NEMA STANDARDS PUBLICATION NO. PS 3.6

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Digital Imaging and Communications in Medicine (DICOM)

Part 6: Data Dictionary

NEMA

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION ■ 2101 L STREET, N.W., WASHINGTON, D.C. 20037

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NEMA PS*3.6 93 ■ 6470247 0505503 7T0 ■

NEMA Standards Publication PS 3.6-1993

Digital Imaging and Communications in Medicine (DICOM)
Part 6: Data Dictionary

Approved by:
The American College of Radiology

Published by

National Electrical Manufacturers Association
2101 L Street, N.W.
Washington, DC 20037

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ACR-NEMA

Digital Imaging Communications in Medicine
Part 6: Data Directory

FOREWORD

The American College of Radiology (ACR) and the National Electrical Manufacturers Association (NEMA) formed a joint committee to develop a standard for Digital Imaging and Communications in Medicine (DICOM). This DICOM Standard was developed according to the NEMA procedures.

This standard is developed in liaison with other standardization organizations including CEN TC251 in Europe and JIRA in Japan, with review also by other organizations including IEEE, HL7 and ANSI in the USA.

The DICOM Standard is structured as a multi-part document using the guidelines established in the following document:

— ISO/IEC Directives, 1989 Part 3 : Drafting and Presentation of International Standards.

This document is one part of the DICOM Standard which consists of the following parts:

PS 3.1: Introduction and Overview

PS 3.2: Conformance

PS 3.3: Information Object Definitions

PS 3.4: Service Class Specifications

PS 3.5: Data Structures and Encoding

PS 3.6: Data Dictionary

PS 3.7: Message Exchange

PS 3.8: Network Communication Support for Message Exchange

PS 3.9: Point-to-Point Communication Support for Message Exchange

These parts are related but independent documents. Their development level and approval status may differ. Additional parts may be added to this multi-part standard. PS 3.1 should be used as the base reference for the current parts of this standard.

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Digital Imaging Communications in Medicine (DICOM)
Part 6: Data Directory

1 Scope and field of application

This part of the DICOM Standard is PS 3.6 of a multi-part standard produced to facilitate the interchange of information between digital imaging computer systems in medical environments. This interchange will enhance diagnostic imaging and potentially other clinical applications. The multi-part DICOM Standard covers the protocols and data that shall be supplied to achieve this interchange of information.

This part of the standard contains the registry of all DICOM Data Elements and all DICOM Unique Identifiers that are defined within the DICOM Standard.

2 Normative references

The following standards contain provisions that, through references in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibilities of applying the most recent editions of the standards indicated below.

ACR-NEMA 300-1988 Digital Imaging and Communications

ISO 8649:1988 Information processing systems—Open Systems Interconnection—Sevice definition for the Association Control Service Element (ACSE).

ISO 8822:1988 Information processing systems—Open Systems Interconnection—Connection oriented presentation service definition.

ISO/IEC Directives, 1989 Part 3 - Drafting and presentation of International Standards.

3 Definitions

For the purposes of this standard, the following definitions apply.

3.1 *DICOM Introduction and overview definition*

This part of the standard makes use of the following term defined in PS 3.1:

a) Attribute

3.2 *DICOM Information object definition*

This part of the standard makes use of the following term defined in PS 3.3:

a) Attribute Tag

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3.3 *DICOM Data structures and encoding definitions*

This part of the standard makes use of the following terms defined in PS 3.5:

a) Data Element

b) Data Element Tag

c) Element Number

d) Group Number

e) Repeating Group

f) Retired Data Element

g) Standard Data Element

h) Value Multiplicity (VM)

i) Value Representation (VR)

3.4 *DICOM Data dictionary*

The following definition is commonly used in this Standard:

3.4.1 tag: A unique identifier for an element of information composed of an ordered pair of numbers (a Group Number followed by an Element Number), which is used to identify Attributes and corresponding Data Elements.

4 Symbols and abbreviations

The following symbols and abbreviations are used in this Standard.

4.1 ACR American College of Radiology

4.2 DICOM Digital Imaging and Communications in Medicine

4.3 IOD Information Object Definition

4.4 ISO International Standards Organization

4.5 NEMA National Electrical Manufacturers Association

4.6 OSI Open Systems Interconnection

4.7 TCP/IP Transmission Control Protocol/Internet Protocol

4.8 UID Unique Identifier

4.9 VM Value Multiplicity

4.10 VR Value Representation

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5 Conventions

Word(s) are capitalized in this document to help the reader understand that these word(s) have been previously defined in Section 3 and are to be interpreted with that meaning.

A Data Element Tag is represented as (gggg,eeee), where gggg equates to the Group Number and eeee equates to the Element Number within that Group. Data Element Tags are represented in hexadecimal notation as specified for each named Data Element in this Standard.

"RET" is used in the VR column to indicate that this Data Element is a Retired Data Element. These Data Elements are shown italicized.

--`,,`,`-`-`,,`,,`,`,,`---

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6 Registry of DICOM data elements

Tag	Name	VR	VM
(0008,0000)	Group Length	UL	1
(0008,0001)	*Length to End*	*RET*	
(0008,0005)	Specific Character Set	CS	1
(0008,0008)	Image Type	CS	1-n
(0008,0010)	*Recognition Code*	*RET*	
(0008,0012)	Instance Creation Date	DA	1
(0008,0013)	Instance Creation Time	TM	1
(0008,0014)	Instance Creator UID	UI	1
(0008,0016)	SOP Class UID	UI	1
(0008,0018)	SOP Instance UID	UI	1
(0008,0020)	Study Date	DA	1
(0008,0021)	Series Date	DA	1
(0008,0022)	Acquisition Date	DA	1
(0008,0023)	Image Date	DA	1
(0008,0024)	Overlay Date	DA	1
(0008,0025)	Curve Date	DA	1
(0008,0030)	Study Time	TM	1
(0008,0031)	Series Time	TM	1
(0008,0032)	Acquisition Time	TM	1
(0008,0033)	Image Time	TM	1
(0008,0034)	Overlay Time	TM	1
(0008,0035)	Curve Time	TM	1
(0008,0040)	*Data Set Type*	*RET*	
(0008,0041)	*Data Set Subtype*	*RET*	
(0008,0042)	Nuclear Medicine Series Type	CS	1
(0008,0050)	Accession Number	SH	1
(0008,0052)	Query/Retrieve Level	CS	1
(0008,0054)	Retrieve AE Title	AE	1-n
(0008,0058)	Failed SOP Instance UID List	UI	1-n

