

AGFA HEALTHCARE DICOM Conformance Statement



DIGID 3000 Rislink Server

Software Version 1108

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Conformance Statement Overview

This document describes the HIS/RIS services of the DIGID 3000 ID station application called DIGID 3000 Rislink Server version 1108. This document specifies the compliance of:

> The Basic Worklist Management Service Class component

with the DICOM standard for the DIGID 3000 Rislink Server implementation as an SCU.

The DICOM Worklist Management Service Class provides a way of connecting the DIGID 3000 patient ID-camera family as a part of Mammography Systems or in Genrad environment to the HIS/RIS in order to get hold of information on patients who have to be exposed by the Mammography Systems or in the Genrad environment.

EXAMPLE Table 1.1-1: Network Services Supported

| SOP Classes | User of Service (SCU) | Provider of Service (SCP) |
|--|-----------------------|---------------------------|
| Workflow Management | | |
| Modality Worklist Information Model – FIND | Yes | No |

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1 INTRODUCTION

1.1 Revision Record

| Revision Number | Date | Reason for Change |
|-----------------|----------|-------------------|
| 1.0 | 11/07/06 | Initial version |

1.2 Purpose and Intended Audience of this Document

This document is a DICOM Conformance Statement for the DICOM Services of the DIGID 3000 Rislink Server software product.

The user of this document is involved with system integration and/or software design. We assume that the reader is familiar with the terminology and concepts that are used in the DICOM 3.0 standard and the IHE Technical Framework.

Readers not familiar with DICOM 3.0 terminology should first read the appropriate parts of the DICOM standard itself, prior to reading this conformance statement.

Although the use of this conformance statement in conjunction with the DICOM 3.0 standard is intended to facilitate communication with Agfa ID-camera equipment, it is not sufficient to guarantee, by itself, the inter-operation of the connection. The following issues need to be considered:

1.3 General Remarks

1.3.1 Integration and Validation Activities

The integration of any device into a system of interconnected devices goes beyond the scope of the DICOM 3.0 standard and this conformance statement when *interoperability* is desired. The responsibility for analyzing the application requirements and developing a solution that integrates the Agfa equipment with other vendors' systems is the user's responsibility and should not be underestimated.

In some circumstances it might be necessary to perform a validation to make sure that functional interoperability between the Agfa equipment and non-Agfa devices works as expected. The user should ensure that any non-Agfa provider accepts responsibility for any validation required for their connection with the Agfa equipment.

1.3.2 Future Evolution

As the DICOM 3.0 standard evolves to meet the user's growing requirements and to incorporate new features and technologies, Agfa will follow the evolution of the standard. This evolution of the standard may require changes to devices that have implemented DICOM 3.0. The user should ensure that any non-Agfa provider, who connects with Agfa devices, also plans for future evolution of the DICOM standard. A refusal to do so may result in the loss of functionality and/or connectivity between the different products.

1.4 Acronyms and Abbreviations

Definitions, terms and abbreviations used in this document are defined within the different parts of the DICOM standard. Abbreviations and terms are as follows:

| | |
|--------|---|
| ACR | American College of Radiology |
| AE | Application Entity |
| DICOM | Digital Imaging and Communications in Medicine |
| HIS | Hospital Information System |
| IHE | Integrating the Healthcare Enterprise |
| NEMA | National Electrical Manufacturers Association |
| PDU | Protocol Data Unit |
| RIS | Radiology Information System |
| SCP | Service Class Provider |
| SCU | Service Class User |
| SCP | Service Class Provider |
| SOP | Service-Object Pair |
| TCP/IP | Transmission Control Protocol/Internet Protocol |
| UID | Unique Identifier |

1.5 Related Documents

- ACR-NEMA Digital Imaging and Communications in Medicine (DICOM) V3.0
- IHE Radiology Technical Framework Revision 6 –May 2005

