

DICOM Conformance Statement

PageWriter TC35 1.2



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1. DICOM Conformance Statement Overview

The PageWriter TC35 implements the necessary DICOM services to:

- (1) Search and retrieve worklists (lists of orders) from information systems,
- (2) Start acquisition of Worklist item, acquire images, and complete acquisition and finalize MPPS,
- (3) Save ECG waveform objects to network storage system &
- (4) Commit objects to storage systems.

Below figure depicts DICOM service implemented by PageWriter TC35.

1.1. Content and Transfer

Table 1-1 lists all Storage SOP Classes and the supported transfer mechanisms as well as the usage scenarios for those instances.

The "Transfer Syntax Set" column lists the sets of Transfer Syntaxes defined in Table 1-2 that are applicable to each SOP Class. The "DIMSE", "DICOM Web" and "Media Services" columns indicate the roles supported for each SOP Class.

The "Function" columns indicate how the instances are used by the system:

- Create: The system creates instances of the SOP Class. The type of the created SOP Class is indicated by one of the following abbreviations:
 - S: Standard SOP Class
 - SE: Standard Extended SOP Class
 - SP: Specialized SOP Class
 - P: Private SOP Class
- Display: The system displays the instances of the SOP Class to the user, either by displaying the SOP Instances natively or by applying instances of another suitable SOP Class to the image instances (e.g., a Presentation State or CAD SR).
- Process: The system processes the instances of the SOP Class to derive some further information that is made available to the user (e.g., a CAD processing algorithm, or a 3D Rendering).
- Archive: The system stores the instances of the SOP Class and makes them available again.

Table 1- 1: Storage SOP Classes

SOP Classes		Transfer Syntax Set	DIMSE Services		DICOM Web Services		Media Services			Function			
			SCU	SCP	UA	OS	FSC	FSU	FSR	Create	Display	Process	Archive
12-Lead ECG Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.1.1	NI	Yes	No	No	No	No	No	No	S	No	No	No
General ECG Waveform Storage SOP Class	1.2.840.10008.5.1.4.1.1.9.1.2	NI	Yes	No	No	No	No	No	No	S	No	No	No
Encapsulated PDF Storage SOP Class	1.2.840.10008.5.1.4.1.1.104.1	NI	Yes	No	No	No	No	No	No	S	No	No	No

Table 1- 2: Supported Transfer Syntaxes

Transfer Syntax Set	Transfer Syntax Name	Transfer Syntax UID	DICOM Web Service Bulkdata Media Type
Non-Image Transfer Syntax Set (NI)	Implicit VR Little Endian	1.2.840.10008.1.2	N/A
	Explicit VR Little Endian native	1.2.840.10008.1.2.1	N/A

1.1.1. Structured Reporting Root Template IDs – N/A

Not applicable since PageWriter TC35 does not support Structured Reporting.

1.2. DIMSE Services

1.2.1. Verification

Table 1-3 lists support for the Verification SOP Class.

Table 1- 3: Verification SOP Class

SOP Classes		Transfer Syntax		SCU	SCP
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	Yes	No
		Explicit VR Little Endian	1.2.840.10008.1.2.1	Yes	No

1.2.2. Storage

For details on supported Storage SOP Classes see Section 1.1.

1.2.3. Workflow Management

Table 1-4 lists all supported Workflow Management SOP Classes.

Table 1- 4: Workflow Management SOP Classes

SOP Classes		Transfer Syntax		SCU	SCP
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31	Implicit VR Little Endian	1.2.840.10008.1.2	Yes	No
		Explicit VR Little Endian	1.2.840.10008.1.2.1	Yes	No
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Implicit VR Little Endian	1.2.840.10008.1.2	Yes	No
		Explicit VR Little Endian	1.2.840.10008.1.2.1	Yes	No
Storage Commitment Push Model	1.2.840.10008.1.20.1	Implicit VR Little Endian	1.2.840.10008.1.2	Yes	No
		Explicit VR Little Endian	1.2.840.10008.1.2.1	Yes	No

1.2.4. Query/Retrieve – N/A

.Not applicable since PageWriter TC35 does not support Query/Retrieve.

1.2.5. Printing – N/A

.Not applicable since PageWriter TC35 does not support Printing.

1.3. DICOM Web Services – N/A

.Not applicable since PageWriter TC35 does not support DICOM Web Services.

1.4. Media Services – N/A

.Not applicable since PageWriter TC35 does not support Media Services.

1.5. Real Time Video Service – N/A

.Not applicable since PageWriter TC35 does not support Real Time Video Service .

1.6. De-identification Profiles – N/A

.Not applicable since PageWriter TC35 does not support De-identification Profiles .

1.7. Specific Character Sets

Table 1- 5: Supported Specific Character Sets

Defined Term	IANA	Description
Single-Byte Character Sets without Code Extensions		
ISO_IR 6	ISO-646	Default Repertoire
ISO_IR 100	ISO-8859-1	Latin Alphabet No.1 (West Europe)

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3. Introduction

The introduction specifies product and relevant disclaimers as well as any general information that the vendor feels is appropriate.

3.1. Revision History

The revision history provides dates and differences of the different releases.

Table 3- 1: Revision History

Revision	Date	Product Version(s)	Change
01	08-Oct-2025	1.2	Initial release of PageWriter TC35

3.2. Audience

This document is intended for the audience listed below. It is assumed that the reader has a working knowledge of the DICOM Standard.

The document structure was designed for easier access to relevant information for different user groups:

- Clinical Users, who want to get an overview of the implemented interoperability features of the system can see Section 4 Implementation Model.
- Personnel involved in Sales can use the information in Section 1 to assess the compatibility between different systems involved in a sales situation.
- System Integrators can use information in Section 6 during system installation and also information from Section 5 Service and Interoperability Description for details regarding the implemented services.
- Field Service Engineers can use the details from Section 5 Service and Interoperability Description and from Section 7 Network and Media Communication Details for troubleshooting.
- Hospital IT staff focusing on security can use the details provided in Section 8 Security regarding implemented Security features.
- Research Personnel may be interested in using information provided in Annex A Information Object Definitions (IODs) or Annex B Structured Report Content Encoding to get detailed imaging and measurement information.

3.3. Remarks

The scope of this DICOM Conformance Statement is to facilitate integration between PageWriter TC35 and other DICOM products. The Conformance Statement should be read and understood in conjunction with the DICOM Standard [1]. DICOM by itself does not guarantee interoperability.

- The Conformance Statement does, however, facilitate a first-level comparison for interoperability between different applications supporting compatible DICOM functionality.
- This Conformance Statement should not replace validation with other DICOM equipment to ensure proper exchange of intended information. In fact, it is the user's responsibility to perform the following validation activities:
 - The comparison of Conformance Statements from PageWriter TC35 and other DICOM conformant equipment is the first step towards assessing interconnectivity and interoperability between those systems.
 - Test procedures should be defined and executed to validate the required level of interoperability with specific DICOM conformant equipment, as established by the healthcare facility.

3.4. Terms and Definitions

The following list includes DICOM Terms, that are used throughout this Conformance Statement:

Table 3- 2: Terms and Definitions

Abstract Syntax	The information agreed to be exchanged between applications, generally equivalent to a Service/Object Pair (SOP) Class. Examples: Verification SOP Class, Modality Worklist Information Model Find SOP Class, Computed Radiography Image Storage SOP Class.
Application Entity (AE)	A representation of the external behavior of an application process in terms of DICOM Network Services, Web Services and/or media exchange capabilities implemented in one or more roles. A single device may have multiple Application Entities.
Application Entity Title (AET)	The externally known name of an Application Entity, used to identify a DICOM application to other DICOM applications on the network.
Application Context	The specification of the type of communication used between Application Entities. Example: DICOM network protocol.
Association	A network communication channel set up between Application Entities.
ANSI	American National Standard Institute
Attribute	A unit of information in an Information Object Definition; a Data Element identified by a tag. The information may be a complex data structure (Sequence), itself composed of lower-level data elements. Examples: Patient ID (0010,0020), Accession Number (0008,0050), Photometric Interpretation (0028,0004), Procedure Code Sequence (0008,1032).
Data Element	A unit of information as defined by a single entry in the data dictionary. An encoded Information Object Definition (IOD) Attribute that is composed of, at a minimum, three fields: a Data Element Tag, a Value Length, and a Value Field. For some specific Transfer Syntaxes, a Data Element also contains a VR Field where the Value Representation of that Data Element is specified explicitly
Information Object Definition (IOD)	The specified set of Attributes that comprise a type of data object does not represent a specific instance of the data object, but rather a Class of similar data objects that have the same properties. Examples: MR Image IOD, CT Image IOD, Print Job IOD. The Attributes within an IOD may be specified as Mandatory (Type 1), Required but possibly unknown (Type 2), or Optional (Type 3), and there may be conditions associated with the use of an Attribute (Types 1C and 2C).
Media Application Profile	The specification of DICOM information objects and encoding exchanged on removable media (e.g., CDs).
Module	A set of Attributes within an Information Object Definition that are logically related to each other. Example: Patient Module includes Patient's Name, Patient ID, Patient's Birth Date, and Patient's Sex.
Negotiation	First phase of Association establishment that allows Application Entities to agree on the types of data to be exchanged and how that data will be encoded.
NEMA	National Electrical Manufacturers Association
Origin Server	Refers to the program that can originate authoritative responses to HTTP requests for a given Target Resource. The term "server" refers to any implementation that receives a web service request message from a user agent.

Presentation Context	The set of DICOM Network Services used over an Association, as negotiated between Application Entities; includes Abstract Syntaxes and Transfer Syntaxes.
Private SOP Class	A SOP Class that is not defined in the DICOM Standard but is published in an implementation's Conformance Statement.
Protocol Data Unit (PDU)	A packet (piece) of a DICOM message sent across the network. Devices must specify the maximum size packet they can receive for DICOM messages.
Security Profile	A set of mechanisms, such as encryption, user authentication, or digital signatures, used by an Application Entity to ensure confidentiality, integrity, and/or availability of exchanged DICOM data.
Service Class Provider (SCP)	Role of an Application Entity that provides a DICOM network service; typically, a server that performs operations requested by another Application Entity (Service Class User). Examples: Picture Archiving and Communication System (image storage SCP, and image query/retrieve SCP), Radiology Information System (modality worklist SCP).
Service Class User (SCU)	Role of an Application Entity that uses a DICOM Network Service; typically, a client. Examples: imaging modality (image storage SCU, and modality worklist SCU), imaging workstation (image query/retrieve SCU).
Service/Object Pair Class (SOP Class)	The specification of the network or media transfer (service) of a particular type of data (object); the fundamental unit of a DICOM interoperability specification. Examples: Ultrasound Image Storage Service, Basic Grayscale Print Management.
Service/Object Pair Instance (SOP Instance)	An information object: a specific occurrence of information exchanged in a SOP Class. E.g., a specific X-ray image.
Specialized SOP Class	A SOP Class that is derived from the Standard that is specialized by additional type 1, 1C, 2, 2C, or 3 Attributes, by enumeration of specific permitted Values for Attributes, or by enumeration of specific permitted Templates. The additional Attributes may either be drawn from the Data Dictionary in PS3.6 or may be Private Attributes.
Standard SOP Class	A SOP Class defined in the Standard, and that is implemented and used without any modifications.
Standard Extended SOP Class	A SOP Class that is defined in the standard, and that is extended by additional type 3 Attributes. The additional Attributes may either be drawn from the DICOM Data Dictionary in PS3.6 or may be Private Attributes.
Tag	A 32-bit identifier for a Data Element, represented as a pair of four-digit hexadecimal numbers, the "group" and the "element". If the "group" number is odd, the tag is for a private (manufacturer-specific) data element. Examples: (0010,0020) [Patient ID], (07FE,0010) [Pixel Data], (0019,0210) [private data element].
Transfer Syntax	The encoding is used for exchange of DICOM information objects and messages. Examples: JPEG compressed (images), Little Endian Explicit Value Representation.
TCP/IP	Transmission Control Protocol/Internet Protocol
TLS-Secured Port	TCP port on which an implementation accepts TLS connections to exchange DICOM information.

Unique Identifier (UID)	A globally unique "dotted decimal" string that identifies a specific object or a Class of objects; an ISO-8824 Object Identifier. Examples: Study Instance UID, SOP Class UID, SOP Instance UID.
User Agent	A client in a network protocol used in communications within a client-server distributed computing system. In particular, the Hypertext Transfer Protocol (HTTP) identifies the client software originating the request, using a user-agent header, even when the client is not operated by a user.
Value Representation (VR)	The format type of an individual DICOM data element, such as text, an integer, a person's name, or a code. DICOM information objects can be transmitted with either explicit identification of the type of each data element (Explicit VR), or without explicit identification (Implicit VR); with Implicit VR, the receiving application must use a DICOM data dictionary to look up the format of each data element.

3.5. Abbreviations

Abbreviations that are used in this DICOM Conformance Statement are listed here.

Table 3- 3: Abbreviations

AE	Application Entity
AET	Application Entity Title
ANSI	American National Standard Institute
AP	Application profile
CAD	Computer Aided Detection
CDA	Clinical Document Architecture
CID	Context Identifier
DCS	DICOM Conformance Statement
DHCP	Dynamic Host Configuration Protocol
DICOM	Digital Imaging and Communications in Medicine
DIMSE	DICOM Message Service Element
DIMSE-C	DIMSE-Composite
DIMSE-N	DIMSE-Normalized
EBE	DICOM Explicit VR Big Endian
ECG	Electrocardiogram
ELE	Explicit VR Little Endian
FSC	File-Set Creator
FSR	File-Set Reader
FSU	File-Set Updater
IANA	Internet Assigned Numbers Authority
IHE	Integrating the Healthcare Enterprise
ILE	Implicit VR Little Endian
IOD	Information Object Definition
IPv4	Internet Protocol version 4

IPv6	Internet Protocol version 6
ISIS	Information System - Imaging System
ISO	International Organization for Standardization
MOD	Magneto-Optical Disk
MPPS	Modality Performed Procedure Step
MWL	Modality Worklist
NEMA	National Electrical Manufacturers Association
NTP	Network Time Protocol
OID	Object Identifier
OS	Origin Server
PDU	Protocol Data Unit
PHI	Protected Health Information
PPS	Performed Procedure Step
QIDO-RS	Query based on ID for DICOM Objects by RESTful Services
RTV	Real Time Video
RWA	Real World Activity
SCP	Service Class Provider
SCU	Service Class User
SDP	Service Description Protocol
SOP	Service-Object Pair
SPS	Scheduled Procedure Step
SR	Structured Reporting
STOW-RS	Store Over the Web by RESTful Services
TCP/IP	Transmission Control Protocol/Internet Protocol
TID	Template Identifier
UA	User Agent
UI	User Interface
UID	Unique Identifier
UL	Upper Layer
UPS	Unified Procedure Step
UPS-RS	Unified Procedure Step by RESTful Services
VR	Value Representation
WADO-RS	Web Access to DICOM Objects by RESTful Services
WADO-URI	Web Access to DICOM Objects by URI
WLM	Worklist Management

3.6. References

- [1] National Electrical Manufacturers Association (NEMA), Rosslyn, VA USA. *PS3 / ISO 12052 Digital Imaging and Communications in Medicine (DICOM) Standard*. <http://www.dicomstandard.org>.

4. Implementation Model

The implementation model consists of three sections:

- The application data flow diagram, specifying the relationship between the Application Entities and the "external world" or Real-World Activities,
- A functional description of each Application Entity.
- The sequencing constraints among them.

4.1. Application Entities and Data Flow

The operator of a PageWriter TC35 electrocardiograph initiates a Modality Worklist query when an up-to-date list is needed. This, in turn, causes a Modality Worklist query to the configured Modality Worklist SCP.

One Work item is then selected from the Modality Worklist and the acquisition is started thus creating MPPS. After acquiring the images, acquisition is completed and MPPS is finalized.

When one or more ECGs have been acquired, the operator of a PageWriter TC35 electrocardiograph initiates a single or batch ECG transmission. This, in turn, causes one or more 12-lead or General ECG Waveform objects or Encapsulated PDF Storage objects to be stored into the configured Storage SCP. If the Storage SCP is configured as an archive device the PageWriter TC35 will request Storage Commitment and if a commitment is successfully obtained will record this information in local database.