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Tag	Name	VR	VM
(0008,0060)	Modality	CS	1
(0008,0064)	Conversion Type	CS	1
(0008,0070)	Manufacturer	LO	1
(0008,0080)	Institution Name	LO	1
(0008,0081)	Institution Address	ST	1
(0008,0082)	Institution Code Sequence	SQ	1
(0008,0090)	Referring Physician's Name	PN	1
(0008,0092)	Referring Physician's Address	ST	1
(0008,0094)	Referring Physician's Telephone Numbers	SH	1-n
(0008,0100)	Code Value	SH	1
(0008,0102)	Coding Scheme Designator	SH	1
(0008,0104)	Code Meaning	LO	1
(0008,1000)	*Network ID*	*RET*	
(0008,1010)	Station Name	SH	1
(0008,1030)	Study Description	LO	1
(0008,1032)	Procedure Code Sequence	SQ	1
(0008,103E)	Series Description	LO	1
(0008,1040)	Institutional Department Name	LO	1
(0008,1050)	Performing Physician's Name	PN	1-n
(0008,1060)	Name of Physician(s) Reading Study	PN	1-n
(0008,1070)	Operators' Name	PN	1-n
(0008,1080)	Admitting Diagnoses Description	LO	1-n
(0008,1084)	Admitting Diagnosis Code Sequence	SQ	1
(0008,1090)	Manufacturer's Model Name	LO	1
(0008,1100)	Referenced Results Sequence	SQ	1
(0008,1110)	Referenced Study Sequence	SQ	1
(0008,1111)	Referenced Study Component Sequence	SQ	1
(0008,1115)	Referenced Series Sequence	SQ	1
(0008,1120)	Referenced Patient Sequence	SQ	1
(0008,1125)	Referenced Visit Sequence	SQ	1
(0008,1130)	Referenced Overlay Sequence	SQ	1
(0008,1140)	Referenced Image Sequence	SQ	1

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Tag	Name	VR	VM
(0008,1145)	Referenced Curve Sequence	SQ	1
(0008,1150)	Referenced SOP Class UID	UI	1
(0008,1155)	Referenced SOP Instance UID	UI	1
(0008,1160)	Referenced Frame Number	IS	1
(0008,2111)	Derivation Description	ST	1
(0008,2112)	Source Image Sequence	SQ	1
(0008,2120)	Stage Name	SH	1
(0008,2122)	Stage Number	IS	1
(0008,2124)	Number of Stages	IS	1
(0008,2128)	View Number	IS	1
(0008,2129)	Number of Event Timers	IS	1
(0008,212A)	Number of Views in Stage	IS	1
(0008,2130)	Event Elapsed Time(s)	DS	1-n
(0008,2132)	Event Timer Name(s)	LO	1-n
(0008,2142)	Start Trim	IS	1
(0008,2143)	Stop Trim	IS	1
(0008,2144)	Recommended Display Frame Rate	IS	1
(0008,2200)	Transducer Position	CS	1
(0008,2204)	Transducer Orientation	CS	1
(0008,2208)	Anatomic Structure	CS	1
(0008,4000)	*Comments*	*RET*	

Tag	Name	VR	VM
(0010,0000)	Group Length	UL	1
(0010,0010)	Patient's Name	PN	1
(0010,0020)	Patient ID	LO	1
(0010,0021)	Issuer of Patient ID	LO	1
(0010,0030)	Patient's Birth Date	DA	1
(0010,0032)	Patient's Birth Time	TM	1
(0010,0040)	Patient's Sex	CS	1
(0010,0050)	Patient's Insurance Plan Code Sequence	SQ	1
(0010,1000)	Other Patient IDs	LO	1-n

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Tag	Name	VR	VM
(0010,1001)	Other Patient Names	PN	1-n
(0010,1005)	Patient's Birth Name	PN	1
(0010,1010)	Patient's Age	AS	1
(0010,1020)	Patient's Size	DS	1
(0010,1030)	Patient's Weight	DS	1
(0010,1040)	Patient's Address	LO	1
(0010,1050)	*Insurance Plan Identification*	*RET*	
(0010,1060)	Patient's Mother's Birth Name	PN	1
(0010,1080)	Military Rank	LO	1
(0010,1081)	Branch of Service	LO	1
(0010,1090)	Medical Record Locator	LO	1
(0010,2000)	Medical Alerts	LO	1-n
(0010,2110)	Contrast Allergies	LO	1-n
(0010,2150)	Country of Residence	LO	1
(0010,2152)	Region of Residence	LO	1
(0010,2154)	Patient's Telephone Numbers	SH	1-n
(0010,2160)	Ethnic Group	SH	1
(0010,2180)	Occupation	SH	1
(0010,21A0)	Smoking Status	CS	1
(0010,21B0)	Additional Patient History	LT	1
(0010,21C0)	Pregnancy Status	US	1
(0010,21D0)	Last Menstrual Date	DA	1
(0010,21F0)	Patient's Religious Preference	LO	1
(0010,4000)	Patient Comments	LT	1

Tag	Name	VR	VM
(0018,0000)	Group Length	UL	1
(0018,0010)	Contrast/Bolus Agent	LO	1
(0018,0015)	Body Part Examined	CS	1
(0018,0020)	Scanning Sequence	CS	1-n
(0018,0021)	Sequence Variant	CS	1-n
(0018,0022)	Scan Options	CS	1-n

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Tag	Name	VR	VM
(0018,0023)	MR Acquisition Type	CS	1
(0018,0024)	Sequence Name	SH	1
(0018,0025)	Angio Flag	CS	1
(0018,0030)	Radionuclide	LO	1-n
(0018,0031)	Radiopharmaceutical	LO	1-n
(0018,0032)	Energy Window Centerline	DS	1
(0018,0033)	Energy Window Total Width	DS	1-n
(0018,0034)	Intervention Drug Name	LO	1
(0018,0035)	Intervention Drug Start Time	TM	1
(0018,0040)	Cine Rate	IS	1
(0018,0050)	Slice Thickness	DS	1
(0018,0060)	KVP	DS	1
(0018,0070)	Counts Accumulated	IS	1
(0018,0071)	Acquisition Termination Condition	CS	1
(0018,0072)	Effective Series Duration	DS	1
(0018,0080)	Repetition Time	DS	1
(0018,0081)	Echo Time	DS	1
(0018,0082)	Inversion Time	DS	1
(0018,0083)	Number of Averages	DS	1
(0018,0084)	Imaging Frequency	DS	1
(0018,0085)	Imaged Nucleus	SH	1
(0018,0086)	Echo Number(s)	IS	1-n
(0018,0087)	Magnetic Field Strength	DS	1
(0018,0088)	Spacing Between Slices	DS	1
(0018,0089)	Number of Phase Encoding Steps	IS	1
(0018,0090)	Data Collection Diameter	DS	1
(0018,0091)	Echo Train Length	IS	1
(0018,0093)	Percent Sampling	DS	1
(0018,0094)	Percent Phase Field of View	DS	1
(0018,0095)	Pixel Bandwidth	DS	1
(0018,1000)	Device Serial Number	LO	1
(0018,1004)	Plate ID	LO	1