2 NETWORKING

2.1 Implementation Model

2.1.1 Application Data Flow Diagram

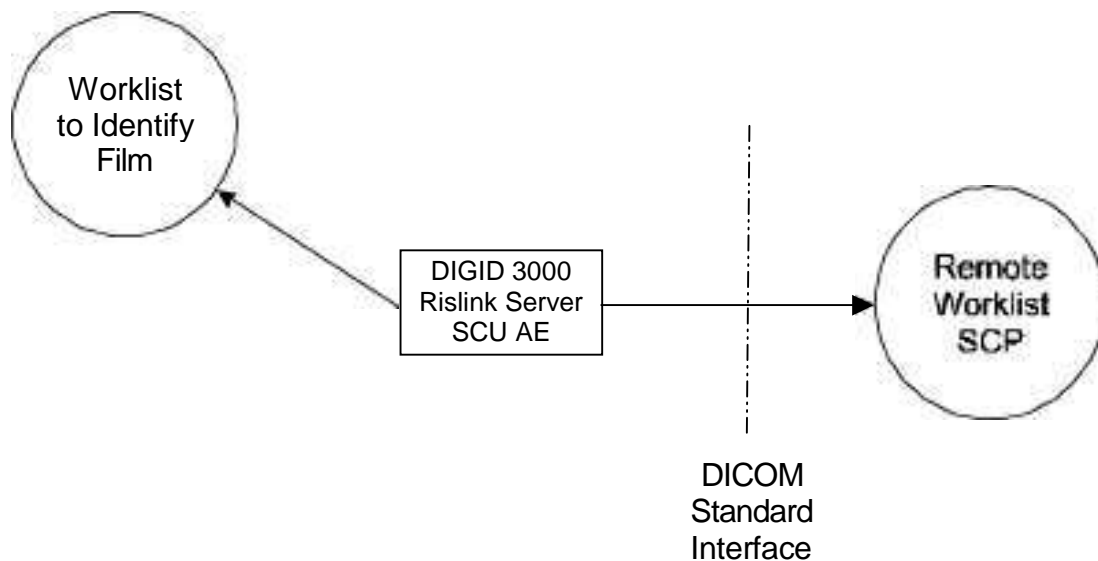


Figure 2.1-1: Functional Overview – Application Data Flow

2.1.2 Functional Definitions of AE's

DIGID 3000 Rislink Server is implemented as a single application entity as a Service Class User for requesting demographic information. The DICOM C-Find Modality Worklist Service is used to retrieve demographic information.

- > Create a DICOM basic worklist management data request.
- > Initiate a DICOM association to send the request.
- > Issue a C-Find request.
- > Wait for the worklist responses.
- > Access the local database to update the patient demographic data.
- > Close the Association.

2.1.3 Sequencing of Real World Activities

DIGID 3000 Rislink Server must have an installed/working connection with a suitable SCP. Query criterion is default configured into the appropriate fields and the query command is given.

2.2 AE Specification: DIGID 3000 Rislink Server

Services Used by DIGID 3000 Rislink Server as SCU

DIGID 3000 Rislink Server provides Standard Conformance to the following DICOM V3.0 **Management SOP Class** as an SCU

2.2.1 SOP Classes Supported

This DIGID 3000 Rislink Server provides Standard Conformance to the following SOP Classes:

Table 2.2-1: SOP Classes

| SOP Class Name | SOP Class UID | SCU | SCP |
|--|------------------------|-----|-----|
| Workflow Management | | | |
| Modality Worklist Information Model - FIND | 1.2.840.10008.5.1.4.31 | Yes | No |

2.2.2 Association Establishment Policies

2.2.2.1 General

DIGID 3000 Rislink Server AE supports a maximum PDU size of 65542 bytes.

The maximum length PDU is not configurable.

DIGID 3000 Rislink Server will attempt to establish an association whenever it is invoked via the refresh button in the user interface, and/or after a time interval, as set in the configuration.

Only DIGID 3000 Rislink Server shall release an Association. DIGID 3000 Rislink Server or the SCP AE may abort the Association.

The DICOM Application Context Name, which is always proposed, is:

Table 2.2-2: DICOM Application Context

| | |
|--------------------------|-----------------------|
| Application Context Name | 1.2.840.10008.3.1.1.1 |
|--------------------------|-----------------------|

2.2.2.2 Number of Associations

DIGID 3000 Rislink Server will attempt only one association establishment at a time.