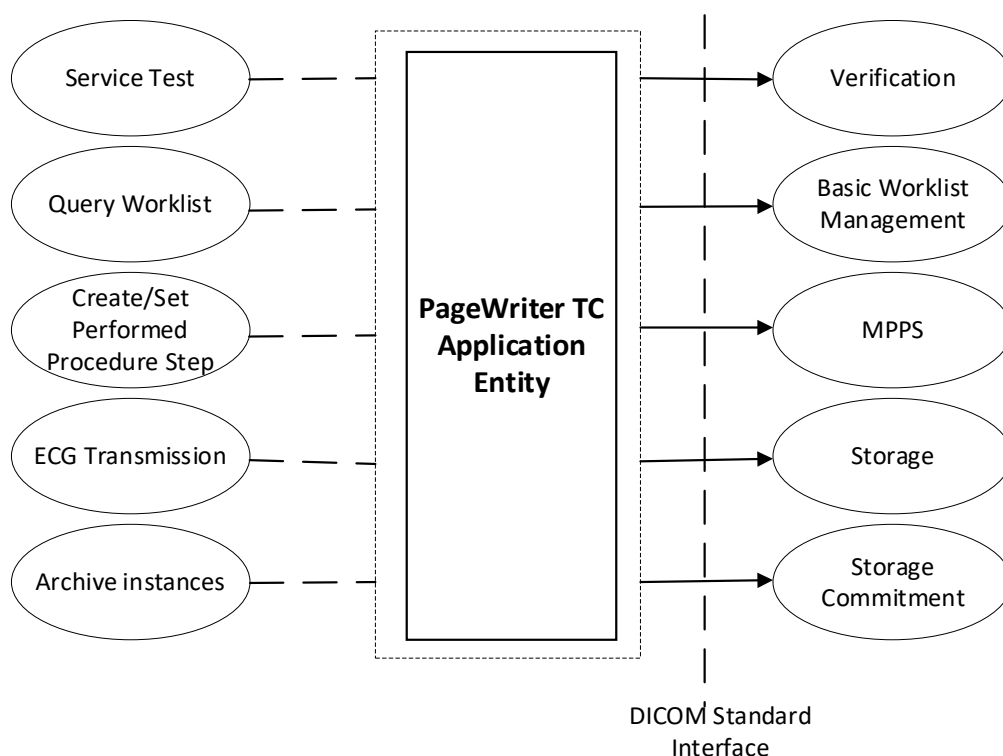


Figure 4-1: PageWriter TC35 Application Data Flow Diagram

This section describes the organization of the supported Services into Application Entities based on the default configuration of the system. This may change based on the actual setup at the customer site. See Section 6 for details about the configurability of Services into AEs.

4.1.1.1. Functional Definition of PageWriter TC35 Application Entity

Verification

The PageWriter TC35 AE implements the RWA verification as SCU. This service is used to verify the service availability of the configured remote destination.

Query Worklist

The PageWriter TC35 AE implements the RWA Basic Worklist Management service as SCU.

The operator of a PageWriter TC35 cardiograph can choose to retrieve an up-to-date worklist to the cardiograph. The operator can either initiate this function on the Worklist GUI to retrieve the whole list, or specify query filters on the Find Patient GUI, and the Modality Worklist service provider is queried for the Modality Worklist. The returned list of work items is listed on the cardiograph.

Report MPPS

The PageWriter TC35 AE implements the RWA Modality Performed Procedure Step as SCU.

After a work item is then selected from the Modality Worklist the acquisition is started thus creating MPPS. After acquiring the images, acquisition is completed and MPPS is finalized.

Export ECG

The PageWriter TC35 AE implements the RWA Image Export.

After acquiring one or more ECGs, the operator can initiate a single or batch transmission of ECGs. This causes the PageWriter TC35 cardiograph to store each ECG into the configured storage SCP. Each ECG is stored as a 12-lead or General ECG Waveform object or Encapsulated PDF Storage Object.

Archive ECG

The PageWriter TC35 AE implements the RWA Storage Commitment Push Model as SCU.

When archiving the ECG transmission the storage commitment is requested to the configured remote destination.

5. Service and Interoperability Description

5.1. Mapping of Services to Application Entities

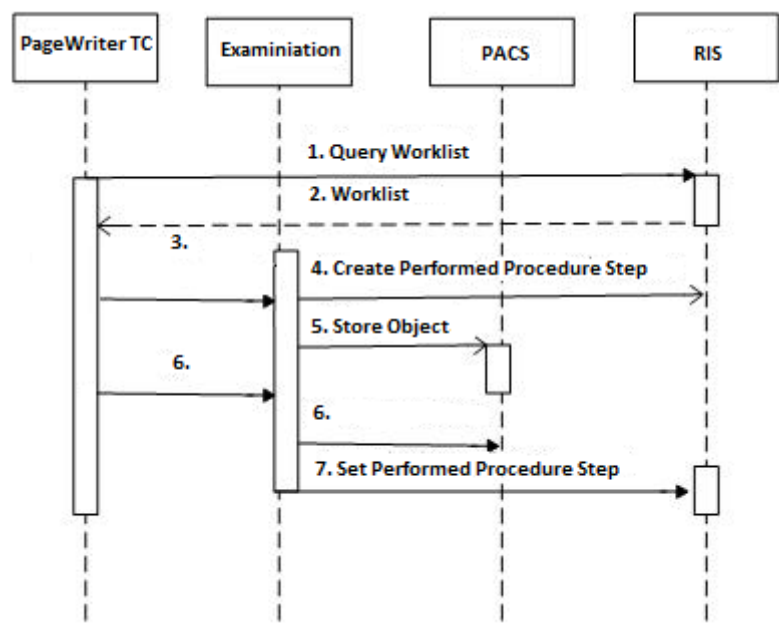


Figure 5- 1: Sequence of Real World Activities

Table 5-1 provides an overview of the Application Entity and the Services supported.

Table 5- 1: Service to AE Mapping

Application Entity	Supported Services	Role								
		DIMSE		DICOM Web		DICOM Media			Real-Time Video	
		SCU	SCP	Origin Server	User Agent	FSC	FSU	FSR	SCU	SCP
PageWriter TC35 AE	Verification	Yes	No	No	No	No	No	No	No	No
	Storage	Yes	No	No	No	No	No	No	No	No
	Storage Commitment	Yes	No	No	No	No	No	No	No	No
	Basic Worklist Management	Yes	No	No	No	No	No	No	No	No
	Modality Performed Procedure Step	Yes	No	No	No	No	No	No	No	No

5.2. Supported DIMSE Services

5.2.1. Basic Worklist Management Service

5.2.1.1. SCU of the Modality Worklist Information Model - FIND SOP Class

The figure below shows sequencing of RWA for MWL as SCU.

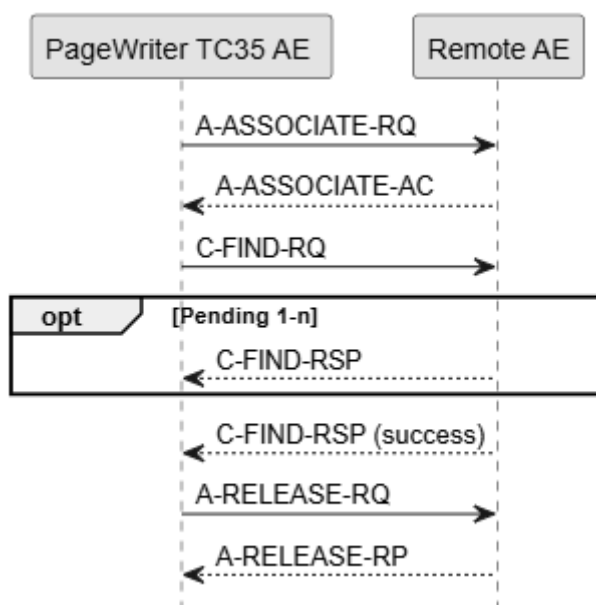


Figure 5- 2 Real World Activity – Modality Worklist as SCU

As a Service Class User of the Modality Worklist Information Model - FIND SOP Class, the PageWriter TC35 uses the C-FIND-RQ message to query the SCP. It supports the Query Keys listed in Table 5-2.

In the "Matching Type" column, the following Values can be used:

- SINGLE_VALUE: SCU can request single Value matching on this Attribute.
- UID: SCU can request List of UID matching on this Attribute.
- WILDCARD: SCU can request Wildcard matching on this Attribute.
- RANGE: SCU can request Range matching on this Attribute.
- SEQUENCE: SCU can request sequence matching on this Attribute.
- UNIVERSAL: SCU can request that the Attribute be a return Value (universal matching).

In the "Query Value Source" column, the following Values can be used:

- FIXED: The query Value cannot be modified by the user or by configuration.
- GENERATED: The query Value is generated by the system (e.g., current date as the study date).
- CONFIGURATION: The query Value is dependent on system configuration.
- USER: The query Value is entered by the user.
- SCANNED: The query Value is read from a barcode scanner or similar device.
- EMPTY: The query Value is sent with a zero-length Value to indicate it is a return key only.

In the "Display on UI" column the following Values can be used:

- D: the return Value is displayed on the main UI by default.

- C: the return Value is displayed on the main UI if configured.
- N: the return Value is never displayed.

Note: Return keys are documented in “Display on UI” as N and D

Table 5- 2: Supported C-FIND Query Parameters for Modality Worklist – SCU

Attribute Name	Tag	Matching Type	Query Value Source	Value	Display on UI	Comments
Scheduled Procedure Step						
Scheduled Procedure Step Sequence	0040,0100	Universal	GENERATED		N	
>Modality	0008,0060	Single	USER	ECG	C	
>Scheduled Station AE Title	0040,0001	Universal	USER		C	
>Scheduled Procedure Step Start Date	0040,0002	Range, Universal	USER		C	Order Request” is displayed on UI.
>Scheduled Procedure Step Start Time	0040,0003	Range, Universal	USER		C	Order Request” is displayed on UI.
>Scheduled Procedure Step Description	0040,0007	Universal	EMPTY		C	
>Scheduled Protocol Code Sequence	0040,0008	Universal	GENERATED		N	
>>Code Value	0008,0100	Universal	EMPTY		N	
>>Coding Scheme Designator	0008,0102	Universal	EMPTY		N	
>>Code Meaning	0008,0104	Universal	EMPTY		N	
>Scheduled Procedure Step ID	0040,0009	Universal	USER		C	
>Scheduled Station Name	0040,0010	Universal	USER		C	
>Scheduled Procedure Step Location	0040,0011	Universal	USER		C	
>Scheduled Performing Physician's Name	0040,0006	Universal	EMPTY		C	
>Scheduled Procedure Step Status	0040,0020	Universal	EMPTY		N	
Requested Procedure Step						
Study Instance UID	0020,000D	Universal	EMPTY		N	
Referenced Study Sequence	0008,1110	Universal	GENERATED		N	Returned in C-FIND response.

Attribute Name	Tag	Matching Type	Query Value Source	Value	Display on UI	Comments
>Referenced SOP Class UID	0008,1150	Universal	EMPTY		N	
>Referenced SOP Instance UID	0008,1155	Universal	EMPTY		N	
Requested Procedure Description	0032,1060	Universal	EMPTY		N	
Requested Procedure Code Sequence	0032,1064	Universal	GENERATED		N	
>>Code Value	0008,0100	Universal	EMPTY		N	
>>Coding Scheme Version	0008,0103	Universal	EMPTY		N	
>> Coding Scheme Designator	0008,0102	Universal	EMPTY		N	
>>Code Meaning	0008,0104	Universal	USER		N	
Requested Procedure ID	0040,1001	Universal	USER		C	
Requested Procedure Priority	0040,1003	Universal	USER		C	
Requested Procedure Location	0040,1005	Universal	USER		C	
Reason for the Requested Procedure	0040,1002	Universal	USER		C	
Imaging Service Request						
Accession Number	0008,0050	Universal	USER		D	"Order number" display in UI
Referring Physician's Name	0008,0090	Universal	USER		C	
Requesting Physician	0032,1032	Universal	EMPTY		C	
Visit Identification						
Institution Name	0008,0080	Universal	USER		C	
Admission ID	0038,0010	Universal	USER		C	
Timezone Offset From UTC	0008,0201	Universal	GENERATED		N	
Visit Status						
Current Patient Location	0038,0300	Universal	USER		C	

Attribute Name	Tag	Matching Type	Query Value Source	Value	Display on UI	Comments
Patient Institution Residence	0038,0400	Universal	EMPTY		C	
Visit Comments	0038,4000	Universal	EMPTY		C	
Patient Identification						
Patient's Name	0010,0010	Universal	USER		D	Values>64 characters are accepted by the system and these are copied into created DICOM IODs.
Patient ID	0010,0020	Single	USER		C	
Other Patient IDs	0010,1000	Universal	USER		C	
Patient Demographic						
Patients Birth Date	0010,0030	Universal	USER		D	Date of birth of the named patient
Patient's Sex	0010,0040	Universal	USER		D	Sex of the named patient. Enumerated Values: M = male F = female O = other
Patient Size	0010,1020	Universal	EMPTY		C	Patient's height or length in meters
Patient's Weight	0010,1030	Universal	EMPTY		C	Weight of the patient in kilograms
Ethnic Group	0010,2160	Universal	EMPTY		C	
Patient Medical						
Medical Alerts	0010,2000	Universal	USER		C	
SOP Common						
Specific Character Set	0008,0005	Universal	GENERATED		N	

5.2.1.2. SCP of the Modality Worklist Information Model - FIND SOP Class – N/A

Not applicable since PageWriter TC35 does not support MWL SCP.

5.2.2. Modality Performed Procedure Step Service

5.2.2.1. SCU of the Modality Performed Procedure Step SOP Class

The figure below shows sequencing of RWA for MPPS as SCU.

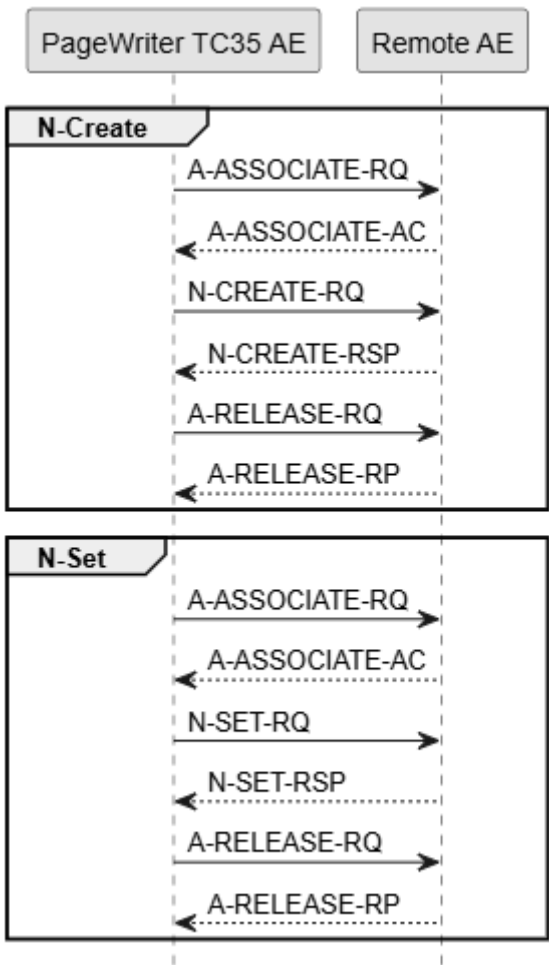


Figure 5- 3: Real World Activity – Modality Performed Procedure Step as SCU

As a Service Class User of the Modality Performed Procedure Step SOP Class, the PageWriter TC35 supports the Attributes listed in Table 5-3 in the N-CREATE-RQ and N-SET-RQ messages, if it creates the message.