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Tag	Name	VR	VM
(0018,1010)	Secondary Capture Device ID	LO	1
(0018,1012)	Date of Secondary Capture	DA	1
(0018,1014)	Time of Secondary Capture	TM	1
(0018,1016)	Secondary Capture Device Manufacturer	LO	1
(0018,1018)	Secondary Capture Device Manufacturer's Model Name	LO	1
(0018,1019)	Secondary Capture Device Software Version(s)	LO	1-n
(0018,1020)	Software Version(s)	LO	1-n
(0018,1022)	Video Image Format Acquired	SH	1
(0018,1023)	Digital Image Format Acquired	LO	1
(0018,1030)	Protocol Name	LO	1
(0018,1040)	Contrast/Bolus Route	LO	1
(0018,1041)	Contrast/Bolus Volume	DS	1
(0018,1042)	Contrast/Bolus Start Time	TM	1
(0018,1043)	Contrast/Bolus Stop Time	TM	1
(0018,1044)	Contrast/Bolus Total Dose	DS	1
(0018,1045)	Syringe counts	IS	1-n
(0018,1050)	Spatial Resolution	DS	1
(0018,1060)	Trigger Time	DS	1
(0018,1061)	Trigger Source or Type	LO	1
(0018,1062)	Nominal Interval	IS	1
(0018,1063)	Frame Time	DS	1
(0018,1064)	Framing Type	LO	1
(0018,1065)	Frame Time Vector	DS	n
(0018,1066)	Frame Delay	DS	1
(0018,1070)	Radionuclide Route	LO	1-n
(0018,1071)	Radionuclide Volume	DS	1-n
(0018,1072)	Radionuclide Start Time	TM	1-n
(0018,1073)	Radionuclide Stop Time	TM	1-n
(0018,1074)	Radionuclide Total Dose	DS	1-n
(0018,1080)	Beat Rejection Flag	CS	1
(0018,1081)	Low R-R Value	IS	1

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Tag	Name	VR	VM
(0018,1082)	High R-R Value	IS	1
(0018,1083)	Intervals Acquired	IS	1
(0018,1084)	Intervals Rejected	IS	1
(0018,1085)	PVC Rejection	LO	1
(0018,1086)	Skip Beats	IS	1
(0018,1088)	Heart Rate	IS	1
(0018,1090)	Cardiac Number of Images	IS	1
(0018,1094)	Trigger Window	IS	1
(0018,1100)	Reconstruction Diameter	DS	1
(0018,1110)	Distance Source to Detector	DS	1
(0018,1111)	Distance Source to Patient	DS	1
(0018,1120)	Gantry/Detector Tilt	DS	1
(0018,1130)	Table Height	DS	1
(0018,1131)	Table Traverse	DS	1
(0018,1140)	Rotation Direction	CS	1
(0018,1141)	Angular Position	DS	1
(0018,1142)	Radial Position	DS	1-n
(0018,1143)	Scan Arc	DS	1
(0018,1144)	Angular Step	DS	1
(0018,1145)	Center of Rotation Offset	DS	1
(0018,1146)	Rotation Offset	DS	1-n
(0018,1147)	Field of View Shape	CS	1
(0018,1149)	Field of View Dimension(s)	IS	1-2
(0018,1150)	Exposure Time	IS	1
(0018,1151)	X-ray Tube Current	IS	1
(0018,1152)	Exposure	IS	1
(0018,1160)	Filter Type	SH	1
(0018,1170)	Generator Power	IS	1
(0018,1180)	Collimator/grid Name	SH	1
(0018,1181)	Collimator Type	CS	1
(0018,1182)	Focal Distance	IS	1
(0018,1183)	X Focus Center	DS	1

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Tag	Name	VR	VM
(0018,1184)	Y Focus Center	DS	1
(0018,1190)	Focal Spot(s)	DS	1-n
(0018,1200)	Date of Last Calibration	DA	1-n
(0018,1201)	Time of Last Calibration	TM	1-n
(0018,1210)	Convolution Kernel	SH	1-n
(0018,1240)	*Upper/Lower Pixel Values*	*RET*	
(0018,1242)	Actual Frame Duration	IS	1
(0018,1243)	Count Rate	IS	1
(0018,1250)	Receiving Coil	SH	1
(0018,1251)	Transmitting Coil	SH	1
(0018,1260)	Plate Type	SH	1
(0018,1261)	Phosphor Type	LO	1
(0018,1300)	Scan Velocity	IS	1
(0018,1301)	Whole Body Technique	CS	1-n
(0018,1302)	Scan Length	IS	1
(0018,1310)	Acquisition Matrix	US	4
(0018,1312)	Phase Encoding Direction	CS	1
(0018,1314)	Flip Angle	DS	1
(0018,1315)	Variable Flip Angle Flag	CS	1
(0018,1316)	SAR	DS	1
(0018,1318)	dB/dt	DS	1
(0018,1400)	Acquisition Device Processing Description	LO	1
(0018,1401)	Acquisition Device Processing Code	LO	1
(0018,1402)	Cassette Orientation	CS	1
(0018,1403)	Cassette Size	CS	1
(0018,1404)	Exposures on Plate	US	1
(0018,1405)	Relative X-ray Exposure	IS	1
(0018,4000)	*Comments*	*RET*	
(0018,5000)	Output Power	SH	1-n
(0018,5010)	Transducer Data	LO	3
(0018,5012)	Focus Depth	DS	1
(0018,5020)	Preprocessing Function	LO	1

