69
22.1.3	Encoder actions .....	70
22.1.4	Decoder actions.....	70
22.2	Pre-alignment and padding specification .....	71
22.2.1	Encoding properties, syntax and purpose.....	71
22.2.2	Specification constraints .....	71
22.2.3	Encoder actions.....	71
22.2.4	Decoder actions.....	71
22.3	Start pointer specification.....	72
22.3.1	Encoding properties, syntax and purpose.....	72
22.3.2	Specification constraints .....	72
22.3.3	Encoder actions .....	72
22.3.4	Decoder actions.....	72
22.4	Encoding space specification .....	73
22.4.1	Encoding properties, syntax and purpose.....	73
22.4.2	Specification restrictions .....	73
22.4.3	Encoder actions.....	74
22.4.4	Decoder actions.....	74
22.5	Optionality determination .....	75
22.5.1	Encoding properties, syntax and purpose.....	75
22.5.2	Specification restrictions .....	75
22.5.3	Encoder actions .....	76
22.5.4	Decoder actions.....	76
22.6	Alternative determination.....	77
22.6.1	Encoding properties, syntax and purpose.....	77
22.6.2	Specification restrictions .....	77
22.6.3	Encoder actions .....	77
22.6.4	Decoder actions.....	78
22.7	Repetition space specification.....	78
22.7.1	Encoding properties, syntax and purpose.....	78
22.7.2	Specification constraints .....	79
22.7.3	Encoder actions.....	80
22.7.4	Decoder actions.....	80
22.8	Value padding and justification.....	81
22.8.1	Encoding properties, syntax, and purpose.....	81
22.8.2	Specification restrictions .....	82
22.8.3	Encoder actions .....	82
22.8.4	Decoder actions.....	83
22.9	Identification handle specification .....	83
22.9.1	Encoding properties, syntax and purpose.....	83
22.9.2	Specification constraints .....	84
22.9.3	Encoders actions.....	84
22.9.4	Decoders actions .....	84
22.10	Concatenation specification .....	84
22.10.1	Encoding properties, syntax and purpose.....	84
22.10.2	Specification constraints .....	85
22.10.3	Encoder actions .....	85
22.10.4	Decoder actions.....	85
22.11	Contained type encoding specification.....	85
22.11.1	Encoding properties, syntax and purpose.....	85
22.11.2	Encoder actions .....	86