In the "Source" column the following Values can be used:

- FIXED: The Value is pre-defined and cannot be modified.
- GENERATED: The Value is generated by the system.
- CONFIGURATION: The Value is copied from system configuration.
- MWL: The Value is copied from modality worklist entry.
- USER: The Value is entered by the user.
- SCANNED: The Value is read from a barcode scanner or similar device.
- EMPTY: The Attribute is sent with a zero-length Value

Table 5- 3: N-CREATE and N-SET Attributes for Modality Performed Procedure Step - SCU

Attribute Name	Tag	Source	Value N-CREATE	Value N-SET	Comments
SOP Common					

Attribute Name	Tag	Source	Value N-CREATE	Value N-SET	Comments
Specific Character Set	0008,0005	CONFIGURATION	ISO IR 100	ISO_IR 100	Optional/Config
Performed Procedure Step Relationship					
Patient ID	0010,0020	MWL/USER	-		
Patient's Birth Date	0010,0030	MWL/USER	-		
Patient's Name	0010,0010	MWL/USER	-		
Patient's Sex	0010,0040	MWL/USER	-		
Patient Age	0010,1010	MWL/USER	-		
Ethnic Group	0010,2160	MWL/USER	-		
Other Patient ID	0010,1000	MWL/USER	-		
Referenced Patient Sequence	0008,1120	EMPTY	-		
> Referenced SOP Class UID	0008,1150	EMPTY			
> Referenced SOP Instance UID	0008,1155	EMPTY			
Scheduled Step Attributes Sequence	0040,0270	GENERATED	-		
>Accession Number	0008,0050	MWL/USER	-		
>Requested Procedure Description	0032,1060	MWL/USER			
>Requested Procedure ID	0040,1001	MWL/USER	-		
>Requested Procedure Code Sequence	0032,1064	GENERATED	-		
>Scheduled Procedure Step Description	0040,0007	MWL/USER	-		
>Study Instance UID	0020,000D	MWL	-		
>Referenced Study Sequence	0008,1110	GENERATED	-		
>>Referenced SOP Class UID	0008,1150	MWL	-		
>>Referenced SOP Instance UID	0008,1155	MWL	-		
>Scheduled Protocol Code Sequence	0040,0008	GENERATED	-		

Attribute Name	Tag	Source	Value N-CREATE	Value N-SET	Comments
>>Code Meaning	0008,0104	MWL			
>>Code Value	0008,0100	MWL			
>>Coding Scheme Designator	0008,0102	MWL			
>Scheduled Procedure Step ID	0040,0009	MWL/USER	-		
Performed Procedure Step Information					
Performed Location	0040,0243	EMPTY			
Performed Procedure Step ID	0040,0253	GENERATED	-		
Performed Procedure Step Description	0040,0254	EMPTY	-		
Performed Procedure Step Start Date	0040,0244	GENERATED	-		Start of the examination
Performed Procedure Step Start Time	0040,0245	GENERATED	-		Start of the examination
Performed Procedure Step End Date	0040,0250	GENERATED	-	-	End of the examination
Performed Procedure Step End Time	0040,0251	GENERATED	-	-	End of the examination
Performed Procedure Step Status	0040,0252	GENERATED	IN PROGRESS	IN PROGRESS or DISCONTINUED or COMPLETED	
Performed Procedure Type Description	0040,0255	EMPTY	-		
Performed Station AE Title	0040,0241	CONFIGURATION	-		
Performed Station Name	0040,0242	CONFIGURATION	-		
Procedure Code Sequence	0008,1032	EMPTY	-	-	
>Code Meaning	0008,0104	GENERATED			
>Code Value	0008,0100	GENERATED			
>Coding Scheme Designator	0008,0102	GENERATED			
Image Acquisition Results					

Attribute Name	Tag	Source	Value N-CREATE	Value N-SET	Comments
Modality	0008,0060	GENERATED/USER	-		
Study ID	0020,0010	MWL	-		
Performed Protocol Code Sequence	0040,0260	GENERATED	-	-	
>Code Meaning	0008,0104	GENERATED			
>Code Value	0008,0100	GENERATED			
>Coding Scheme Designator	0008,0102	GENERATED			
Performed Series Sequence	0040,0340	GENERATED	-		
>Retrieve AE Title	0008,0054	EMPTY	-	-	
>Series Description	0008,103E	EMPTY	-	-	
>Performing Physician's Name	0008,1050	EMPTY	-	-	
>Operator's Name	0008,1070	MWL/USER	-	-	
>Referenced Image Sequence	0008,1140	EMPTY	-	-	
>> Referenced SOP Class UID	0008,1150	EMPTY			
>>Referenced SOP Instance UID	0008,1155	EMPTY			
>Protocol Name	0018,1030	GENERATED	-	-	
>Series Instance UID	0020,000E	GENERATED	-	-	
> Referenced Non-Image Composite SOP Instance Sequence	0040,0220	EMPTY	-	-	
>> Referenced SOP Class UID	0008,1150	EMPTY			
>> Referenced SOP Instance UID	0008,1155	EMPTY			

When PageWriter TC35 starts the scan of an examination, an association is established with the SCP and send a N-CREATE message with all appropriate information about the examination on the PageWriter TC35 scanner; the status will be set to IN-PROGRESS.

After clicking on the "Transfer" button the PageWriter TC35 will archive acquired images and send a N-SET message having status IN-PROGRESS and procedure end date and time information.

After clicking on the “End Session” button PageWriter TC35 send a N-SET message (having status “COMPLETED” and procedure end date and time information).

After starting the session, when the PageWriter TC35 end the session without acquiring image, then PageWriter send a N-SET message with status or “DISCONTINUED”. The MPPS function is independent of the use of storage commitment.

5.2.2.2. SCP of the Modality Performed Procedure Step SOP Class – N/A

Not applicable since PageWriter TC35 does not support MPPS SCP

5.2.3. Unified Worklist and Procedure Step Service – N/A

Not applicable since PageWriter TC35 does not support Unified Worklist.

5.2.4. Instance Availability Notification Service – N/A

Not applicable since PageWriter TC35 does not support Instance Availability Notification Service.

5.2.5. Storage Service

5.2.5.1. SCU of the Storage SOP Classes

The figure below shows sequencing of RWA for Storage as SCU.

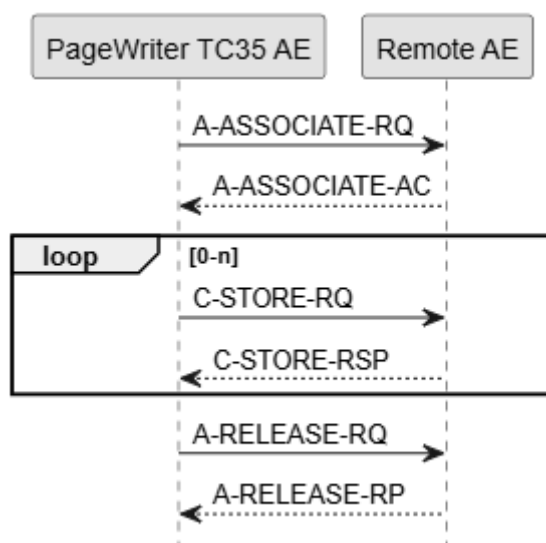


Figure 5- 4: Real World Activity – Storage as SCU

As a Service Class User of the Storage Service Class, the PageWriter TC35 uses the C-STORE-RQ message to request storage of DICOM objects by a remote SCP. See Section 1.1 Content and Transfer in the Overview for the list of supported SOP Classes.

For details regarding the content of SOP Instances that are created by the system, see Annexes A, which describes the underlying IOD of the supported SOP Classes.

5.2.5.1.1 Transcoding of Transfer Syntaxes – N/A

Not applicable since PageWriter TC35 does not support Transcoding of Transfer Syntaxes

5.2.5.2. SCP of the Storage SOP Classes – N/A

Not applicable since PageWriter TC35 does not support Store SCP.

5.2.6. Storage Commitment Service

5.2.6.1. SCU of the Storage Commitment SOP Class

The figure below shows sequencing of RWA for Storage Commitment as SCU.

Archive means that PageWriter TC35 stores images with Storage Commitment.

The PageWriter TC35 will request an association with the remote Storage SCP for the applicable Storage SOP Classes. After accepting the association, the PageWriter TC35 will send the store request, wait for response, and then release the association. The store response status may be inspected on the UI. The Transferred image shall not be deleted from the system until the Storage Commit N-EVENT is received.

Depending on the status of the store the PageWriter TC35 may queue store requests for retries. The queued store requests can be cancelled from the UI.

When an archive supports DICOM Storage Commitment, this node can be configured for it. For each image that is sent to this node, also a Storage Commitment Request is sent. The image is delete-protected until the Storage Commit Response has been received.

- Storage commitment request is marked as failure when - Storage Commitment missing for few objects.
- The N-EVENT-REPORT-RQ has a transaction UID value which is different from the transaction UID value that is sent in the N-ACTION-RQ.
- On receiving a storage commitment result the Application Entity will mark the not committed images as failed.
- The Storage AE will consider Storage Commitment failed if no N-EVENT-REPORT is received for a Transaction UID within a configurable time period after receiving a successful N-ACTION response.

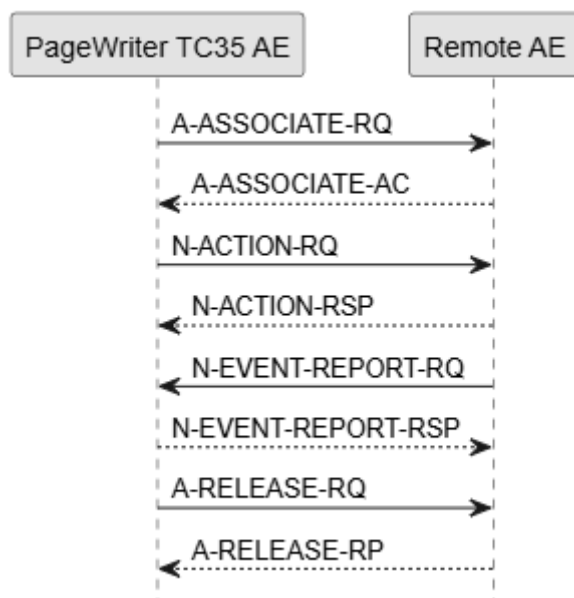


Figure 5- 5: Real World Activity – Storage Commitment as SCU (Synchronous)

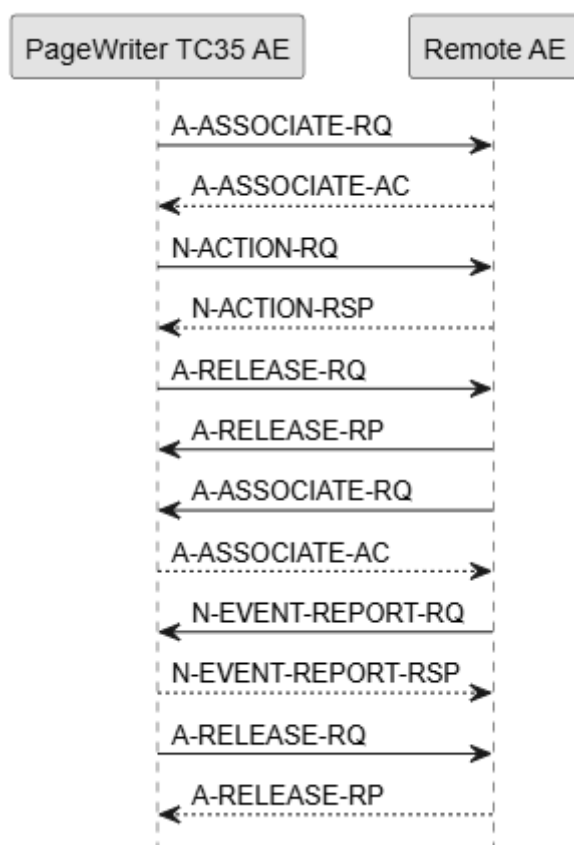


Figure 5- 6: Real World Activity – Storage Commitment as SCU (Asynchronous)

As a Service Class User of the Storage Commitment SOP Class, the PageWriter TC35 uses the N-ACTION-RQ message to request storage commitment from a remote SCP. In turn, it receives N-EVENT-REPORT-RQ messages from the SCP indicating success or failure of the request.

As a Service Class User of the Storage Commitment Push Model SOP Classes the product supports committing all Storage SOP Classes listed in Section 1.1 Content and Transfer are supported.

Table 5- 4: N-ACTION-RQ Dataset Specification.

Storage Commitment Push Model SOP Class			
Attribute Name	Tag	VR	Comment
Storage Commitment Module			
Transaction UID	0008,1195	UI	
Referenced SOP Sequence	0008,1199	SQ	
>Referenced SOP Class UID	0008,1150	UI	
>Referenced SOP Instance UID	0008,1155	UI	

5.2.6.2. SCP of the Storage Commitment SOP Class – N/A

Not applicable since PageWriter TC35 does not support Storage Commitment SCP

5.2.7. Query/Retrieve Service Class – N/A

Not applicable since PageWriter TC35 does not support Query/Retrieve.

5.2.8. Print Management Service – N/A

Not applicable since PageWriter TC35 does not support Print Management service.

5.2.9. Verification Service

5.2.9.1. SCU of the Verification Service SOP Class

The figure below shows sequencing of RWA for Verification as SCU.

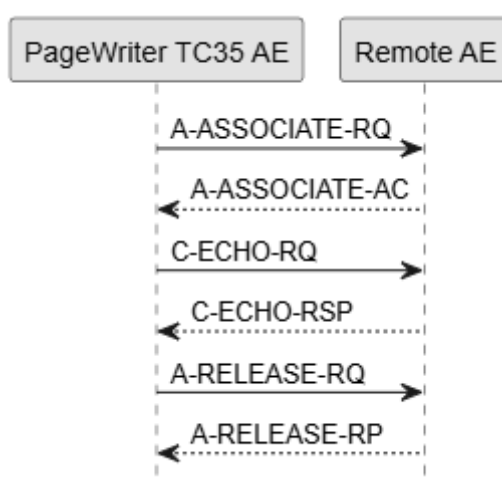


Figure 5- 7: Real World Activity – Verification as SCU

As a Service Class User of the Verification Service Class, the PageWriter TC35 uses the C-ECHO-RQ message to verify end-to-end communications with a remote DICOM AE. Upon receipt of the C-ECHO confirmation

ECHO-RSP message, the SCU determines that verification is complete. For the list of supported DIMSE services see Section 1.2.

5.2.9.2. SCP of the Verification Service SOP Class – N/A

. Not applicable since PageWriter TC35 does not support Verification SCP

5.3. Supported DICOM Web Services – N/A

Not applicable since PageWriter TC35 does not support DICOM Web Services.

5.4. Media Service – N/A

Not applicable since PageWriter TC35 does not support Media service.

5.5. Real Time Video Service – N/A

Not applicable since PageWriter TC35 does not support Real Time Video Service.

5.6. Cross Service Considerations - N/A

Not applicable since PageWriter TC35 does not support Cross Service Considerations.

5.7. Specific Character Sets

For Specific Character Sets supported in addition to the default character repertoire, refer to Section 1.7 for the Values for Specific Character Set (0008,0005).

6. Configuration

Any implementation's DICOM conformance may be dependent upon configuration, which takes place at the time of installation. Issues concerning configuration are addressed in this section.

An important installation issue is the translation from AE title to presentation address.

The AE Titles, hostnames and TCP/IP Port numbers of the remote applications are configured using the PageWriter TC35 Configuration GUI. Every DICOM service destination can use a different configurable AE Title.

Throughout all subsections the following Values can be used in the "Configurable" column:

- USER: The parameter is configurable by the user.
- SERVICE: The parameter is configurable by service personnel.
- FIXED: The parameter is not configurable (it has a fixed Value). The Value is required for the configuration of the remote system.
- N/A: The parameter is not applicable for the local or the remote system.

6.1. General Configuration Parameters

A number of parameters related to general operation can be configured using the PageWriter TC35 Configuration GUI. The table below only shows those configuration parameters relevant to DICOM communications, grouped according to the specific PageWriter TC35 application. See the PageWriter TC35 Manual on the application for details on general configuration capabilities.

The PageWriter TC35 supports the following configuration parameters:

Table 6-1 lists general configuration parameters applicable across all supported DICOM Services.

Table 6- 1: General Configuration Parameters

Parameter	Configurable	Default Value	Comments
General Parameters			
Timeout waiting for acceptance or rejection Response to an Association Open Request. (Application-Level timeout)			
Timeout waiting for a response to an Association release request (Application-Level Timeout)			
General DIMSE level timeout Values	SERVICE		
DICOM Services Parameters			
Maximum number of simultaneous Associations accepted	FIXED	1	
Specific Character Set	USER	ISO_IR 100	
TLS Configuration Parameters			
Secure Connection	USER	OFF	Set to ON for secure connection
Certificate and Private Key	USER	N/A	

Parameter	Configurable	Default Value	Comments
Trusted Root CA Certificate	USER	N/A	
Others Parameters			
SOP Class	FIXED	"Based on Lead Count", which means 12-Lead ECG Waveform for ECGs with only 12 leads, and General ECG Waveform for ECGs with more than 12 leads*	
PDU Length	FIXED	16384	

6.2. Configuration of DIMSE Services

The AE Titles and TCP/IP Ports configured from the PageWriter TC35 Configuration GUI. Every DICOM service can use different AE Title.