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Tag	Name	VR	VM
(0018,5021)	Postprocessing Function	LO	1
(0018,5022)	Mechanical Index	DS	1
(0018,5024)	Thermal Index	DS	1
(0018,5026)	Cranial Thermal Index	DS	1
(0018,5027)	Soft Tissue Thermal Index	DS	1
(0018,5028)	Soft Tissue-focus Thermal Index	DS	1
(0018,5029)	Soft Tissue-surface Thermal Index	DS	1
(0018,5030)	*Dynamic Range*	*RET*	
(0018,5040)	*Total Gain*	*RET*	
(0018,5050)	Depth of Scan Field	IS	1
(0018,5100)	Patient Position	CS	1
(0018,5101)	View Position	CS	1
(0018,5210)	Image Transformation Matrix	DS	6
(0018,5212)	Image Translation Vector	DS	3
(0018,6000)	Sensitivity	DS	1
(0018,6011)	Sequence of Ultrasound Regions	SQ	1
(0018,6012)	Region Spatial Format	US	1
(0018,6014)	Region Data Type	US	1
(0018,6016)	Region Flags	UL	1
(0018,6018)	Region Location Min X_0	UL	1
(0018,601A)	Region Location Min Y_0	UL	1
(0018,601C)	Region Location Max X_1	UL	1
(0018,601E)	Region Location Max Y_1	UL	1
(0018,6020)	Reference Pixel X_0	SL	1
(0018,6022)	Reference Pixel Y_0	SL	1
(0018,6024)	Physical Units X Direction	US	1
(0018,6026)	Physical Units Y Direction	US	1
(0018,6028)	Reference Pixel Physical Value X	FD	1
(0018,602A)	Reference Pixel Physical Value Y	FD	1
(0018,602C)	Physical Delta X	FD	1
(0018,602E)	Physical Delta Y	FD	1
(0018,6030)	Transducer Frequency	UL	1

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Tag	Name	VR	VM
(0018,6031)	Transducer Type	CS	1
(0018,6032)	Pulse Repetition Frequency	UL	1
(0018,6034)	Doppler Correction Angle	FD	1
(0018,6036)	Steering Angle	FD	1
(0018,6038)	Doppler Sample Volume X Position	UL	1
(0018.603A)	Doppler Sample Volume Y Position	UL	1
(0018,603C)	TM-Line Position X_0	UL	1
(0018,603E)	TM-Line Position Y_0	UL	1
(0018,6040)	TM-Line Position X_1	UL	1
(0018,6042)	TM-Line Position Y_1	UL	1
(0018,6044)	Pixel Component Organization	US	1
(0018,6046)	Pixel Component Mask	UL	1
(0018,6048)	Pixel Component Range Start	UL	1
(0018,604A)	Pixel Component Range Stop	UL	1
(0018,604C)	Pixel Component Physical Units	US	1
(0018,604E)	Pixel Component Data Type	US	1
(0018,6050)	Number of Table Break Points	UL	1
(0018,6052)	Table of X Break Points	UL	1-n
(0018,6054)	Table of Y Break Points	FD	1-n

Tag	Name	VR	VM
(0020,0000)	Group Length	UL	1
(0020,000D)	Study Instance UID	UI	1
(0020,000E)	Series Instance UID	UI	1
(0020,0010)	Study ID	SH	1
(0020,0011)	Series Number	IS	1
(0020,0012)	Acquisition Number	IS	1
(0020,0013)	Image Number	IS	1
(0020,0014)	Isotope Number	IS	1
(0020,0015)	Phase Number	IS	1
(0020,0016)	Interval Number	IS	1
(0020,0017)	Time Slot Number	IS	1

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Tag	Name	VR	VM
(0020,0018)	Angle Number	IS	1
(0020,0020)	Patient Orientation	CS	2
(0020,0022)	Overlay Number	IS	1
(0020,0024)	Curve Number	IS	1
(0020,0026)	LUT Number	IS	1
(0020,0030)	*Image Position*	*RET*	
(0020,0032)	Image Position (Patient)	DS	3
(0020,0035)	*Image Orientation*	*RET*	
(0020,0037)	Image Orientation (Patient)	DS	6
(0020,0050)	*Location*	*RET*	
(0020,0052)	Frame of Reference UID	UI	1
(0020,0060)	Laterality	CS	1
(0020,0070)	*Image Geometry Type*	*RET*	
(0020,0080)	*Masking Image*	*RET*	
(0020,0100)	Temporal Position Identifier	IS	1
(0020,0105)	Number of Temporal Positions	IS	1
(0020,0110)	Temporal Resolution	DS	1
(0020,1000)	Series in Study	IS	1
(0020,1001)	*Acquisitions in Series*	*RET*	
(0020,1002)	Images in Acquisition	IS	1
(0020,1004)	Acquisitions in Study	IS	1
(0020,1020)	*Reference*	*RET*	
(0020,1040)	Position Reference Indicator	LO	1
(0020,1041)	Slice Location	DS	1
(0020,1070)	Other Study Numbers	IS	1-n
(0020,1200)	Number of Patient Related Studies	IS	1
(0020,1202)	Number of Patient Related Series	IS	1

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Tag	Name	VR	VM
(0020,1204)	Number of Patient Related Images	IS	1
(0020,1206)	Number of Study Related Series	IS	1
(0020,1208)	Number of Study Related Images	IS	1
(0020,3100 to 31FF)	*Source Image IDs*	*RET*	
(0020,3401)	*Modifying Device ID*	*RET*	
(0020,3402)	*Modified Image ID*	*RET*	
(0020,3403)	*Modified Image Date*	*RET*	
(0020,3404)	*Modifying Device Manufacturer*	*RET*	
(0020,3405)	*Modified Image Time*	*RET*	
(0020,3406)	*Modified Image Description*	*RET*	
(0020,4000)	Image Comments	LT	1
(0020,5000)	*Original Image Identification*	*RET*	
(0020,5002)	*Original Image Identification Nomenclature*	*RET*	

Tag	Name	VR	VM
(0028,0000)	Group Length	UL	1
(0028,0002)	Samples per Pixel	US	1
(0028,0004)	Photometric Interpretation	CS	1
(0028,0005)	*Image Dimensions*	*RET*	
(0028,0006)	Planar Configuration	US	1
(0028,0008)	Number of Frames	IS	1
(0028,0009)	Frame Increment Pointer	AT	1
(0028,0010)	Rows	US	1
(0028,0011)	Columns	US	1
(0028,0030)	Pixel Spacing	DS	2
(0028,0031)	Zoom Factor	DS	2
(0028,0032)	Zoom Center	DS	2
(0028,0034)	Pixel Aspect Ratio	IS	2
(0028,0040)	*Image Format*	*RET*	
(0028,0050)	*Manipulated Image*	*RET*	
(0028,0051)	Corrected Image	CS	1