Table 2.2-3: Number of Associations as an Association Initiator for DIGID 3000 Rislink Server

| | |
|---|---|
| Maximum number of simultaneous associations initiated | 1 |
|---|---|

Table 2.2-4: Number of Associations as an Association Acceptor

| | |
|--|--------------|
| Maximum number of simultaneous associations accepted | (See note 1) |
|--|--------------|

Note 1:

The maximum number of associations accepted by <AE #1> is manually configurable at run time, and limited to the value that has been configured. The maximum configurable value may be limited by the available system resources. By default, the value is set at 10. Refer to the section on Configurations for a complete list of configuration parameters.

2.2.2.3 Asynchronous Nature

DIGID 3000 Rislink Server allows a single outstanding operation on any association. Therefore, DIGID 3000 Rislink Server does not support asynchronous operations window negotiation, other than the default as specified by the DICOM specification..

However, the DIGID 3000 Rislink Server Worklist Management Component may cancel the C-FIND service by issuing a C-CANCEL-FIND request at any time during processing of the C-FIND service by the SCP AE.

Table 2.2-5: Asynchronous Nature as an Association Initiator

| | |
|---|---|
| Maximum number of outstanding asynchronous transactions | X |
|---|---|

2.2.2.4 Implementation Identifying Information

The Implementation Version Name is a concatenation of the company name Agfa, abbreviation of DICOM task force (dtf) and the DICOM Library ID, being 1.0.43.

DIGID 3000 Rislink Server provides the following implementation identifying parameters:

Table 2.2-6: DICOM implementation Class and Version for Transfer

| | |
|-----------------------------|----------------|
| Implementation Class UID | 1.3.51.0.1.3 |
| Implementation Version Name | AGFA DTF1.0.43 |

2.2.2.5 Called/Calling AE Titles

The calling AE title and the called AE title that DIGID 3000 Rislink Server will use are configurable after application startup.

2.2.3 Association Initiation Policies

DIGID 3000 Rislink Server attempts to initiate a new association for every query.

2.2.3.1 Association Initiation by Real World Activity

The DIGID 3000 Rislink Server AE attempts to initiate a new association due to two Real-World activities:

- > Worklist oriented query manually initiated by the operator.
- > Worklist oriented query automatically initiated at a configured time interval.

Although there are two different real world activities that can begin a DICOM Worklist query, the DICOM association initiation and transfer process is identical.

2.2.3.1.1 Associated Real World Activity - Modality Worklist Management

The Real World activity associated with the C-FIND operation is the response of the SCP and the creation of a worklist on the DIGID 3000 Rislink Server, this worklist is sent to the respective DIGID 3000 ID-camera, wherefrom a patient can be selected to identify the film.

2.2.3.1.1.1 Proposed Presentation Contexts

DIGID 3000 Rislink Server proposes the presentation context listed in Table 3.2.

Table 2.2-7: Presentation Contexts Proposed by DIGID 3000 Rislink Server

| Presentation Context Table | | | | | |
|--|------------------------|---|-------------------|------|----------------------|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Modality Worklist Information Model - FIND | 1.2.840.10008.5.1.4.31 | DICOM Implicit VR Little Endian Transfer Syntax | 1.2.840.10008.1.2 | SCU | None |

2.2.3.1.2 SOP Specific Conformance – Modality Worklist Management

2.2.3.1.2.1 Worklist Oriented Selection

DIGID 3000 Rislink Server provides standard conformance to the DICOM Basic **Worklist Management** Service Class. DIGID 3000 Rislink Server requests the following matching key types for the Worklist Oriented Selection:

| Matching Key Types | |
|--------------------|---------------------|
| SV | Single valued match |
| SM | Sequence Matching |

DIGID 3000 Rislink Server requests the following elements for this SOP class:

| Module | Attribute Name | Tag | Match |
|------------------------------------|--|-------------|--------------------------|
| SOP Common | Specific Character Set | (0008,0005) | Zero-length |
| Scheduled Procedure Step | Scheduled Procedure Step Sequence | (0040,0100) | SM |
| | > Scheduled Station AE Title | (0040,0001) | SV (see Note) |
| | > Scheduled Procedure Step Start Date | (0040,0002) | TODAY |
| | > Scheduled Procedure Step Start Time | (0040,0003) | Zero length |
| | > Modality | (0008,0060) | Zero length |
| | > Scheduled Performing Phys. Name | (0040,0006) | Zero-length |
| | > Scheduled Procedure Step Description | (0040,0007) | Zero-length |
| | > Scheduled Station Name. | (0040,0010) | Zero-length |
| | > Scheduled Procedure Step Location. | (0040,0011) | Zero-length |
| | > Scheduled Action Item Code Sequence | (0040,0008) | SM with Zero length item |
| | » Code Value | (0008,0100) | — |
| | » Code Scheme Designator | (0008,0102) | — |
| | » Code Meaning | (0008,0104) | — |
| | > Pre-Medication. | (0040,0012) | Zero-length |
| | > Scheduled Procedure Step ID. | (0040,0009) | Zero-length |
| | > Requested Contrast Agent | (0032,1070) | Zero-length |
| | > Scheduled Procedure Step Status | (0040,0020) | Zero-length |
| Requested Procedure | Requested Procedure ID | (0040,1001) | Zero-length |
| | Requested Procedure Description | (0032,1060) | Zero-length |
| | Requested Procedure Code Sequence | (0032,1064) | SM with Zero-length item |
| | > Code Value | (0008,0100) | — |
| | > Coding Scheme Designator | (0008,0102) | — |
| | > Code Meaning | (0008,0104) | — |
| | Study Instance UID | (0020,000D) | Zero-length |
| | Referenced Study Sequence | (0008,1110) | SM with Zero-length item |
| | > Referenced SOP Class UID | (0008,1150) | — |
| | > Referenced SOP Instance UID | (0008,1155) | — |
| | Requested Procedure Priority | (0040,1003) | Zero-length |
| Patient Transport Arrangements | (0040,1004) | Zero-length | |
| Reason for the Requested Procedure | (0040,1002) | Zero-length | |
| Imaging Service Request | Accession Number | (0008,0050) | Zero-length |
| | Requesting Physician | (0032,1032) | Zero-length |
| | Referring Physician's Name | (0008,0090) | Zero-length |
| Visit Identification | Admission ID | (0038,0010) | Zero-length |
| Visit Status | Current Patient Location | (0038,0300) | Zero-length |
| Visit Relationship | Referenced Patient Sequence | (0008,1120) | SM with Zero- |
| | > Referenced SOP Class UID | (0008,1150) | - |
| | > Referenced SOP Instance UID | (0008,1155) | — |
| | Referenced Study Sequence | (0008,1110) | SM with Zero- |
| | > Referenced SOP Class UID | (0008,1150) | — |
| > Referenced SOP Instance UID | (0008,1155) | - | |
| Visit Admission | Referring Physician's Name | (0008,0090) | Zero-length |

| Module | Attribute Name | Tag | Match |
|------------------------|--|-------------|--------------------------|
| Patient Relationship | Referenced Study Sequence | (0008,1110) | SM with Zero-length item |
| | > Referenced SOP Class UID | (0008,1150) | — |
| | > Referenced SOP Instance UID | (0008,1155) | — |
| Patient Identification | Patient's Name | (0010,0010) | Zero-length |
| | Patient ID | (0010,0020) | Zero-length |
| | Other Patient Ids | (0010,1000) | Zero-length |
| Patient Demographic | Patient's Birth Date | (0010,0030) | Zero-length |
| | Patient's Sex | (0010,0040) | Zero-length |
| | Patient's Weight | (0010,1030) | Zero-length |
| | Confidentiality Constraint on Patient Data | (0040,3001) | Zero-length |
| | Patient's Size | (0010,1020) | Zero-length |
| | Ethnic Group | (0010,2160) | Zero-length |
| | Occupation | (0010,2180) | Zero-length |
| Patient Medical | Patient State | (0038,0500) | Zero-length |
| | Pregnancy Status | (0010,21C0) | Zero-length |
| | Medical Alerts | (0010,2000) | Zero-length |
| | Contrast Allergies | (0010,2110) | Zero-length |
| | Special Needs | (0038,0050) | Zero-length |
| | Additional Patient History | (0010,21B0) | Zero-length |

Table 2.2-8: *Modality Worklist Information Model attributes.*

2.2.3.1.3 Information on Film

The *DIGID 3000* ID-camera (all type versions) is equipped with an exposure window that can be loaded with information. This information is obtained from the worklist.

The layout of the exposure window and the type of information to be exposed are completely configurable via the user interface.