The AE Title, host names and port numbers of remote applications are configured using the PageWriter TC35 Configuration GUI.

A number of parameters related to general operation can be configured using the PageWriter TC35 Configuration GUI.

The tables in the following subsections show the configuration parameters required for DIMSE Services.

In order to identify whether PageWriter TC35 is an SCP and / or an SCU, the following applies:

- SCP: The (Secured) Local Called AET and Remote Calling AET parameters are present.
- SCU: The (Secured) Local Calling AET and Remote Called AET parameters are present.

6.2.1. Basic Worklist Management Service Configuration

Table 6-2 lists Worklist Service configuration parameters:

Table 6- 2: Worklist Service Parameters

Local Worklist Configuration Parameters - Worklist Service			
Parameter	Configurable	Default Value	Comments
Calling AE Title (SCU)	SERVICE		
Modality	SERVICE		
Outbound Charset	FIXED	ISO_IR 100	
Remote Configuration Parameters - Worklist Service			
Called AE Title (SCP)	SERVICE		
Host (IP Address)	SERVICE		
Port (Host Port Number)	SERVICE		
Previous (Days)	SERVICE	0	
Next (Days)	SERVICE	0	

6.2.2. Modality Performed Procedure Step Service Configuration

Table 6-3 lists Modality Performed Procedure Step Service configuration parameters:

Table 6- 3: MPPS Service Parameters

Local Configuration Parameters - MPPS Service			
Parameter	Configurable	Default Value	Comments
Calling AE Title (SCU)	SERVICE		
Modality	SERVICE		
Outbound Charset	FIXED	ISO_IR 100	
Remote Configuration Parameters - MPPS Service			
Called AE Title (SCP)	SERVICE		
Host (IP Address)	SERVICE		
Port (Host Port Number)	SERVICE		

6.2.3. Unified Worklist and Procedure Step Service Configuration – N/A

Not applicable since PageWriter TC35 does not support Unified Worklist and Procedure Step Service.

6.2.4. Instance Availability Notification Service Configuration – N/A

Not applicable since PageWriter TC35 does not support Instance Availability notification.

6.2.5. Storage Service Configuration

Table 6-4 lists Storage Service configuration parameters:

Table 6- 4: Storage Service Parameters

Local Worklist Configuration Parameters - Worklist Service			
Parameter	Configurable	Default Value	Comments
Calling AE Title (SCU)	SERVICE		
Modality	SERVICE		
Outbound Charset	FIXED	ISO_IR 100	
Report Type	SERVICE	12 - Lead	
ECG Filter	SERVICE		
Remote Configuration Parameters - Worklist Service			
Called AE Title (SCP)	SERVICE		
Host (IP Address)	SERVICE		
Port (Host Port Number)	SERVICE		

6.2.6. Storage Commitment Service Configuration

Table 6-5 lists Storage Commitment Service configuration parameters:

Table 6- 5: Storage Commitment Service Parameters

Local Configuration Parameters - Storage Commitment Service			
Parameter	Configurable	Default Value	Comments
Calling AE Title (SCU)	SERVICE		
Modality	SERVICE		
Outbound Charset	FIXED	ISO_IR 100	
Local Port	SERVICE		
Remote Configuration Parameters - Storage commitment Service			
Called AE Title (SCP)	SERVICE		
Host (IP Address)	SERVICE		
Port (Host Port Number)	SERVICE		

6.2.7. Query/Retrieve Service Configuration – N/A

Not applicable since PageWriter TC35 does not support Query/Retrieve

6.2.8. Print Management Service Configuration – N/A

Not applicable since PageWriter TC35 does not support Print Management

6.2.9. Verification Service Configuration

Table 6-6 lists Storage Service configuration parameters:

Table 6- 6: Verification Service Parameters

Local Configuration Parameters - Verification Service			
Parameter	Configurable	Default Value	Comments
Calling AE Title (SCU)	SERVICE		

6.3. Configuration of DICOM Web Services – N/A

Not applicable since PageWriter TC35 does not support DICOM Web Services.

6.4. Configuration of Media Storage Service – N/A

Not applicable since PageWriter TC35 does not support Media Storage

6.5. Configuration of Real Time Video Service – N/A

Not applicable since PageWriter TC35 does not support Real Time Video.

6.6. Configuration of Audit Trail – Syslog – N/A

Not applicable since PageWriter TC35 does not support Audit Trail.

7. Network and Media Communication Details

7.1. General

The cross interaction between the AEs is depicted in the diagrams below.

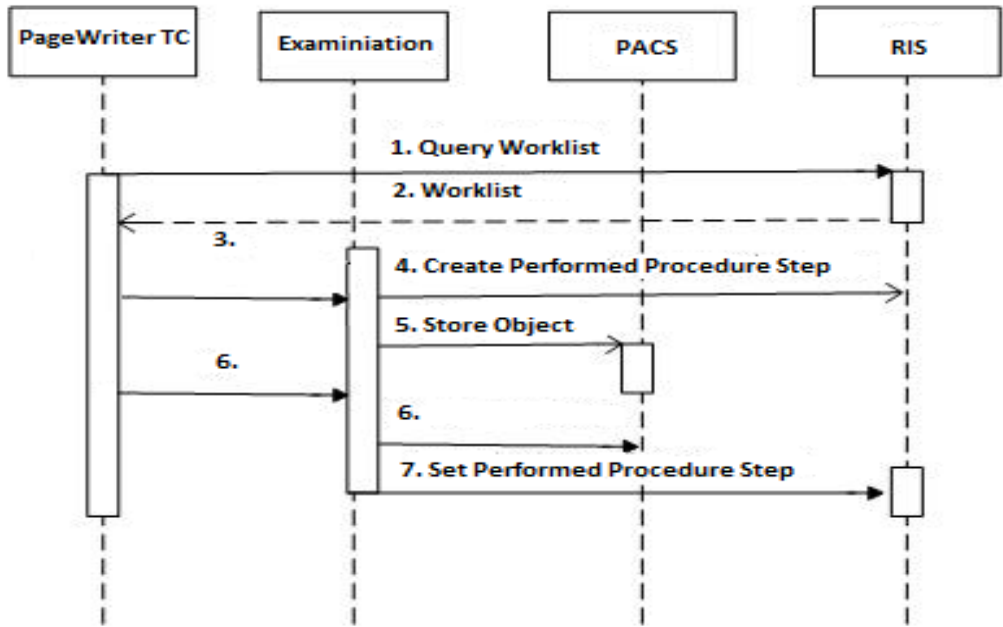


Figure 7-1: Real-World Activity and Cross AE interaction

7.1.1. General Association Parameters

As the product implements a single application entity the association parameters are specified in Table 7- 2 lists Association parameters applicable to the AE on the system.

7.2. Specifications

7.2.1. PageWriter TC35 Application Entity

7.2.1.1. Sequencing of Real-World Activities for Modality Worklist

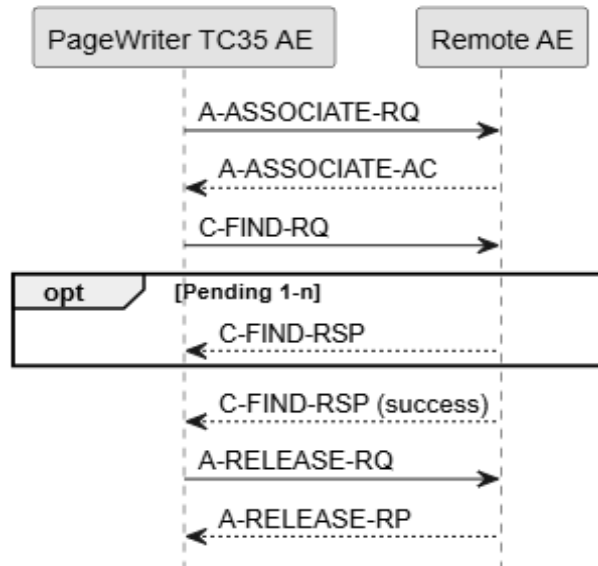


Figure 7-2: Sequencing of Real-World Activities for modality worklist

7.2.1.2. Sequencing of Real-World Activities for Modality Performed Procedure Step

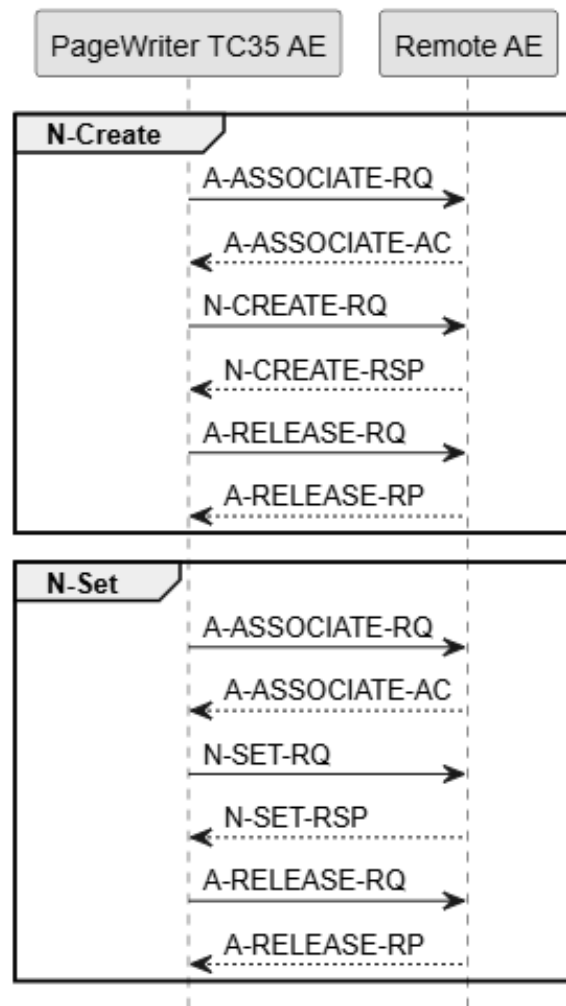


Figure 7-3: Sequencing of Real-World Activities for Modality Performed Procedure Step

7.2.1.3. Sequencing of Real-World Activities for Image Export

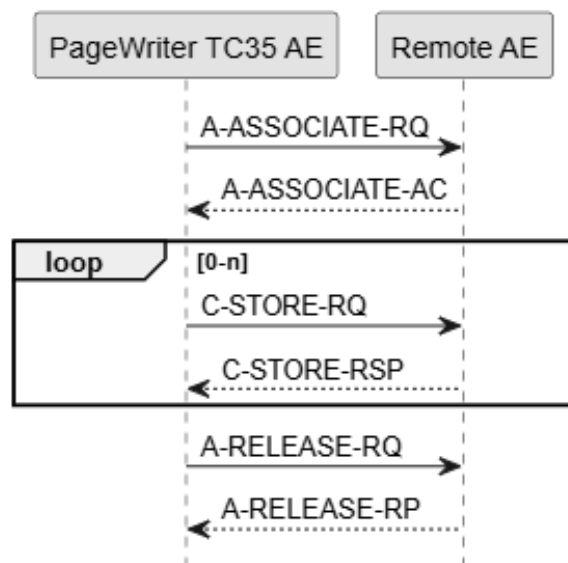


Figure 7-4: Sequencing of Real-World Activities for Image Export

7.2.1.4. Sequencing of Real-World Activities for Storage Commitment

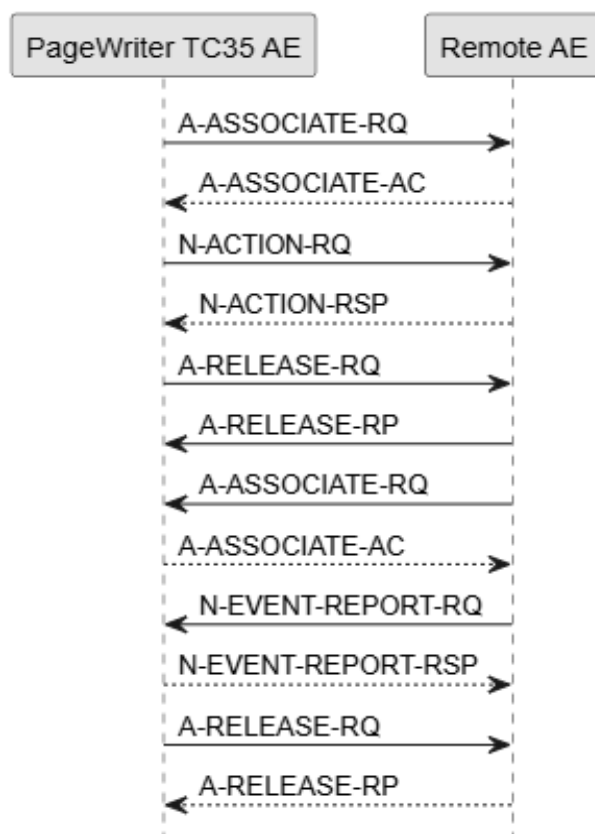


Figure 7-5: Sequencing of Real-World Activities for Storage Commitment

7.2.1.5. Sequencing of Real-World Activities for Verification

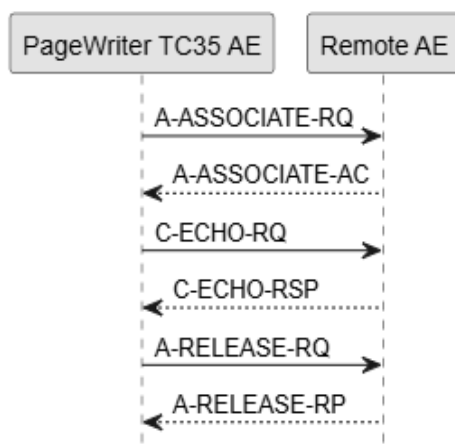


Figure 7-6: Sequencing of Real-World Activities for Verification

7.2.1.6. Association Parameters of PageWriter TC35 AE

Table 7- 1 lists Association parameters applicable to PageWriter TC35 AE.

Table 7- 1: General Association Parameters

	Name	Value
Networking Services	Application Context Name	1.2.840.10008.3.1.1.1
	Implementation Class UID	1.3.46.670589.32.860437.1.2.0
	Implementation Version Name	TC35DCM_1_2_0
	Maximum PDU Length	16384 (Fixed or not configurable)
	ARTIM Timeout	Default: 30s
	Maximum number of simultaneous Associations as Association Initiator	1
	Maximum number of outstanding synchronous Transactions	1
	Maximum number of outstanding asynchronous Transactions	1

7.2.1.7. Association Initiation

This section details the Association policies of the Application Entity when it is initiating an Association.

7.2.1.7.1 Real-World Activity Modality Worklist

The operator of the PageWriter TC35 can choose to retrieve an up-to-date worklist. To initiate this function, the operator will run a query (patient based query or broad query) from the cardiograph, with or without optional search criteria. When the operator starts the query process, the PageWriter TC35 will query the

DICOM Modality Worklist service provider for the Modality Worklist, using the search criteria if provided. The list of orders is returned to the cardiograph (Max.200) and displayed to the operator. Extended negotiation is not supported.

7.2.1.7.2 Real-World Activity Modality Performed Procedure Step

When PageWriter TC35 start the scan of an examination, an association is established with the SCP and send a N-CREATE message with all appropriate information about the examination on the PageWriter TC35 scanner; the status will be set to IN-PROGRESS. After clicking on the "Transfer" button the PageWriter TC35 will archive acquired images and send a N-SET message having status IN-PROGRESS and procedure end date and time information. After clicking on the "End Session" button PageWriter TC35 send a N-SET message (having status "COMPLETED" and procedure end date and time information). After starting the session, when the PageWriter TC35 end the session without acquiring image, then PageWriter TC35 send a N-SET message with status or "DISCONTINUED". The MPPS function is independent of the use of storage commitment. The sequence diagram in figure 7-3 shows the interaction for the PageWriter TC35 RWA for MPPS.