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Tag	Name	VR	VM
(0028,0060)	*Compression Code*	*RET*	
(0028,0100)	Bits Allocated	US	1
(0028,0101)	Bits Stored	US	1
(0028,0102)	High Bit	US	1
(0028,0103)	Pixel Representation	US	1
(0028,0104)	*Smallest Valid Pixel Value*	*RET*	
(0028,0105)	*Largest Valid Pixel Value*	*RET*	
(0028,0106)	Smallest Image Pixel Value	US or SS	1
(0028,0107)	Largest Image Pixel Value	US or SS	1
(0028,0108)	Smallest Pixel Value in Series	US or SS	1
(0028,0109)	Largest Pixel Value in Series	US or SS	1
(0028,0120)	Pixel Padding Value	US or SS	1
(0028,0200)	*Image Location*	*RET*	
(0028,1050)	Window Center	DS	1-n
(0028,1051)	Window Width	DS	1-n
(0028,1052)	Rescale Intercept	DS	1
(0028,1053)	Rescale Slope	DS	1
(0028,1054)	Rescale type	LO	1
(0028,1055)	Window Center & Width Explanation	LO	1-n
(0028,1080)	*Gray Scale*	*RET*	
(0028,1100)	*Gray Lookup Table Descriptor*	*RET*	
(0028,1101)	Red Palette Color Lookup Table Descriptor	US\US or SS\US	3
(0028,1102)	Green Palette Color Lookup Table Descriptor	US\US or SS\US	3
(0028,1103)	Blue Palette Color Lookup Table Descriptor	US\US or SS\US	3
(0028,1200)	*Gray Lookup Table Data*	*RET*	
(0028,1201)	Red Palette Color Lookup Table Data	US or SS	1-n
(0028,1202)	Green Palette Color Lookup Table Data	US or SS	1-n
(0028,1203)	Blue Palette Color Lookup Table Data	US or SS	1-n
(0028,3000)	Modality LUT Sequence	SQ	1

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Tag	Name	VR	VM
(0028,3002)	LUT Descriptor	US\US or SS\US	3
(0028,3003)	LUT Explanation	LO	1
(0028,3004)	Modality LUT Type	LO	1
(0028,3006)	LUT Data	US or SS	1-n
(0028,3010)	VOI LUT Sequence	SQ	1
(0028,4000)	*Comments*	*RET*	

Tag	Name	VR	VM
(0032,0000)	Group Length	UL	1
(0032,000A)	Study Status ID	CS	1
(0032,000C)	Study Priority ID	CS	1
(0032,0012)	Study ID Issuer	LO	1
(0032,0032)	Study Verified Date	DA	1
(0032,0033)	Study Verified Time	TM	1
(0032,0034)	Study Read Date	DA	1
(0032,0035)	Study Read Time	TM	1
(0032,1000)	Scheduled Study Start Date	DA	1
(0032,1001)	Scheduled Study Start Time	TM	1
(0032,1010)	Scheduled Study Stop Date	DA	1
(0032,1011)	Scheduled Study Stop Time	TM	1
(0032,1020)	Scheduled Study Location	LO	1
(0032,1021)	Scheduled Study Location AE Title(s)	AE	1-n
(0032,1030)	Reason for Study	LO	1
(0032,1032)	Requesting Physician	PN	1
(0032,1033)	Requesting Service	LO	1
(0032,1040)	Study Arrival Date	DA	1
(0032,1041)	Study Arrival Time	TM	1
(0032,1050)	Study Completion Date	DA	1
(0032,1051)	Study Completion Time	TM	1
(0032,1055)	Study Component Status ID	CS	1
(0032,1060)	Requested Procedure Description	LO	1

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Tag	Name	VR	VM
(0032,1064)	Requested Procedure Code Sequence	SQ	1
(0032,1070)	Requested Contrast Agent	LO	1
(0032,4000)	Study Comments	LT	1

Tag	Name	VR	VM
(0038,0000)	Group Length	UL	1
(0038,0004)	Referenced Patient Alias Sequence	SQ	1
(0038,0008)	Visit Status ID	CS	1
(0038,0010)	Admission ID	LO	1
(0038,0011)	Issuer of Admission ID	LO	1
(0038,0016)	Route of Admissions	LO	1
(0038,001A)	Scheduled Admission Date	DA	1
(0038,001B)	Scheduled Admission Time	TM	1
(0038,001C)	Scheduled Discharge Date	DA	1
(0038,001D)	Scheduled Discharge Time	TM	1
(0038,001E)	Scheduled Patient Institution Residence	LO	1
(0038,0020)	Admitting Date	DA	1
(0038,0021)	Admitting Time	TM	1
(0038,0030)	Discharge Date	DA	1
(0038,0032)	Discharge Time	TM	1
(0038,0040)	Discharge Diagnosis Description	LO	1
(0038,0044)	Discharge Diagnosis Code Sequence	SQ	1
(0038,0050)	Special Needs	LO	1
(0038,0300)	Current Patient Location	LO	1
(0038,0400)	Patient's Institution Residence	LO	1
(0038,0500)	Patient State	LO	1
(0038,4000)	Visit Comments	LT	1

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Tag	Name	VR	VM
(0088,0000)	Group Length	UL	1
(0088,0130)	Storage Media File-set ID	SH	1
(0088,0140)	Storage Media File-set UID	UI	1

Tag	Name	VR	VM
(2000,0000)	Group Length	UL	1
(2000,0010)	Number Of Copies	IS	1
(2000,0020)	Print Priority	CS	1
(2000,0030)	Medium Type	CS	1
(2000,0040)	Film Destination	CS	1
(2000,0050)	Film Session Label	LO	1
(2000,0060)	Memory Allocation	IS	1
(2000,0500)	Referenced Film Box Sequence	SQ	1

Tag	Name	VR	VM
(2010,0000)	Group Length	UL	1
(2010,0010)	Image Display Format	ST	1
(2010,0030)	Annotation Display Format ID	CS	1
(2010,0040)	Film Orientation	CS	1
(2010,0050)	Film Size ID	CS	1
(2010,0060)	Magnification Type	CS	1
(2010,0080)	Smoothing Type	CS	1
(2010,0100)	Border Density	CS	1
(2010,0110)	Empty Image Density	CS	1
(2010,0120)	Min Density	US	1
(2010,0130)	Max Density	US	1
(2010,0140)	Trim	CS	1
(2010,0150)	Configuration Information	ST	1
(2010,0500)	Referenced Film Session Sequence	SQ	1
(2010,0510)	Referenced Image Box Sequence	SQ	1
(2010,0520)	Referenced Basic Annotation Box Sequence	SQ	1