Description of Activities

MPPS messages are only created for scheduled studies.

After the image for a Scheduled Procedure Step has been acquired, the system sets the MPPS status of the related examination to "IN PROGRESS" and generates an initial MPPS in progress message. The system does not generate intermediate MPPS in progress message for subsequent acquisitions of this Scheduled Procedure Step instance.

After finishing the appropriate acquisition(s), the system will change the MPPS status of the related examination to "COMPLETED: and generate and MPPS N-SET-FINAL message.

Note: When acquiring the first image of a Scheduled or Unscheduled Procedure Step, ECG PageWriter generates a MPPS IN PROGRESS message.

7.2.1.7.3 Real-World Activity Image Export

After generating an ECG, PageWriter TC35 will initiate transmission of the ECG. This causes the PageWriter TC35 to store the ECG into the configured Storage SCP. ECGs are stored using the 12-Lead ECG Waveform Object or as a General ECG Waveform Object or as Encapsulated PDF Storage Object depending on the configuration settings.

7.2.1.7.4 Real-World Activity Storage Commitment

After generating an ECG, PageWriter TC35 will initiate transmission of the ECG. This causes the PageWriter TC35 to store the ECG into the configured Storage SCP. ECGs are stored using the 12-Lead ECG Waveform Object or as a General ECG Waveform Object or as Encapsulated PDF Storage Object depending on the configuration settings.

Archive means that PageWriter TC35 stores images with Storage Commitment.

The PageWriter TC35 will request an association with the remote Storage SCP for the applicable Storage SOP Classes. After accepting the association, the PageWriter TC35 will send the store request, wait for response, and the release the association. The store response status may be inspected on the UI. The Transferred image shall not be deleted from the system until the Storage Commit N-EVENT is received.

Depending on the status of the store the PageWriter TC35 may queue store requests for retries. The queued store requests can be cancelled from the UI.

When an archive supports DICOM Storage Commitment, this node can be configured for it. For each image that is sent to this node, also a Storage Commitment Request is sent. The image is delete-protected until the Storage Commit Response has been received. The current status is shown in the Image Info Panel.

7.2.1.7.5 Real-World Activity Verification

PageWriter TC35 requests verification to a remote system using the C-ECHO command.

7.2.1.8. Association Acceptance – N/A

Not applicable since PageWriter TC35 does not support association acceptance.

7.3. Status Codes

The following sections describe the Status Codes supported by the system for each implemented service as well as the reason for issuing specific Status codes or the associated behavior when receiving it.

7.3.1. General AE Communication and Failure Behavior and Handling

7.3.1.1. Communication Failure Behavior as Association Initiator

Table 7-2 describes behavior of the AE if a communication failure occurs when it initiated an Association.

Table 7- 2: DICOM Communication Failure Behavior as Association Initiator

Failure	Failure Behavior
Timeout	The Association is aborted using A-ABORT and command marked as failed. The reason is logged and reported to the user.
Association aborted	On receiving Abort request, ECG PageWriter displays “Remote Transfer Error”.
Association Rejection	On receiving Abort request, ECG PageWriter displays “Remote Transfer Error”.

7.3.1.2. Communication Failure Handling as Association Acceptor - N/A

Not applicable since PageWriter TC35 does not support association accept.

7.3.2. DIMSE Services

7.3.2.1. Basic Worklist Management Service

7.3.2.1.1 SCU of the Modality Worklist Information Model Find SOP Class - C-FIND

Table 7-3 lists the Status Codes that the SCU of the Modality Worklist Information Model Find SOP Class supports for the C-FIND message and defines the application behavior when encountering the listed Status Codes.

Table 7- 3: : Status Codes for C-FIND of the Modality Worklist Information Model SOP Class - SCU

Service Status	Further Meaning	Status Code	Behavior
Success	Matching is complete - No final identifier is supplied	0000	Association established with the SCP system.
*	Any other status	Unsuccessful Operation	Association not established with the SCP System and reason is logged.

7.3.2.1.2 SCP of the Modality Worklist Information Model Find SOP Class - C-FIND- N/A

Not applicable since PageWriter TC35 does not support MWL SCP.

7.3.2.2. Modality Performed Procedure Step Service

7.3.2.2.1 SCU of the Modality Performed Procedure Step SOP Class - N-CREATE

Table 7-4 lists the Status Codes that the SCU of the Modality Performed Procedure Step SOP Class supports for the N-CREATE message and defines the application behavior when encountering the listed Status Codes.

Table 7- 4: Status Codes for N-CREATE of the Modality Performed Procedure Step SOP Class – SCU

Service Status	Further Meaning	Status Code	Behavior
Success	Successful Operation	0000	Operation completed successfully.
*	Unsuccessful Operation	Any other status	Operation not completed, and failure reason is logged.

7.3.2.2.2 SCU of the Modality Performed Procedure Step SOP Class - N-SET

Table 7-5 lists the Status Codes that the SCU of the Modality Performed Procedure Step SOP Class supports for the N-SET message and defines the application behavior when encountering the listed Status Codes.

Table 7- 5: Status Codes for N-SET of the Modality Performed Procedure Step SOP Class — SCU

Service Status	Further Meaning	Status Code	Behavior
Success	Successful Operation	0000	Operation completed successfully.
*	Unsuccessful Operation	Any other status	Operation not completed, and failure reason is logged.

7.3.2.2.3 SCP of the Modality Performed Procedure Step SOP Class - N-CREATE – N/A

Not applicable since PageWriter TC35 does not support MPPS SCP

7.3.2.2.4 SCP of the Modality Performed Procedure Step SOP Class - N-SET – N/A

Not applicable since PageWriter TC35 does not support MPP SCP

7.3.2.3. Unified Worklist and Procedure Step Service – N/A

Not applicable since PageWriter TC35 does not support Unified Worklist and Procedure Step service.

7.3.2.4. Instance Availability Notification Service – N/A

Not applicable since PageWriter TC35 does not support Instance Availability Notification.

7.3.2.5. Storage Service

7.3.2.5.1 SCU of the Storage SOP Classes - C-STORE

Table 7-6 lists the Status Codes that the SCU of the Storage SOP Class supports for the C-STORE message and defines the application behavior when encountering the listed Status Codes.

Table 7- 6: Status Codes C-STORE for the Storage SOP Classes – SCU

Service Status	Further Meaning	Status Code	Behavior
Success	Successful operation	0000	Store operation completed successfully.
*	Unsuccessful operation	Any other status	Store operation not completed, and reason is logged.

7.3.2.5.2 SCP of the Storage SOP Classes - C-STORE – N/A

Not applicable since PageWriter TC35 does not support Store SCP

7.3.2.6. Storage Commitment Service

7.3.2.6.1 SCU of the Storage Commitment Push Model SOP Class - N-ACTION

Table 7-7 lists the Status Codes that the SCU of the Storage Commitment Push Model SOP Class supports for the N-ACTION message and defines the application behavior when encountering the listed Status Codes.

Table 7- 7: Status Codes for N-ACTION of the Storage Commitment Push Model SOP Class – SCU

Service Status	Further Meaning	Status Code	Behavior
Success	Successful Operation	0000	Storage Commitment (N-ACTION) operation completed successfully.
*	Unsuccessful Operation	Any other status	Storage Commitment (N-ACTION) not completed, and reason is logged.

7.3.2.6.2 SCU of the Storage Commitment Push Model SOP Class - N-EVENT-REPORT

Table 7-8 lists the Status Codes that the SCU of the Storage Commitment Push Model SOP Class supports for the N-EVENT-REPORT message and defines the application behavior when encountering the listed Status Codes.

Table 7- 8: Status Codes for N-EVENT-REPORT for the Storage Commitment Push Model SOP Class – SCU

Service Status	Further Meaning	Status Code	Behavior
Success	Successful Operation	0000	Storage Commitment (N-EVENT-REPORT) operation completed successfully. The Examination is marked as completed and it becomes a candidate for an automatic deletion

Service Status	Further Meaning	Status Code	Behavior
			from the local database if local resources become scarce.
*	Unsuccessful Operation	Any other status	Reason is logged. The failure is reported to the operator by not marking the examination as completed. The operator may re-transfer the image data (which was previously transferred to the Image Archive).

7.3.2.6.3 SCP of the Storage Commitment Push Model SOP Class - N-ACTION – N/A

Not applicable since PageWriter TC35 does not support Storage Commitment SCP

7.3.2.6.4 SCP of the Storage Commitment Push Model SOP Class - N-EVENT-REPORT – N/A

Not applicable since PageWriter TC35 does not support Storage Commitment SCP

7.3.2.7. Query/Retrieve Service – N/A

Not applicable since PageWriter TC35 does not support Query/Retrieve.

7.3.2.8. Print Management Service – N/A

Not applicable since PageWriter TC35 does not support Print Management.

7.3.2.9. Verification Service

7.3.2.9.1 SCU of the Verification SOP Class - C-ECHO

Table 7-9 lists the Status Codes that the SCU of the Storage SOP Class supports for the C-ECHO message and defines the application behaviour when encountering the listed Status Codes.

Table 7- 9: Status Codes C-ECHO for the Verification SOP Class – SCU

Service Status	Further Meaning	Status Code	Behavior
Success	Matching is complete - No final identifier is supplied	0000	Association established with the SCP system.
*	Any other status	Unsuccessful Operation	Association not established with the SCP System and reason is logged.

7.3.2.9.2 SCP of the Verification SOP Class - C-ECHO - N/A

Not applicable since PageWriter TC35 does not support Verification SCP

7.3.3. DICOM Web Services – N/A

Not applicable since PageWriter TC35 does not support DICOM Web Services.

8. Security

8.1. Introduction

The security section describes security features implemented by this product. It includes descriptions of non-DICOM network protocols, information to configure firewalls and application whitelists, lists of supported DICOM security profiles as well as Web Security features. Additionally, secured media storage, VPN, etc. are also specified in this security section.

8.2. External Network Requirements

Table 8-1 describes additional non-DICOM network protocols that are used by PageWriter TC35.

Table 8- 1: External Network Requirements

Profile	Actor	Transaction	Protocol Used	RFCs	Security Support	Reference
Basic Time Synchronization	NTP Client	Maintain Time	NTP	RFC5905	No	C.1.1
Basic Time Synchronization	SNTP Client	Maintain Time	SNTP	RFC2030	No	C1.1

8.3. TCP Port Configuration

Not applicable since PageWriter TC35 is client and TCP configuration required only for the Server.

8.4. DICOM Security Profiles Support

8.4.1. Secure Use and User Identity Profiles – N/A

Not applicable since PageWriter TC35 does not support this profile.

8.4.2. Secure Transport Connection Profiles

Table 8-3 describes the Secure Transport Connection Profiles supported by the product. Accepted cipher suites are described in the section listed in the "Reference" column.

Table 8- 2: Secure Transport Connection Profiles

Profile	Secured AE	Sender	Receiver	Reference
BCP 195 RFC 8996 TLS Secure Transport Connection Profile	ECG (Configurable)	Yes	N/A	C.2.5

8.4.3. Media Storage Security Profiles – N/A

Not applicable since PageWriter TC35 does not support this profile.

8.4.4. Attribute Confidentiality Profiles – N/A

Not applicable since PageWriter TC35 does not support this profile.

8.4.5. Digital Signature Profiles – N/A

Not applicable since PageWriter TC35 does not support this profile.

8.4.6. Additional DICOM Security Profiles – N/A

Not applicable since PageWriter TC35 does not support an additional DICOM security profile.

8.5. User Identity Negotiation Support – N/A

Not applicable since PageWriter TC35 does not support any User Identity Negotiation.

8.6. Web Services Security Features – N/A

Not applicable since PageWriter TC35 does not support Web services.

8.7. Other Security Features – N/A

Not applicable since PageWriter TC35 does not support other security features.

Annexes

A Information Object Definitions (IODs)

This section describes all the SOP Instances natively created by PageWriter TC35 e.g. images created by an acquisition modality or evidence documents created on a review workstation (i.e., all SOP Classes that are marked in the "Created" column in Table 1-1). Details on Attribute coercion are defined in Section 5.2.5.2. (Table 5-11. Attribute Coercion by Storage SCP).

In the "Source" column, the following Values can be used:

- FIXED: The Value is pre-defined and cannot be modified.
- GENERATED: The Value is generated by the system.
- CONFIGURATION: The Value is copied from the system configuration.
- MWL: The Value is copied from a Modality Worklist entry.
- QUERY: The Value is determined by performing a query of any of the supported Query/Retrieve Services.
- USER: The Value is entered by the user.
- SCANNED: The Value is read from a barcode scanner or similar device.
- EMPTY: The Attribute is sent with a zero-length Value.
- SRC_INSTANCE: The Value is copied from previously created/received SOP Instances.

The "Presence" columns reflect the usage of the Module, Functional Group Macro, Attributes, or Value in the *<product>*Implementation and is not necessarily the same as defined in the DICOM Standard. For the "Presence" column the following Values can be used:

- ALWAYS: the module, functional group macro, Attributes or Value is always present.
- CONDITIONAL: the presence of the module, functional group macro, Attributes or Value is dependent on a condition. The condition must be listed in the "Conditions" column.
- SRC_COPY: The presence of the Attributes and Values depends on the availability of these in the source instances, which are used for copying this information.
- EMPTY: The Attribute is present but without a Value (zero length).

A.1 Information shared across multiple IODs -N/A

Not applicable since PageWriter TC35 does not support common information shared across multiple IODs.

A.2 12-Lead ECG IOD

Table below defines the structure of 12 Lead ECG IOD

Table A- 1: 12-Lead ECG IOD

IE	Module Name	Presence (Module)	Condition	Reference
Patient	Patient	ALWAYS		Patient Module
Study	General Study	ALWAYS		General Study Module
	Patient Study	ALWAYS		Patient Study Module
Series	General Series	ALWAYS		General Series Module
Equipment	General Equipment	ALWAYS		General Equipment Module
Waveform	Waveform Identification	ALWAYS		Waveform Identification Module
	Waveform	ALWAYS		Waveform Module
	Acquisition Context	ALWAYS		Acquisition Context Module
	Waveform Annotation	ALWAYS		Waveform Annotation Module
	SOP Common	ALWAYS		SOP Common Module
Additional Attributes	Additional Attributes	ALWAYS		Additional Attributes Module

A.2.1 12-Lead ECG IOD Specific Modules

The following tables list Modules and Attributes specific for 12-Lead ECG IOD:

Table A- 2: Patient Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Patient's Name	(0010,0010)	MWL	ALWAYS	CONDITIONAL			
Patient ID	(0010,0020)	MWL	ALWAYS	CONDITIONAL			
Patient's Birth Date	(0010,0030)	MWL	ALWAYS	CONDITIONAL			
Patient's Sex	(0010,0040)	MWL	ALWAYS	CONDITIONAL			
Ethnic Group	(0010,2160)	MWL	CONDITIONAL	CONDITIONAL			
Other Patient IDs	(0010,1000)	MWL	CONDITIONAL	ALWAYS			

Table A- 3: General Study Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Study Date	(0008,0020)	GENERATED	ALWAYS	CONDITIONAL			
Study Time	(0008,0030)	GENERATED	ALWAYS	CONDITIONAL			
Accession Number	(0008,0050)	MWL	ALWAYS	CONDITIONAL			
Referring Physician's Name	(0008,0090)	MWL	ALWAYS	CONDITIONAL			
Study Description	(0008,1030)	GENERATED	ALWAYS	EMPTY			
Procedure Code Sequence	(0008,1032)	MWL	CONDITIONAL	ALWAYS			
>Code Value	(0008,0100)	GENERATED	CONDITIONAL	ALWAYS			
>Coding Scheme Designator	(0008,0102)	GENERATED	CONDITIONAL	ALWAYS			
>Code Meaning	(0008,0104)	GENERATED	CONDITIONAL	ALWAYS			
Study Instance UID	(0020,000D)	MWL	ALWAYS	ALWAYS			
Study ID	(0020,0010)	MWL	ALWAYS	CONDITIONAL			

Table A- 4: Patient Study Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Patient's Age	(0010,1010)	USER	ALWAYS	CONDITIONAL			
Patient's Size	(0010,1020)	USER	ALWAYS	CONDITIONAL			
Patient's Weight	(0010,1030)	USER	ALWAYS	CONDITIONAL			
Admission ID	(0038,0010)	MWL	CONDITIONAL	CONDITIONAL			