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Tag	Name	VR	VM
(2020,0000)	Group Length	UL	1
(2020,0010)	Image Position	US	1
(2020,0020)	Polarity	CS	1
(2020,0030)	Requested Image Size	DS	1
(2020,0110)	Preformatted Grayscale Image Sequence	SQ	1
(2020,0111)	Preformatted Color Image Sequence	SQ	1
(2020,0130)	Referenced Image Overlay Box Sequence	SQ	1
(2020,0140)	Referenced VOI LUT Box Sequence	SQ	1

Tag	Name	VR	VM
(2030,0000)	Group Length	UL	1
(2030,0010)	Annotation Position	US	1
(2030,0020)	Text String	LO	1

Tag	Name	VR	VM
(2040,0000)	Group Length	UL	1
(2040,0010)	Referenced Overlay Plane Sequence	SQ	1
(2040,0011)	Referenced Overlay Plane Groups	US	1-99
(2040,0060)	Overlay Magnification Type	CS	1
(2040,0070)	Overlay Smoothing Type	CS	1
(2040,0080)	Overlay Foreground Density	CS	1
(2040,0090)	Overlay Mode	CS	1
(2040,0100)	Threshold Density	CS	1
(2040,0500)	Referenced Image Box Sequence	SQ	1

Tag	Name	VR	VM
(2100,0000)	Group Length	UL	1
(2100,0020)	Execution Status	CS	1
(2100,0030)	Execution Status Info	CS	1
(2100,0040)	Creation Date	DA	1

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Tag	Name	VR	VM
(2100,0050)	Creation Time	TM	1
(2100,0070)	Originator	AE	1
(2100,0500)	Referenced Print Job Sequence	SQ	1

Tag	Name	VR	VM
(2110,0000)	Group Length	UL	1
(2110,0010)	Printer Status	CS	1
(2110,0020)	Printer Status Info	CS	1
(2110,0030)	Printer Name	LO	1

Tag	Name	VR	VM
(4000,0000)	*Group Length*	*RET*	
(4000,0010)	*Arbitrary*	*RET*	
(4000,4000)	*Comments*	*RET*	

Tag	Name	VR	VM
(4008,0000)	Group Length	UL	1
(4008,0040)	Results ID	SH	1
(4008,0042)	Results ID Issuer	LO	1
(4008,0050)	Referenced Interpretation Sequence	SQ	1
(4008,0100)	Interpretation Recorded Date	DA	1
(4008,0101)	Interpretation Recorded Time	TM	1
(4008,0102)	Interpretation Recorder	PN	1
(4008,0103)	Reference to Recorded Sound	LO	1
(4008,0108)	Interpretation Transcription Date	DA	1
(4008,0109)	Interpretation Transcription Time	TM	1
(4008,010A)	Interpretation Transcriber	PN	1
(4008,010B)	Interpretation Text	ST	1
(4008,010C)	Interpretation Author	PN	1
(4008,0111)	Interpretation Approver Sequence	SQ	1

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Tag	Name	VR	VM
(4008,0112)	Interpretation Approval Date	DA	1
(4008,0113)	Interpretation Approval Time	TM	1
(4008,0114)	Physician Approving Interpretation	PN	1
(4008,0115)	Interpretation Diagnosis Description	LT	1
(4008,0117)	Interpretation Diagnosis Code Sequence	SQ	1
(4008,0118)	Results Distribution List Sequence	SQ	1
(4008,0119)	Distribution Name	PN	1
(4008,011A)	Distribution Address	LO	1
(4008,0200)	Interpretation ID	SH	1
(4008,0202)	Interpretation ID Issuer	LO	1
(4008,0210)	Interpretation Type ID	CS	1
(4008,0212)	Interpretation Status ID	CS	1
(4008,0300)	Impressions	ST	1
(4008,4000)	Results Comments	ST	1

Tag	Name	VR	VM
(50xx,0000)	Group Length	UL	1
(50xx,0005)	Curve Dimensions	US	1
(50xx,0010)	Number of Points	US	1
(50xx,0020)	Type of Data	CS	1
(50xx,0022)	Curve Description	LO	1
(50xx,0030)	Axis Units	SH	1-n
(50xx,0040)	Axis Labels	SH	1-n
(50xx,0103)	Data Value Representation	US	1
(50xx,0104)	Minimum Coordinate Value	US	1-n
(50xx,0105)	Maximum Coordinate Value	US	1-n
(50xx,0106)	Curve Range	SH	1-n
(50xx,0110)	Curve Data Descriptor	US	1
(50xx,0112)	Coordinate Start Value	US	1
(50xx,0114)	Coordinate Step Value	US	1
(50xx,2000)	Audio Type	US	1

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Tag	Name	VR	VM
(50xx,2002)	Audio Sample Format	US	1
(50xx,2004)	Number of Channels	US	1
(50xx,2006)	Number of Samples	UL	1
(50xx,2008)	Sample Rate	UL	1
(50xx,200A)	Total Time	UL	1
(50xx,200C)	Audio Sample Data	OW/OB	1
(50xx,200E)	Audio Comments	LT	1
(50xx,3000)	Curve Data	OW/OB	1

Tag	Name	VR	VM
(60xx,0000)	Group Length	UL	1
(60xx,0010)	Rows	US	1
(60xx,0011)	Columns	US	1
(60xx,0015)	Number of Frames in Overlay	IS	1
(60xx,0040)	Overlay Type	CS	1
(60xx,0050)	Origin	SS	2
(60xx,0060)	*Compression Code*	*RET*	
(60xx,0100)	Bits Allocated	US	1
(60xx,0102)	Bit Position	US	1
(60xx,0110)	*Overlay Format*	*RET*	
(60xx,0200)	*Overlay Location*	*RET*	
(60xx,1100)	Overlay Descriptor - Gray	US	1
(60xx,1101)	Overlay Descriptor - Red	US	1
(60xx,1102)	Overlay Descriptor - Green	US	1
(60xx,1103)	Overlay Descriptor - Blue	US	1
(60xx,1200)	Overlays- Gray	US	1-n
(60xx,1201)	Overlays - Red	US	1-n
(60xx,1202)	Overlays - Green	US	1-n
(60xx,1203)	Overlays- Blue	US	1-n
(60xx,1301)	ROI Area	IS	1
(60xx,1302)	ROI Mean	DS	1

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Tag	Name	VR	VM
(60xx,1303)	ROI Standard Deviation	DS	1
(60xx,3000)	Overlay Data	OW	1
(60xx,4000)	*Comments*	*RET*	

Tag	Name	VR	VM
(7FE0,0000)	Group Length	UL	1
(7FE0,0010)	Pixel Data	OW/OB	1

Tag	Name	VR	VM
(FFFE,E000)	Item	* see note	1
(FFFE,E00D)	Item Delimitation Item	* see note	1
(FFFE,E0DD)	Sequence Delimitation Item	* see note	1

NOTE— The VR for Data Elements, Item (FFFE,E000), Item Delimitation Item (FFFE,E00D), and Sequence Delimitation Item (FFFE,E0DD) do not exist. See PS 3.5 for explanation.