Table A- 5: General Series Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Modality	(0008,0060)	FIXED	ALWAYS	ALWAYS	ECG		
Operators' Name	(0008,1070)	USER	ALWAYS	CONDITIONAL			
Series Instance UID	(0020,000E)	GENERATED	ALWAYS	ALWAYS			Unique identifier for the Series. PageWriter TC35 will generate this as: DECG prefix: 1.3.46.670589.32 Time Clock Random Number Suffix: 1
Series Number	(0020,0011)	GENERATED	ALWAYS	CONDITIONAL			
Performed Procedure Step Start Date	(0040,0244)	GENERATED	CONDITIONAL	ALWAYS			
Performed Procedure Step Start Time	(0040,0245)	GENERATED	CONDITIONAL	ALWAYS			
Performed Procedure Step ID	(0040,0253)	GENERATED	CONDITIONAL	ALWAYS			
Performed Procedure Step Description	(0040,0254)	GENERATED	ALWAYS	EMPTY			
Performed Protocol Code Sequence	(0040,0260)	MWL	CONDITIONAL	ALWAYS			
>Code Value	(0008,0100)	FIXED	CONDITIONAL	ALWAYS	P2-3120A		
>Coding Scheme Designator	(0008,0102)	FIXED	CONDITIONAL	ALWAYS	SRT		
>Code Meaning	(0008,0104)	FIXED	CONDITIONAL	ALWAYS	12-lead ECG		
Request Attributes Sequence	(0040,0275)	MWL	CONDITIONAL	ALWAYS			
>Requested Procedure ID	(0040,1001)	MWL	CONDITIONAL	CONDITIONAL			

>Requested Procedure Description	(0032,1060)	MWL	CONDITIONAL	ALWAYS			
>Requested Procedure Code Sequence	(0032,1064)	MWL	CONDITIONAL	ALWAYS			
>>Code Value	(0008,0100)	MWL	CONDITIONAL	ALWAYS			
>>Coding Scheme Designator	(0008,0102)	MWL	CONDITIONAL	ALWAYS			
>>Code Meaning	(0008,0104)	MWL	CONDITIONAL	ALWAYS			
>Scheduled Procedure Step ID	(0040,0009)	MWL	CONDITIONAL	CONDITIONAL			
>Scheduled Procedure Step Description	(0040,0007)	MWL	CONDITIONAL	ALWAYS			
>Scheduled Protocol Code Sequence	(0040,0008)	MWL	CONDITIONAL	ALWAYS			
>>Code Value	(0008,0100)	MWL	CONDITIONAL	ALWAYS			
>>Coding Scheme Designator	(0008,0102)	MWL	CONDITIONAL	ALWAYS			
>>Code Meaning	(0008,0104)	MWL	CONDITIONAL	ALWAYS			

Table A- 6: General Equipment Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Manufacturer	(0008,0070)	FIXED	ALWAYS	CONDITIONAL	Philips		
Institution Name	(0008,0080)	MWL USER	CONDITIONAL	CONDITIONAL			If the institution name in MWL is empty, the local institution name is used.
Station Name	(0008,1010)	CONFIGURATION MWL	CONDITIONAL	ALWAYS			User defined name identifying the machine that produced the composite instances (Cart ID)
Institutional Department Name	(0008,1040)	CONFIGURATION	CONDITIONAL	ALWAYS			
Manufacturer's Model Name	(0008,1090)	FIXED	CONDITIONAL	ALWAYS	860437		
Software Versions	(0018,1020)	GENERATED	CONDITIONAL	ALWAYS			

Table A- 7: Waveform Identification Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Content Date	(0008,0023)	GENERATED	ALWAYS	ALWAYS			
Acquisition DateTime	(0008,002A)	GENERATED	ALWAYS	ALWAYS			
Content Time	(0008,0033)	GENERATED	ALWAYS	ALWAYS			
Instance Number	(0020,0013)	FIXED	ALWAYS	ALWAYS	1		

Table A- 8: Waveform Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Waveform Sequence	(5400,0100)	GENERATED	ALWAYS	ALWAYS			
>Multiplex Group Time Offset	(0018,1068)	GENERATED	ALWAYS	ALWAYS			
>Trigger Time Offset	(0018,1069)	GENERATED	ALWAYS	ALWAYS			
>Waveform Originality	(003A,0004)	GENERATED	ALWAYS	ALWAYS			This will be “ORIGINAL” for the rhythm data and “DERIVED” for median data.
>Number of Waveform Channels	(003A,0005)	FIXED	ALWAYS	ALWAYS	12		
>Number of Waveform Samples	(003A,0010)	GENERATED	ALWAYS	ALWAYS			
>Sampling Frequency	(003A,001A)	GENERATED	ALWAYS	ALWAYS			Frequency in Hz
>Multiplex Group Label	(003A,0020)	GENERATED	CONDITIONAL	ALWAYS			This is “RHYTHM” for the first group and “MEDIAN BEAT” for the second group.
>Channel Definition Sequence	(003A,0200)	GENERATED	ALWAYS	ALWAYS			
>>Channel Status	(003A,0205)	GENERATED	ALWAYS	ALWAYS			
>>Channel Source Sequence	(003A,0208)	GENERATED	ALWAYS	ALWAYS			
>>>Code Value	(0008,0100)	GENERATED	CONDITIONAL	ALWAYS			
>>>Coding Scheme Designator	(0008,0102)	GENERATED	CONDITIONAL	ALWAYS			
>>>Coding Scheme Version	(0008,0103)	GENERATED	CONDITIONAL	ALWAYS			

>>>Code Meaning	(0008,0104)	GENERATED	CONDITIONAL	ALWAYS			
>>Channel Sensitivity	(003A,0210)	GENERATED	CONDITIONAL	ALWAYS			Nominal numeric value of unit quantity of sample
>>Channel Sensitivity Units Sequence	(003A,0211)	GENERATED	CONDITIONAL	ALWAYS			A coded descriptor of the Units of measure for the Channel Sensitivity
>>>Code Value	(0008,0100)	GENERATED	CONDITIONAL	ALWAYS			
>>>Coding Scheme Designator	(0008,0102)	GENERATED	CONDITIONAL	ALWAYS			
>>>Coding Scheme Version	(0008,0103)	GENERATED	CONDITIONAL	ALWAYS			
>>>Code Meaning	(0008,0104)	GENERATED	CONDITIONAL	ALWAYS			This will be “microvolt”
>>Channel Sensitivity Correction Factor	(003A,0212)	FIXED	CONDITIONAL	ALWAYS	1		Multiplier to be applied to encoded sample values to match units specified in Channel Sensitivity (003A,0210).
>>Channel Baseline	(003A,0213)	FIXED	CONDITIONAL	ALWAYS	0		
>>Channel Sample Skew	(003A,0215)	FIXED	CONDITIONAL	ALWAYS	0		
>>Waveform Bits Stored	(003A,021A)	GENERATED	ALWAYS	ALWAYS			
>>Filter Low Frequency	(003A,0220)	CONFIGURATION	CONDITIONAL	ALWAYS			Nominal 3dB point of lower frequency of pass band
>>Filter High Frequency	(003A,0221)	CONFIGURATION	CONDITIONAL	ALWAYS			Nominal 3dB point of higher frequency of pass band
>>Notch Filter Frequency	(003A,0222)	CONFIGURATION	CONDITIONAL	ALWAYS			Center frequency of notch filter(s)
>Waveform Bits Allocated	(5400,1004)	GENERATED	ALWAYS	ALWAYS			
>Waveform Sample Interpretation	(5400,1006)	FIXED	ALWAYS	ALWAYS	SS		
>Waveform Data	(5400,1010)	GENERATED	ALWAYS	ALWAYS			

Table A- 9: Acquisition Context Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Acquisition Context Sequence	(0040,0555)	GENERATED	ALWAYS	CONDITIONAL			
>Value Type	(0040,A040)	FIXED	ALWAYS	CONDITIONAL	CODE		
>Concept Name Code Sequence	(0040,A043)	FIXED	ALWAYS	ALWAYS			
>>Code Value	(0008,0100)	FIXED	CONDITIONAL	ALWAYS	5.4.5-33-1		
>>Coding Scheme Designator	(0008,0102)	FIXED	CONDITIONAL	ALWAYS	SCPECG		
>>Coding Scheme Version	(0008,0103)	FIXED	CONDITIONAL	ALWAYS	1.3		
>>Code Meaning	(0008,0104)	FIXED	CONDITIONAL	ALWAYS	Electrode Placement		
>Concept Code Sequence	(0040,A168)	FIXED	ALWAYS	ALWAYS			This is the Value component of a Name/Value pair when the concept implied by concept Name code sequence (0040,A043) is a coded value
>>Code Value	(0008,0100)	FIXED	CONDITIONAL	ALWAYS	5.4.5-33-1-1		This will be which means “Standard 12-lead positions: limb leads placed at extremities”
>>Coding Scheme Designator	(0008,0102)	FIXED	CONDITIONAL	ALWAYS	SCPECG		
>>Coding Scheme Version	(0008,0103)	FIXED	CONDITIONAL	ALWAYS	1.3		
>>Code Meaning	(0008,0104)	FIXED	CONDITIONAL	ALWAYS	Standard 12-lead positions: limb leads placed at extremities		This will be Standard 12-Lead Positions

Table A- 10: Waveform Annotation Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Waveform Annotation Sequence	(0040,B020)	GENERATED	CONDITIONAL	ALWAYS			
>Referenced Waveform Channels	(0040,A0B0)	GENERATED	CONDITIONAL	ALWAYS			
>Annotation Group Number	(0040,A180)	GENERATED	CONDITIONAL	ALWAYS			
>Unformatted Text Value	(0070,0006)	GENERATED	CONDITIONAL	CONDITIONAL			SIMULATION MODE set to ON
>Measurement Units Code Sequence	(0040,08EA)	GENERATED	CONDITIONAL	ALWAYS			
>>Code Value	(0008,0100)	GENERATED	CONDITIONAL	ALWAYS	ms		
>>Coding Scheme Designator	(0008,0102)	GENERATED	CONDITIONAL	ALWAYS	UCUM		
>>Coding Scheme Version	(0008,0103)	GENERATED	CONDITIONAL	ALWAYS			
>>Code Meaning	(0008,0104)	GENERATED	CONDITIONAL	ALWAYS			
>Concept Name Code Sequence	(0040,A043)	GENERATED	CONDITIONAL	ALWAYS			
>>Code Value	(0008,0100)	GENERATED	CONDITIONAL	ALWAYS			
>>Coding Scheme Designator	(0008,0102)	GENERATED	CONDITIONAL	ALWAYS			
>>Coding Scheme Version	(0008,0103)	GENERATED	CONDITIONAL	ALWAYS			
>>Code Meaning	(0008,0104)	GENERATED	CONDITIONAL	ALWAYS			
>Referenced Waveform Channels	(0040,A0B0)	GENERATED	CONDITIONAL	ALWAYS			
>Temporal Range Type	(0040,A130)	GENERATED	CONDITIONAL	ALWAYS			
>Referenced Sample Positions	(0040,A132)	GENERATED	CONDITIONAL	ALWAYS			
>Annotation Group Number	(0040,A180)	GENERATED	CONDITIONAL	ALWAYS			

Table A- 11: SOP Common Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Specific Character Set	(0008,0005)	CONFIGURATION	ALWAYS	ALWAYS	"ISO-IR-100"		

Instance Creation Date	(0008,0012)	GENERATED	CONDITIONAL	ALWAYS			
Instance Creation Time	(0008,0013)	GENERATED	CONDITIONAL	ALWAYS			
SOP Class UID	(0008,0016)	FIXED	ALWAYS	ALWAYS	1.2.840.10008.5.1.4.1.1.9.1.1		
SOP Instance UID	(0008,0018)	GENERATED	ALWAYS	ALWAYS			Uniquely identifies the SOP Instance. PageWriter TC35 will generate this as: DECG prefix: 1.3.46.670589.32 Time Clock Random Number Suffix: 1
Instance Number	(0020,0013)	GENERATED	CONDITIONAL	ALWAYS			

Table A- 12: Additional Attributes Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Visit Comments	(0038,4000)	USER	CONDITIONAL	CONDITIONAL			
Reason for the Requested Procedure	(0040,1002)	USER	CONDITIONAL	CONDITIONAL			
Performed Procedure Code Sequence	(0040,A372)	USER	CONDITIONAL	ALWAYS			
>Code Value	(0008,0100)	USER	CONDITIONAL	ALWAYS			
>Coding Scheme Designator	(0008,0102)	USER	CONDITIONAL	ALWAYS			
>Code Meaning	(0008,0104)	USER	CONDITIONAL	ALWAYS			

A.2.2 12-Lead ECG Functional Group Macros - N/A

Not applicable since PageWriter TC35 does not support function group.

A.2.3 12-Lead ECG Private Modules - N/A

Not applicable since PageWriter TC35 does not support private module

A.2.4 12-Lead ECG Coded Values

Using SNOMED RT codes and SCP-ECG vocabulary.

A.3 General ECG IOD

Table below defines the structure of General ECG Waveform IOD

Table A- 13: General ECG Waveform IOD

IE	Module Name	Presence (Module)	Condition	Reference
Patient	Patient	ALWAYS		Patient Module
Study	General Study	ALWAYS		General Study Module
	Patient Study	ALWAYS		Patient Study Module
Series	General Series	ALWAYS		General Series Module
Equipment	General Equipment	ALWAYS		General Equipment Module
Waveform	Waveform Identification	ALWAYS		Waveform Identification Module
	Waveform	ALWAYS		Waveform Module
	Acquisition Context	ALWAYS		Acquisition Context Module
	Waveform Annotation	ALWAYS		Waveform Annotation Module
	SOP Common	ALWAYS		SOP Common Module
Additional Attributes	Additional Attributes	ALWAYS		Additional Attributes Module

A.3.1 General ECG IOD Specific Modules

The following tables list Modules and Attributes specific for General ECG IOD:

Table A- 14: Patient Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Patient's Name	(0010,0010)	MWL	ALWAYS	CONDITIONAL			
Patient ID	(0010,0020)	MWL	ALWAYS	CONDITIONAL			
Patient's Birth Date	(0010,0030)	MWL	ALWAYS	CONDITIONAL			
Patient's Sex	(0010,0040)	MWL	ALWAYS	CONDITIONAL			
Ethnic Group	(0010,2160)	MWL	CONDITIONAL	CONDITIONAL			

Other Patient IDs	(0010,1000)	MWL	CONDITIONAL	ALWAYS			
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Table A- 15: General Study Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Study Date	(0008,0020)	GENERATED	ALWAYS	CONDITIONAL			
Study Time	(0008,0030)	GENERATED	ALWAYS	CONDITIONAL			
Accession Number	(0008,0050)	MWL	ALWAYS	CONDITIONAL			
Referring Physician's Name	(0008,0090)	MWL	ALWAYS	CONDITIONAL			
Study Description	(0008,1030)	GENERATED	ALWAYS	EMPTY			
Procedure Code Sequence	(0008,1032)	MWL	CONDITIONAL	ALWAYS			
>Code Value	(0008,0100)	GENERATED	CONDITIONAL	ALWAYS			
>Coding Scheme Designator	(0008,0102)	GENERATED	CONDITIONAL	ALWAYS			
>Code Meaning	(0008,0104)	GENERATED	CONDITIONAL	ALWAYS			
Study Instance UID	(0020,000D)	MWL	ALWAYS	ALWAYS			
Study ID	(0020,0010)	MWL	ALWAYS	CONDITIONAL			

Table A- 16: Patient Study Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Patient's Age	(0010,1010)	USER	ALWAYS	CONDITIONAL			

Patient's Size	(0010,1020)	USER	ALWAYS	CONDITIONAL			
Patient's Weight	(0010,1030)	USER	ALWAYS	CONDITIONAL			
Admission ID	(0038,0010)	MWL	CONDITIONAL	CONDITIONAL			

Table A- 17: General Series Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Modality	(0008,0060)	FIXED	ALWAYS	ALWAYS	ECG		
Operators' Name	(0008,1070)	USER	ALWAYS	CONDITIONAL			
Series Instance UID	(0020,000E)	GENERATED	ALWAYS	ALWAYS			Uniquely identifies the SOP Instance. PageWriter TC35 will generate this as: DECG prefix: 1.3.46.670589.32 Time Clock Random Number Suffix: 1
Series Number	(0020,0011)	GENERATED	ALWAYS	CONDITIONAL			
Performed Procedure Step Start Date	(0040,0244)	GENERATED	CONDITIONAL	ALWAYS			
Performed Procedure Step Start Time	(0040,0245)	GENERATED	CONDITIONAL	ALWAYS			
Performed Procedure Step ID	(0040,0253)	GENERATED	CONDITIONAL	ALWAYS			
Performed Procedure Step Description	(0040,0254)	GENERATED	ALWAYS	EMPTY			
Performed Protocol Code Sequence	(0040,0260)	MWL	CONDITIONAL	ALWAYS			
>Code Value	(0008,0100)	FIXED	CONDITIONAL	ALWAYS	P2-3120A		
>Coding Scheme Designator	(0008,0102)	FIXED	CONDITIONAL	ALWAYS	SRT		
>Code Meaning	(0008,0104)	FIXED	CONDITIONAL	ALWAYS	12-lead ECG		

Request Attributes Sequence	(0040,0275)	GENERATED	CONDITIONAL	ALWAYS			
>Requested Procedure ID	(0040,1001)	MWL	CONDITIONAL	CONDITIONAL			
>Requested Procedure Description	(0032,1060)	MWL	CONDITIONAL	ALWAYS			
>Requested Procedure Code Sequence	(0032,1064)	MWL	CONDITIONAL	ALWAYS			
>>Code Value	(0008,0100)	MWL	CONDITIONAL	ALWAYS			
>>Coding Scheme Designator	(0008,0102)	MWL	CONDITIONAL	ALWAYS			
>>Code Meaning	(0008,0104)	MWL	CONDITIONAL	ALWAYS			
>Scheduled Procedure Step ID	(0040,0009)	MWL	CONDITIONAL	CONDITIONAL			
>Scheduled Procedure Step Description	(0040,0007)	MWL	CONDITIONAL	ALWAYS			
>Scheduled Protocol Code Sequence	(0040,0008)	MWL	CONDITIONAL	ALWAYS			
>>Code Value	(0008,0100)	MWL	CONDITIONAL	ALWAYS			
>>Coding Scheme Designator	(0008,0102)	MWL	CONDITIONAL	ALWAYS			
>>Code Meaning	(0008,0104)	MWL	CONDITIONAL	ALWAYS			

Table A- 18: General Equipment Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Manufacturer	(0008,0070)	FIXED	ALWAYS	CONDITIONAL	Philips		
Institution Name	(0008,0080)	MWL USER	CONDITIONAL	CONDITIONAL			If the institution name in MWL is empty, the local institution name is used.
Station Name	(0008,1010)	MWL CONFIGURATION	CONDITIONAL	ALWAYS			User defined name identifying the machine that produced the composite instances (Cart ID)
Institutional Department Name	(0008,1040)	CONFIGURATION	CONDITIONAL	ALWAYS			

Manufacturer's Model Name	(0008,1090)	FIXED	CONDITIONAL	ALWAYS	860437		
Software Versions	(0018,1020)	GENERATED	CONDITIONAL	ALWAYS			

Table A- 19: Waveform Identification Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Content Date	(0008,0023)	GENERATED	ALWAYS	ALWAYS			
Acquisition DateTime	(0008,002A)	GENERATED	ALWAYS	ALWAYS			
Content Time	(0008,0033)	GENERATED	ALWAYS	ALWAYS			
Instance Number	(0020,0013)	FIXED	ALWAYS	ALWAYS	1		

Table A- 20: Waveform Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Waveform Sequence	(5400,0100)	GENERATED	ALWAYS	ALWAYS			
>Multiplex Group Time Offset	(0018,1068)	GENERATED	ALWAYS	ALWAYS			
>Trigger Time Offset	(0018,1069)	GENERATED	ALWAYS	ALWAYS			
>Waveform Originality	(003A,0004)	GENERATED	ALWAYS	ALWAYS			This will be "ORIGINAL" for the rhythm data and "DERIVED" for median data.
>Number of Waveform Channels	(003A,0005)	FIXED	ALWAYS	ALWAYS	12		
>Number of Waveform Samples	(003A,0010)	GENERATED	ALWAYS	ALWAYS			
>Sampling Frequency	(003A,001A)	GENERATED	ALWAYS	ALWAYS			Frequency in Hz
>Multiplex Group Label	(003A,0020)	GENERATED	CONDITIONAL	ALWAYS			This is "RHYTHM" for the first group and "MEDIAN BEAT" for the second group.
>Channel Definition Sequence	(003A,0200)	GENERATED	ALWAYS	ALWAYS			

>>Channel Status	(003A,0205)	GENERATED	ALWAYS	ALWAYS			
>>Channel Source Sequence	(003A,0208)	GENERATED	ALWAYS	ALWAYS			
>>>Code Value	(0008,0100)	GENERATED	CONDITIONAL	ALWAYS			
>>>Coding Scheme Designator	(0008,0102)	GENERATED	CONDITIONAL	ALWAYS			
>>>Coding Scheme Version	(0008,0103)	GENERATED	CONDITIONAL	ALWAYS			
>>>Code Meaning	(0008,0104)	GENERATED	CONDITIONAL	ALWAYS			
>>Channel Sensitivity	(003A,0210)	GENERATED	CONDITIONAL	ALWAYS			Nominal numeric value of unit quantity of sample
>>Channel Sensitivity Units Sequence	(003A,0211)	GENERATED	CONDITIONAL	ALWAYS			A coded descriptor of the Units of measure for the Channel Sensitivity
>>>Code Value	(0008,0100)	GENERATED	CONDITIONAL	ALWAYS			
>>>Coding Scheme Designator	(0008,0102)	GENERATED	CONDITIONAL	ALWAYS			
>>>Coding Scheme Version	(0008,0103)	GENERATED	CONDITIONAL	ALWAYS			
>>>Code Meaning	(0008,0104)	GENERATED	CONDITIONAL	ALWAYS			This will be "microvolt"
>>Channel Sensitivity Correction Factor	(003A,0212)	FIXED	CONDITIONAL	ALWAYS	1		Multiplier to be applied to encoded sample values to match units specified in Channel Sensitivity (003A,0210).
>>Channel Baseline	(003A,0213)	FIXED	CONDITIONAL	ALWAYS	0		
>>Channel Sample Skew	(003A,0215)	FIXED	CONDITIONAL	ALWAYS	0		
>>Waveform Bits Stored	(003A,021A)	GENERATED	ALWAYS	ALWAYS			
>>Filter Low Frequency	(003A,0220)	CONFIGURATION	CONDITIONAL	ALWAYS			Nominal 3dB point of lower frequency of pass band
>>Filter High Frequency	(003A,0221)	CONFIGURATION	CONDITIONAL	ALWAYS			Nominal 3dB point of higher frequency of pass band

>>Notch Filter Frequency	(003A,0222)	CONFIGURATION	CONDITIONAL	ALWAYS			Center frequency of notch filter(s)
>Waveform Bits Allocated	(5400,1004)	GENERATED	ALWAYS	ALWAYS			
>Waveform Sample Interpretation	(5400,1006)	FIXED	ALWAYS	ALWAYS	SS		
>Waveform Data	(5400,1010)	GENERATED	ALWAYS	ALWAYS			

Table A- 21: Acquisition Context Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Acquisition Context Sequence	(0040,0555)	GENERATED	ALWAYS	CONDITIONAL			
>Value Type	(0040,A040)	FIXED	ALWAYS	CONDITIONAL	CODE		
>Concept Name Code Sequence	(0040,A043)	FIXED	ALWAYS	ALWAYS			
>>Code Value	(0008,0100)	FIXED	CONDITIONAL	ALWAYS	5.4.5-33-1		
>>Coding Scheme Designator	(0008,0102)	FIXED	CONDITIONAL	ALWAYS	SCPECG		
>>Coding Scheme Version	(0008,0103)	FIXED	CONDITIONAL	ALWAYS	1.3		
>>Code Meaning	(0008,0104)	FIXED	CONDITIONAL	ALWAYS	Electrode Placement		
>Concept Code Sequence	(0040,A168)	FIXED	ALWAYS	ALWAYS			This is the Value component of a Name/Value pair when the concept implied by concept Name code sequence (0040,A043) is a coded value
>>Code Value	(0008,0100)	FIXED	CONDITIONAL	ALWAYS	5.4.5-33-1-1		This will be which means "Standard 12-lead positions: limb leads placed at extremities"
>>Coding Scheme Designator	(0008,0102)	FIXED	CONDITIONAL	ALWAYS	SCPECG		
>>Coding Scheme Version	(0008,0103)	FIXED	CONDITIONAL	ALWAYS	1.3		

>>Code Meaning	(0008,0104)	FIXED	CONDITIONAL	ALWAYS	Standard 12-lead positions: limb leads placed at extremities"		This will be Standard 12-Lead Positions
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Table A- 22: Waveform Annotation Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Waveform Annotation Sequence	(0040,B020)	GENERATED	CONDITIONAL	ALWAYS			
>Referenced Waveform Channels	(0040,A0B0)	GENERATED	CONDITIONAL	ALWAYS			
>Annotation Group Number	(0040,A180)	GENERATED	CONDITIONAL	ALWAYS			
>Unformatted Text Value	(0070,0006)	GENERATED	CONDITIONAL	CONDITIONAL			SIMULATION MODE set to ON
>Measurement Units Code Sequence	(0040,08EA)	GENERATED	CONDITIONAL	ALWAYS			
>>Code Value	(0008,0100)	GENERATED	CONDITIONAL	ALWAYS			
>>Coding Scheme Designator	(0008,0102)	GENERATED	CONDITIONAL	ALWAYS			
>>Coding Scheme Version	(0008,0103)	GENERATED	CONDITIONAL	ALWAYS			
>>Code Meaning	(0008,0104)	GENERATED	CONDITIONAL	ALWAYS			
>Concept Name Code Sequence	(0040,A043)	GENERATED	CONDITIONAL	ALWAYS			
>>Code Value	(0008,0100)	GENERATED	CONDITIONAL	ALWAYS			
>>Coding Scheme Designator	(0008,0102)	GENERATED	CONDITIONAL	ALWAYS			
>>Coding Scheme Version	(0008,0103)	GENERATED	CONDITIONAL	ALWAYS			
>>Code Meaning	(0008,0104)	GENERATED	CONDITIONAL	ALWAYS			
>Referenced Waveform Channels	(0040,A0B0)	GENERATED	CONDITIONAL	ALWAYS			
>Temporal Range Type	(0040,A130)	GENERATED	CONDITIONAL	ALWAYS			
>Referenced Sample Positions	(0040,A132)	GENERATED	CONDITIONAL	ALWAYS			
>Annotation Group Number	(0040,A180)	GENERATED	CONDITIONAL	ALWAYS			

Table A- 23: SOP Common Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Specific Character Set	(0008,0005)	CONFIGURATION	ALWAYS	ALWAYS	ISO-IR-100		
Instance Creation Date	(0008,0012)	GENERATED	CONDITIONAL	ALWAYS			
Instance Creation Time	(0008,0013)	GENERATED	CONDITIONAL	ALWAYS			
SOP Class UID	(0008,0016)	FIXED	ALWAYS	ALWAYS	1.2.840.10008.5.1.4.1.1.9.1.2		
SOP Instance UID	(0008,0018)	GENERATED	ALWAYS	ALWAYS			Uniquely identifies the SOP Instance. PageWriter TC35 will generate this as: DECG prefix: 1.3.46.670589.32 Time Clock Random Number Suffix: 1
Instance Number	(0020,0013)	GENERATED	CONDITIONAL	ALWAYS			

Table A- 24: Additional Attributes Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Visit Comments	(0038,4000)	USER	CONDITIONAL	CONDITIONAL			
Reason for the Requested Procedure	(0040,1002)	USER	CONDITIONAL	CONDITIONAL			
Other Patient IDs	(0010,1000)	USER	CONDITIONAL	ALWAYS			
Performed Procedure Code Sequence	(0040,A372)	USER	CONDITIONAL	ALWAYS			
>Code Value	(0008,0100)	USER	CONDITIONAL	ALWAYS			
>Coding Scheme Designator	(0008,0102)	USER	CONDITIONAL	ALWAYS			
>Code Meaning	(0008,0104)	USER	CONDITIONAL	ALWAYS			

A.3.2 General ECG Functional Group Macros - N/A

Not applicable since PageWriter TC35 does not support Functional group

A.3.3 General ECG Private Modules - N/A

Not applicable since PageWriter TC35 does not support private modules

A.3.4 General ECG Coded Values

Using SNOMED RT codes and SCP-ECG vocabulary.

A.4 Encapsulated PDF IOD

Table below defines the structure of Encapsulated PDF IOD:

Table A- 25: - Encapsulated PDF IOD

IE	Module Name	Presence (Module)	Condition	Reference
Patient	Patient	ALWAYS		Patient Module
Study	General Study	ALWAYS		General Study Module
	Patient Study	CONDITIONAL		Patient Study Module
Series	Encapsulated Document Series	ALWAYS		Encapsulated Document Series Module
Equipment	General Equipment	ALWAYS		General Equipment Module
	SC Equipment	ALWAYS		SC Equipment Module
Encapsulated Document	Encapsulated Document	ALWAYS		Encapsulated Document Module
	SOP Common	ALWAYS		SOP Common Module
Additional Attributes	Additional Attributes	ALWAYS		Additional Attributes Module

A.4.1 Encapsulated PDF IOD Specific Modules

The following tables list Modules and Attributes specific for Encapsulated PDF IOD:

Table A- 26: Patient Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Patient's Name	(0010,0010)	MWL USER	ALWAYS	CONDITIONAL			
Patient ID	(0010,0020)	MWL USER	ALWAYS	CONDITIONAL			
Patient's Birth Date	(0010,0030)	MWL USER	ALWAYS	CONDITIONAL			
Patient's Sex	(0010,0040)	MWL	ALWAYS	CONDITIONAL			
Ethnic Group	(0010,2160)	MWL	CONDITIONAL	CONDITIONAL			
Other Patient IDs	(0010,1000)	USER	CONDITIONAL	ALWAYS			

Table A- 27: General Study Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Study Date	(0008,0020)	MWL	ALWAYS	CONDITIONAL			
Study Time	(0008,0030)	MWL	ALWAYS	CONDITIONAL			
Accession Number	(0008,0050)	MWL	ALWAYS	CONDITIONAL			
Issuer of Accession Number Sequence	(0008,0051)	MWL	CONDITIONAL	ALWAYS			
Referring Physician's Name	(0008,0090)	MWL	ALWAYS	CONDITIONAL			
Study Description	(0008,1030)	GENERATED	ALWAYS	EMPTY			
Procedure Code Sequence	(0008,1032)	MWL	CONDITIONAL	ALWAYS			
>Code Value	(0008,0100)	GENERATED	CONDITIONAL	ALWAYS			

>Coding Scheme Designator	(0008,0102)	GENERATED	CONDITIONAL	ALWAYS			
>Code Meaning	(0008,0104)	GENERATED	CONDITIONAL	ALWAYS			
Study Instance UID	(0020,000D)	MWL	ALWAYS	ALWAYS			
Study ID	(0020,0010)	MWL	ALWAYS	CONDITIONAL			

Table A- 28: Patient Study Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Patient's Age	(0010,1010)	MWL USER	CONDITIONAL	ALWAYS			
Patient's Size	(0010,1020)	MWL USER	CONDITIONAL	ALWAYS			
Patient's Weight	(0010,1030)	MWL USER	CONDITIONAL	ALWAYS			
Admission ID	(0038,0010)	GENERATED	CONDITIONAL	CONDITIONAL			

Table A- 29: Encapsulated Document Series Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Modality	(0008,0060)	GENERATED	ALWAYS	ALWAYS			
Referenced Performed Procedure Step Sequence	(0008,1111)	GENERATED	CONDITIONAL	ALWAYS			
Series Instance UID	(0020,000E)	GENERATED	ALWAYS	ALWAYS			Uniquely identifies the SOP Instance. PageWriter TC35 will generate this as: DECG prefix: 1.3.46.670589.32 Time Clock Random Number Suffix: 1
Series Number	(0020,0011)	GENERATED	ALWAYS	ALWAYS			