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Annex A
(Normative)
Registry of DICOM unique identifiers (UID)

Table A-1 lists the UID values which are registered and used throughout the Parts of the DICOM Standard. This central registry ensures that when additional UIDs are assigned, non duplicate values are assigned.

Table A-1—UID values

UID Value	UID NAME	UID TYPE	Part
1.2.840.10008.1.1	Verification SOP Class	SOP Class	PS 3.4
1.2.840.10008.1.2	Implicit VR Little Endian: Default Transfer Syntax for DICOM	Transfer Syntax	PS 3.5
1.2.840.10008.1.2.1	Explicit VR Little Endian	Transfer Syntax	PS 3.5
1.2.840.10008.1.2.2	Explicit VR Big Endian	Transfer Syntax	PS 3.5
1.2.840.10008.1.2.4.50	JPEG Baseline (Process 1): Default Transfer Syntax for Lossy JPEG 8 Bit Image Compression	Transfer Syntax	PS 3.5
1.2.840.10008.1.2.4.51	JPEG Extended (Process 2 & 4): Default Transfer Syntax for Lossy JPEG 12 Bit Image Compression (Process 4 only)	Transfer Syntax	PS 3.5
1.2.840.10008.1.2.4.52	JPEG Extended (Process 3 & 5)	Transfer Syntax	PS 3.5
1.2.840.10008.1.2.4.53	JPEG Spectral Selection, Non-Hierarchical (Process 6 & 8)	Transfer Syntax	PS 3.5
1.2.840.10008.1.2.4.54	JPEG Spectral Selection, Non-Hierarchical (Process 7 & 9)	Transfer Syntax	PS 3.5
1.2.840.10008.1.2.4.55	JPEG Full Progression, Non-Hierarchical (Process 10 & 12)	Transfer Syntax	PS 3.5

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UID Value	UID Name	UID Type	Part
1.2.840.10008.1.2.4.56	JPEG Full Progression, Non-Hierarchical (Process 11 & 13)	Transfer Syntax	PS 3.5
1.2.840.10008.1.2.4.57	JPEG Lossless, Non-Hierarchical (Process 14)	Transfer Syntax	PS 3.5
1.2.840.10008.1.2.4.58	JPEG Lossless, Non-Hierarchical (Process 15)	Transfer Syntax	PS 3.5
1.2.840.10008.1.2.4.59	JPEG Extended, Hierarchical (Process 16 & 18)	Transfer Syntax	PS 3.5
1.2.840.10008.1.2.4.60	JPEG Extended, Hierarchical (Process 17 & 19)	Transfer Syntax	PS 3.5
1.2.840.10008.1.2.4.61	JPEG Spectral Selection, Hierarchical (Process 20 & 22)	Transfer Syntax	PS 3.5
1.2.840.10008.1.2.4.62	JPEG Spectral Selection, Hierarchical (Process 21 & 23)	Transfer Syntax	PS 3.5
1.2.840.10008.1.2.4.63	JPEG Full Progression, Hierarchical (Process 24 & 26)	Transfer Syntax	PS 3.5
1.2.840.10008.1.2.4.64	JPEG Full Progression, Hierarchical (Process 25 & 27)	Transfer Syntax	PS 3.5
1.2.840.10008.1.2.4.65	JPEG Lossless, Hierarchical (Process 28)	Transfer Syntax	PS 3.5
1.2.840.10008.1.2.4.66	JPEG Lossless, Hierarchical (Process 29)	Transfer Syntax	PS 3.5
1.2.840.10008.1.2.4.70	JPEG Lossless, Hierarchical, First-Order Prediction (Process 14 [Selection Value 1]): Default Transfer Syntax for Lossless JPEG Image Compression	Transfer Syntax	PS 3.5

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UID Value	UID Name	UID Type	Part
1.2.840.10008.1.9	Basic Study Content Notification SOP Class	SOP Class	PS 3.4
1.2.840.10008.3.1.1.1	DICOM Application Context Name	Application Context Name	PS 3.7
1.2.840.10008.3.1.2.1.1	Detached Patient Management SOP Class	SOP Class	PS 3.4
1.2.840.10008.3.1.2.1.4	Detached Patient Management Meta SOP Class	Meta SOP Class	PS 3.4
1.2.840.10008.3.1.2.2.1	Detached Visit Management SOP Class	SOP Class	PS 3.4
1.2.840.10008.3.1.2.3.1	Detached Study Management SOP Class	SOP Class	PS 3.4
1.2.840.10008.3.1.2.3.2	Study Component Management SOP Class	SOP Class	PS 3.4
1.2.840.10008.3.1.2.5.1	Detached Results Management SOP Class	SOP Class	PS 3.4
1.2.840.10008.3.1.2.5.4	Detached Results Management Meta SOP Class	Meta SOP Class	PS 3.4
1.2.840.10008.3.1.2.5.5	Detached Study Management Meta SOP Class	Meta SOP Class	PS 3.4
1.2.840.10008.3.1.2.6.1	Detached Interpretation Management SOP Class	SOP Class	PS 3.4
1.2.840.10008.5.1.1.1	Basic Film Session SOP Class	SOP Class	PS 3.4
1.2.840.10008.5.1.1.2	Basic Film Box SOP Class	SOP Class	PS 3.4
1.2.840.10008.5.1.1.4	Basic Grayscale Image Box SOP Class	SOP Class	PS 3.4
1.2.840.10008.5.1.1.4.1	Basic Color Image Box SOP Class	SOP Class	PS 3.4
1.2.840.10008.5.1.1.4.2	Referenced Image Box SOP Class	SOP Class	PS 3.4
1.2.840.10008.5.1.1.9	Basic Grayscale Print Management Meta SOP Class	Meta SOP Class	PS 3.4

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UID Value	UID Name	UID Type	Part
1.2.840.10008.5.1.1.9.1	Referenced Grayscale Print Management Meta SOP Class	Meta SOP Class	PS 3.4
1.2.840.10008.5.1.1.14	Print Job SOP Class	SOP Class	PS 3.4
1.2.840.10008.5.1.1.15	Basic Annotation Box SOP Class	SOP Class	PS 3.4
1.2.840.10008.5.1.1.16	Printer SOP Class	SOP Class	PS 3.4
1.2.840.10008.5.1.1.17	Printer SOP Instance	Well-known Printer SOP Instance	PS 3.4
1.2.840.10008.5.1.1.18	Basic Color Print Management Meta SOP Class	Meta SOP Class	PS 3.4
1.2.840.10008.5.1.1.18.1	Referenced Color Print Management Meta SOP Class	Meta SOP Class	PS 3.4
1.2.840.10008.5.1.1.22	VOI LUT Box SOP Class	SOP Class	PS 3.4
1.2.840.10008.5.1.1.24	Image Overlay Box SOP Class	SOP Class	PS 3.4
1.2.840.10008.5.1.4.1.1.1	Computed Radiography Image Storage	SOP Class	PS 3.4
1.2.840.10008.5.1.4.1.1.2	CT Image Storage	SOP Class	PS 3.4
1.2.840.10008.5.1.4.1.1.3	Ultrasound Multi-frame Image Storage	SOP Class	PS 3.4
1.2.840.10008.5.1.4.1.1.4	MR Image Storage	SOP Class	PS 3.4
1.2.840.10008.5.1.4.1.1.5	Nuclear Medicine Image Storage	SOP Class	PS 3.4
1.2.840.10008.5.1.4.1.1.6	Ultrasound Image Storage	SOP Class	PS 3.4
1.2.840.10008.5.1.4.1.1.7	Secondary Capture Image Storage	SOP Class	PS 3.4
1.2.840.10008.5.1.4.1.1.8	Standalone Overlay Storage	SOP Class	PS 3.4
1.2.840.10008.5.1.4.1.1.9	Standalone Curve Storage	SOP Class	PS 3.4
1.2.840.10008.5.1.4.1.1.10	Standalone Modality LUT Storage	SOP Class	PS 3.4

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UID Value	UID Name	UID Type	Part
1.2.840.10008.5.1.4.1.1.11	Standalone VOI LUT Storage	SOP Class	PS 3.4
1.2.840.10008.5.1.4.1.2.1.1	Patient Root Query/Retrieve Information Model - FIND	SOP Class	PS 3.4
1.2.840.10008.5.1.4.1.2.1.2	Patient Root Query/Retrieve Information Model - MOVE	SOP Class	PS 3.4
1.2.840.10008.5.1.4.1.2.1.3	Patient Root Query/Retrieve Information Model - GET	SOP Class	PS 3.4
1.2.840.10008.5.1.4.1.2.2.1	Study Root Query/Retrieve Information Model - FIND	SOP Class	PS 3.4
1.2.840.10008.5.1.4.1.2.2.2	Study Root Query/Retrieve Information Model - MOVE	SOP Class	PS 3.4
1.2.840.10008.5.1.4.1.2.2.3	Study Root Query/Retrieve Information Model - GET	SOP Class	PS 3.4
1.2.840.10008.5.1.4.1.2.3.1	Patient/Study Only Query/Retrieve Information Model - FIND	SOP Class	PS 3.4
1.2.840.10008.5.1.4.1.2.3.2	Patient/Study Only Query/Retrieve Information Model - MOVE	SOP Class	PS 3.4
1.2.840.10008.5.1.4.1.2.3.3	Patient/Study Only Query/Retrieve Information Model - GET	SOP Class	PS 3.4

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NEMA STANDARDIZATION BACKGROUND

The purpose of NEMA standards, their classification, and status are set forth in certain clauses of the NEMA *Standardization Policies and Procedures* manual and are referenced below:

Purpose of Standards

National Electrical Manufacturers Association Standards are adopted in the public interest and are designed to eliminate misunderstandings between the manufacturer and the purchaser and to assist the purchaser in selecting and obtaining the proper product for their particular needs. Existence of a National Electrical Manufacturers Association Standard does not in any respect preclude any member or nonmember from manufacturing or selling products not conforming to the standard.

Definition of a Standard

A standard of the National Electrical Manufacturers Association defines a product, process, or procedure with reference to one or more of the following: nomenclature, composition, dimensions, tolerances, safety, operating characteristics, performance, rating, testing, and the service for which they are designed.

(Standardization Policies and Procedures, p. 1)

Dimensions

Where dimensions are given for interchangeability purposes, alternate dimensions satisfying the other provisions of the Standards Publication may be capable of otherwise equivalent performance.

(Standardization Policies and Procedures, p. 6)

Categories of Standards

National Electrical Manufacturers Association Standards are of three classes, which have received the affirmative vote of at least two-thirds of the Subdivision votes cast in the affirmative or negative:

1. NEMA Standard, which relates to a product, process, or procedure commercially standardized and subject to repetitive manufacture.
2. Suggested Standard for Future Design, which may not have been regularly applied to a commercial product, but which suggests a sound engineering approach to future development.
3. Adoptive Standard, which is adopted in whole or in part from the standards of another organization, either domestic, regional, or international.

(Standardization Policies and Procedures, pp. 5)

Authorized Engineering Information

Authorized Engineering Information consists of explanatory data and other engineering information of an informative character not falling within the classification of NEMA Standard or Suggested Standard for Future Design, which standard has received the affirmative vote of at least two-thirds of the Subdivision votes cast in the affirmative or negative.

(Standardization Policies and Procedures, pp. 5)

Identification of Status

Standards in NEMA Standards Publications are identified as "NEMA Standard," "Suggested Standard for Future Design," or "Adoptive Standard." These indicate the status of the standard. A statement incorporating the auxiliary verb "shall" indicates that compliance with a requirement is mandatory for compliance with the standard. These classes of standards are identified in the foreword or throughout the text.

The material identified as "Authorized Engineering Information" is designated similarly. Statements incorporating other auxiliary verbs such as "should," "may," etc. refer to the authorized engineering information and not to procedures required for compliance with the standard.

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