Performed Procedure Step Start Date	(0040,0244)	GENERATED	CONDITIONAL	ALWAYS			
Performed Procedure Step Start Time	(0040,0245)	GENERATED	CONDITIONAL	ALWAYS			
Performed Procedure Step ID	(0040,0253)	GENERATED	CONDITIONAL	ALWAYS			
Performed Procedure Step Description	(0040,0254)	GENERATED	ALWAYS	EMPTY			
Performed Protocol Code Sequence	(0040,0260)	MWL	CONDITIONAL	ALWAYS			
>Code Value	(0008,0100)	FIXED	CONDITIONAL	ALWAYS	P2-3120A		
>Coding Scheme Designator	(0008,0102)	FIXED	CONDITIONAL	ALWAYS	SRT		
>Code Meaning	(0008,0104)	FIXED	CONDITIONAL	ALWAYS	12-lead ECG		
Request Attributes Sequence	(0040,0275)	GENERATED	CONDITIONAL	ALWAYS			
>Requested Procedure ID	(0040,1001)	MWL	CONDITIONAL	CONDITIONAL			
>Requested Procedure Description	(0032,1060)	MWL	CONDITIONAL	ALWAYS			
>Requested Procedure Code Sequence	(0032,1064)	MWL	CONDITIONAL	ALWAYS			
>>Code Value	(0008,0100)	MWL	CONDITIONAL	ALWAYS			
>>Coding Scheme Designator	(0008,0102)	MWL	CONDITIONAL	ALWAYS			
>>Code Meaning	(0008,0104)	MWL	CONDITIONAL	ALWAYS			
>Scheduled Procedure Step ID	(0040,0009)	MWL	CONDITIONAL	CONDITIONAL			
>Scheduled Protocol Code Sequence	(0040,0008)	MWL	CONDITIONAL	ALWAYS			
>>Code Value	(0008,0100)	MWL	CONDITIONAL	ALWAYS			
>>Coding Scheme Designator	(0008,0102)	MWL	CONDITIONAL	ALWAYS			
>>Code Meaning	(0008,0104)	MWL	CONDITIONAL	ALWAYS			

Comments on the Performed Procedure Step	(0040,0280)	GENERATED	CONDITIONAL	ALWAYS			
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Table A- 30: General Equipment Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Manufacturer	(0008,0070)	FIXED	ALWAYS	CONDITIONAL	Philips		
Institution Name	(0008,0080)	MWL USER	CONDITIONAL	CONDITIONAL			If the institution name in MWL is empty, the local institution name is used.
Institution Address	(0008,0081)	GENERATED	CONDITIONAL	ALWAYS			
Station Name	(0008,1010)	MWL CONFIGURATION	CONDITIONAL	ALWAYS			User defined name identifying the machine that produced the composite instances (Cart ID
Institutional Department Name	(0008,1040)	USER	CONDITIONAL	ALWAYS			
Manufacturer's Model Name	(0008,1090)	FIXED	CONDITIONAL	ALWAYS	860437		
Software Versions	(0018,1020)	GENERATED	CONDITIONAL	ALWAYS			

Table A- 31: SC Equipment Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Modality	(0008,0060)	GENERATED	CONDITIONAL	ALWAYS			
Conversion Type	(0008,0064)	GENERATED	ALWAYS	ALWAYS			

Table A- 32: Encapsulated Document Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Content Date	(0008,0023)	GENERATED	ALWAYS	CONDITIONAL			

Acquisition DateTime	(0008,002A)	GENERATED	ALWAYS	CONDITIONAL			
Content Time	(0008,0033)	GENERATED	ALWAYS	CONDITIONAL			
Instance Number	(0020,0013)	GENERATED	ALWAYS	ALWAYS			
Image Laterality	(0020,0062)	GENERATED	CONDITIONAL	ALWAYS			
Burned In Annotation	(0028,0301)	GENERATED	ALWAYS	ALWAYS			
Concept Name Code Sequence	(0040,A043)	GENERATED	ALWAYS	CONDITIONAL			
Verification Flag	(0040,A493)	GENERATED	CONDITIONAL	ALWAYS			
Document Title	(0042,0010)	GENERATED	ALWAYS	CONDITIONAL			
Encapsulated Document	(0042,0011)	GENERATED	ALWAYS	ALWAYS			
MIME Type of Encapsulated Document	(0042,0012)	GENERATED	ALWAYS	ALWAYS			

Table A- 33: SOP Common Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Specific Character Set	(0008,0005)	CONFIGURATION	ALWAYS	ALWAYS	ISO-IR-100		
Instance Creation Date	(0008,0012)	GENERATED	CONDITIONAL	ALWAYS			
Instance Creation Time	(0008,0013)	GENERATED	CONDITIONAL	ALWAYS			
Instance Number	(0020,0013)	GENERATED	CONDITIONAL	ALWAYS			
SOP Class UID	(0008,0016)	FIXED	ALWAYS	ALWAYS	1.2.840.10008.5.1.4.1.1.104.1		
SOP Instance UID	(0008,0018)	GENERATED	ALWAYS	ALWAYS			Uniquely identifies the SOP Instance. PageWriter TC35 will generate this as: DECG prefix:

							1.3.46.670589.32 Time Clock Random Number Suffix: 1
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Table A- 34: Additional Attribute Module

Attribute Name	Tag	Source	Presence of Attribute	Presence of Value	Value	Conditions	Comments
Acquisition Context Sequence	(0040,0555)	GENERATED	ALWAYS	CONDITIONAL			
>Value Type	(0040,A040)	FIXED	ALWAYS	CONDITIONAL	CODE		
>Concept Name Code Sequence	(0040,A043)	FIXED	ALWAYS	ALWAYS			
>>Code Value	(0008,0100)	FIXED	CONDITIONAL	ALWAYS	5.4.5-33-1		
>>Coding Scheme Designator	(0008,0102)	FIXED	CONDITIONAL	ALWAYS	SCPECG		
>>Coding Scheme Version	(0008,0103)	FIXED	CONDITIONAL	ALWAYS	1.3		
>>Code Meaning	(0008,0104)	FIXED	CONDITIONAL	ALWAYS	Electrode Placement		
>Concept Code Sequence	(0040,A168)	FIXED	ALWAYS	ALWAYS			This is the Value component of a Name/Value pair when the concept implied by concept Name code sequence (0040,A043) is a coded value
>>Code Value	(0008,0100)	FIXED	CONDITIONAL	ALWAYS	5.4.5-33-1-1		This will be which means "Standard 12-lead positions: limb leads placed at extremities"
>>Coding Scheme Designator	(0008,0102)	FIXED	CONDITIONAL	ALWAYS	SCPECG		
>>Coding Scheme Version	(0008,0103)	FIXED	CONDITIONAL	ALWAYS	1.3		
>>Code Meaning	(0008,0104)	FIXED	CONDITIONAL	ALWAYS	Standard 12-lead positions: limb leads placed at extremities		This will be Standard 12-Lead Positions

A.4.2 Functional Group Macros - N/A

Not applicable since PageWriter TC35 does not support functional group.

A.4.3 Private Modules - N/A

Not applicable since PageWriter TC35 does not support private modules.

A.4.4 Coded Values

Using SNOMED RT codes and SCP-ECG vocabulary.

B Structured Report Content Encoding – N/A

Not applicable since PageWriter TC35 does not support Structured Report.

C Security Details

This section provides additional details about security features that are formally described in Section 8.

C.1 External Network Requirement Details

C.1.1 Basic Time Synchronization

PageWriter TC35 conforms to the Basic Time Synchronization profile. PageWriter T35 supports SNTP (Simple NTP) as time client, to enable user needs to manually configure the IP address of the SNTP server for time sync. It is possible to synchronize time with the NTP Timeserver using serviceability. The NTP Timeserver is an element of Hospital Infrastructure.

C.1.2 Basic Network Address Management – N/A

The System does not support Network Address Management profiles Basic Network Address Management.

C.1.3 Application Configuration Management-N/A

Not applicable since PageWriter TC35 does not support Application configuration Management .

C.1.4 DNS Service Discovery – N/A

C.2 DICOM Security Profile Details

C.2.1 Online Electronic Storage Secure Use – N/A

Not applicable since PageWriter TC35 does not support this profile.

C.2.2 Audit Trail Messages – N/A

Not applicable since PageWriter TC35 does not support this profile.

C.2.3 Audit Trial Message Transmission Profile - SYSLOG - TLS – N/A

Not applicable since PageWriter TC35 does not support this profile.

C.2.4 Audit Trial Message Transmission Profile - SYSLOG - UDP – N/A

Not applicable since PageWriter TC35 does not support this profile.

C.2.5 Secure Transport Connection Details

PageWriter TC35 supports only TLS 1.2.

PageWriter TC35 does not support disabling of any cipher suites, the product is designed to support as many cipher suites as possible and the server can choose which to be enabled.

Table C.2.5 1 lists the secure transport connection profiles and cipher suites supported for TLS 1.2:

Table C.2.5 1: Secure Transport Connection Profiles and Cipher Suites

Profile	Cipher Suite	Default Preference Order (from 1=preferred to n=less preferred)
BCP 195 RFC 8996 TLS Secure Transport Connection Profile	TLS_AES_256_GCM_SHA384 (0x1302)	1

	TLS_CHACHA20_POLY1305_SHA256 (0x1303)	2
	TLS_AES_128_GCM_SHA256 (0x1301)	3
	TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256 (0xc02f)	4
	TLS_DHE_RSA_WITH_AES_128_GCM_SHA256 (0x009e)	5
	TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384 (0xc030)	6
	TLS_DHE_RSA_WITH_AES_256_GCM_SHA384 (0x009f)	7
	TLS_EMPTY_RENEGOTIATION_INFO_SCSV (0x00ff)	8

Table C.2.5 2 lists the secure transport connection profiles and key exchange algorithms supported for TLS 1.2:

Table C.2.5 2: Secure Transport Connection Profiles and TLS 1.2 Key Exchange Algorithms

Profile	Key Exchange Algorithms	Default Preference Order (from 1=preferred to n=less preferred)
BCP 195 RFC 8996 TLS Secure Transport Connection Profile	ECDHE	1
	DHE	2

Table C.2.5 3 lists the secure transport connection profiles and signature algorithms supported for TLS 1.2:

Table C.2.5 3: Secure Transport Connection Profiles and TLS 1.2 Signature Algorithms

Profile	Signature Algorithms	Default Preference Order (from 1=preferred to n=less preferred)
BCP 195 RFC 8996 TLS Secure Transport Connection Profile	ecdsa_secp256r1_sha256	1.
	ecdsa_secp384r1_sha384	2.
	ecdsa_secp521r1_sha512	3.
	ed25519	4.
	ed448	5.
	ecdsa_brainpoolP256r1_sha256	6.
	ecdsa_brainpoolP384r1_sha384	7.
	ecdsa_brainpoolP512r1_sha512	8.
	rsa_pss_pss_sha256	9.
	rsa_pss_pss_sha384	10.
	rsa_pss_pss_sha512	11.

Profile	Signature Algorithms	Default Preference Order (from 1=preferred to n=less preferred)
	rsa_pss_rsae_sha256	12.
	rsa_pss_rsae_sha384	13.
	rsa_pss_rsae_sha512	14.
	rsa_pkcs1_sha256	15.
	rsa_pkcs1_sha384	16.
	rsa_pkcs1_sha512	17.
	SHA224 ECDSA	18.
	ecdsa_sha1	19.
	SHA224 RSA	20.
	rsa_pkcs1_sha1	21.
	SHA224 DSA	22.
	SHA1 DSA	23.
	SHA256 DSA	24.
	SHA384 DSA	25.
	SHA512 DSA	26.

Table C 2.5 4 describes the configurable parameters and behaviors supported by this product for the Secure Transport Connection:

Table C.2.5 4: Secure Transport Connection Configuration

Local Secure Transport Connection Configuration			
Parameter/Behavior	Configurable	Default Value	Comments
Common Secure Transport Connection parameters			
Port	See Section 6 Configuration		
Secure Connection	See Section 6 Configuration		
Certificate and Private Key	See Section 6 Configuration		
Trusted Root CA Certificate	See Section 6 Configuration		

C.2.6 Attribute Confidentiality Details – N/A

Not applicable since PageWriter TC35 does not support this profile.

C.2.7 Digital Signature Details – N/A

Not applicable since PageWriter TC35 does not support this profile.

C.2.8 Additional DICOM Security Profile Details – N/A

Not applicable since PageWriter TC35 does not support an additional DICOM security profile.

D Mapping of Attributes

D.1 Mapping Between Modality Worklist Instances and MPPS

Table D-1 describes the mapping of Attributes between Modality Worklist Instances and MPPS messages.

In the "Scenario" column the following Values are used:

In the "Value Source" columns, the following Values are used. The column cell may additionally contain an Attribute Tag if the value is copied from a different Attribute.

- GENERATED: The Value is generated by the system.
- SRC_INSTANCE: The Value is copied from previously created instances.
- MWL: The Value is copied from a Modality Worklist entry.
- USER: The Value is entered by the user.
- SCANNED: The Value is read from a barcode scanner or similar device.
- EMPTY: The Attribute is sent with a zero-length Value.

The "Destination" columns either contain TOP, if the Attribute is added to the top level Data Set of the Instance or contain the Attribute Tag of the Sequence the Attribute will be added to. The "Comments" column can be used to provide additional information regarding the Values added to the Instance or MPPS.

Table D- 1: Mapping of Attributes from Modality Worklist to Instance and MPPS

Attribute Name in Image/MPPS	Tag	Scenario	Image		MPPS		Comments
			Value Source	Destination	Value Source	Destination	
Study Instance UID	(0020,000D)	SCHEDULED	MWL	TOP	SRC_INSTANCE	(0040,0270)	
Accession Number	(0008,0050)	SCHEDULED	MWL	TOP	SRC_INSTANCE	(0040,0270)	
Requested Procedure ID	(0040,1001)	SCHEDULED	MWL	TOP	SRC_INSTANCE	(0040,0270)	
Institution Name	(0008,0080)	SCHEDULED	MWL	TOP	EMPTY		
Patient's Size	(0010,1020)	SCHEDULED	MWL	TOP	EMPTY		
Patient's Weight	(0010,1030)	SCHEDULED	MWL	TOP	EMPTY		
Referring Physician's Name	(0008,0090)	SCHEDULED	MWL	TOP	EMPTY		
Reason for the Requested Procedure	(0040,1002)	SCHEDULED	MWL	TOP	EMPTY		
Visit Comments	(0038,4000)	SCHEDULED	MWL	TOP	EMPTY		

Attribute Name in Image/MPPS	Tag	Scenario	Image		MPPS		Comments
			Value Source	Destination	Value Source	Destination	
Admission ID	(0038,0010)	SCHEDULED	MWL	TOP	SRC_INSTANCE		
Ethnic Group	(0010,2160)	SCHEDULED	MWL	TOP	SRC_INSTANCE		
Modality	(0008,0060)	SCHEDULED	MWL	TOP	SRC_INSTANCE		
Other Patient IDs	(0010,1000)	SCHEDULED	MWL	TOP	SRC_INSTANCE		
Patient's Name	(0010,0010)	SCHEDULED	MWL	TOP	SRC_INSTANCE		
Patient ID	(0010,0020)	SCHEDULED	MWL	TOP	SRC_INSTANCE		
Patient's Birth Date	(0010,0030)	SCHEDULED	MWL	TOP	SRC_INSTANCE		
Patient's Sex	(0010,0040)	SCHEDULED	MWL	TOP	SRC_INSTANCE		
Requested Procedure Description	(0032,1060)	SCHEDULED	MWL	TOP	SRC_INSTANCE	(0040,0270)	
Requested Procedure Code Sequence	(0032,1064)	SCHEDULED	MWL	TOP	SRC_INSTANCE	(0040,0270)	
Scheduled Procedure Step ID	(0040,0009)	SCHEDULED	MWL	TOP	SRC_INSTANCE	(0040,0270)	
Specific Character Set	(0008,0005)	SCHEDULED	MWL	TOP	SRC_INSTANCE	(0040,0270)	
Scheduled Procedure Step Description	(0040,0007)	SCHEDULED	MWL	TOP	SRC_INSTANCE	(0040,0270)	
Scheduled Protocol Code Sequence	(0040,0008)	SCHEDULED	MWL	TOP	SRC_INSTANCE	(0040,0270)	

E Code Set Usage

Using SNOMED RT codes and SCP-ECG vocabulary.

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