2.2.3.1.4 Status Codes Processed when Receiving Messages from a Modality Worklist SCP

Table 2.2-9: *C-Find Response Status*

| Service Status | Further Meaning | Status Codes | DIGID 3000 Rislinc Server Behavior |
|----------------|---|--------------|------------------------------------|
| Refused | Out of Resources | A700 | Note 1 |
| Failed | Identifier Does Not Match SOP Class | A900 | Note 1 |
| | Unable to Process | C000 | Note 1 |
| | Unable to Process | Cxxx | Note 2 |
| Cancel | Matching terminated due to Cancel request | FE00 | None |
| Success | Matching is complete - No final Identifier is supplied | 0000 | None |
| Pending | Matches are continuing - Current Match is supplied and any optional Keys were supported in the same manner as Required keys | FF00 | None |

| Service Status | Further Meaning | Status Codes | DIGID 3000 Rislink Server Behavior |
|----------------|--|--------------|------------------------------------|
| | Matches are continuing - Warning that one or more Optional Keys were not supported for existence for this Identifier | FF01 | None |

Notes:

1. No warning or error message on the user interface of the DIGID 3000 Rislink Server or ID camera. In the Report Viewer, the Status Code and Further Meaning will be logged.
2. Same as Note 1, but only Status Code will be logged in decimal notation.

2.3 Network Interfaces

DIGID 3000 Rislink Server provides DICOM V3.0 TCP/IP Network Communication Support as defined in PS 3.8 of the DICOM Standard. *DIGID 3000 Rislink Server* inherits its TCP/IP stack from the computer system upon which it executes.

2.3.1 Physical Medium Support

DIGID 3000 Rislink Server is indifferent to the physical medium over which TCP/IP executes; it inherits the medium from the computer system upon which it is being executed.

2.4 EXTENSIONS / SPECIALIZATIONS / PRIVATIZATIONS

Because of IHE constraints, two additional tags are added to the Worklist request:

| Module | Attribute Name | Tag | Match |
|-------------------------|---|-------------|-------------|
| Imaging Service Request | Placer Order Number / Imaging Service Request | (0040,2016) | Zero length |
| | Filler Order Number / Imaging Service Request | (0040,2017) | Zero length |

2.5 Configuration

The following parameters are configurable for this AE:

2.5.1 Via the Windows control panel

Local IP Address, Netmask and Gateway

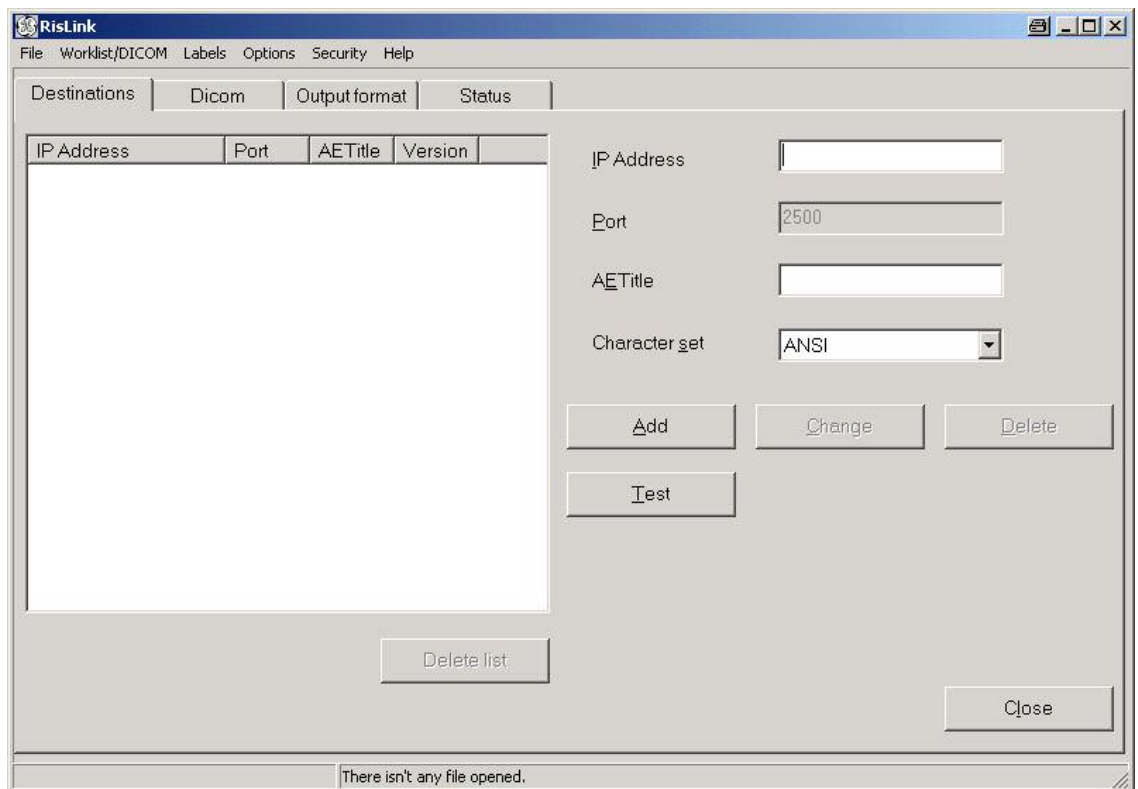
2.5.2 AE Title/ Presentation Mapping

The calling AE-title of the DIGID 3000 ID-cam is configured by service or local system administrator in the destination pane of the application. Default for the AE-title is not set, it is an empty field. (see Fig 1. Destination Configuration Pane)

The network address needs to be set in the "IP-Address" field of the same pane.

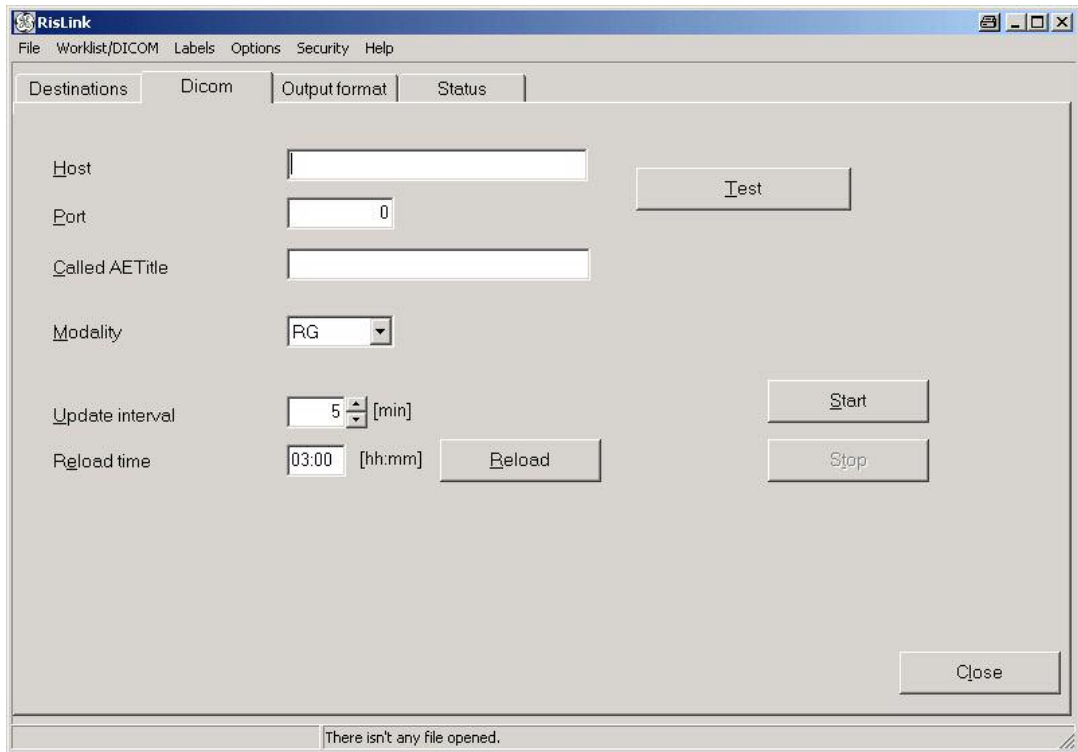
Port number is fixed to 2500 and can not be changed as well as the character set.

Fig 1 : Destination Configuration Pane (ID camera)



The called AE title of the HIS/RIS is in the Dicom Configuration Pane (see Fig 2)

Fig 2 : Dicom Configuration Pane



Note:

AE-Title of the *DIGID 3000 ID-cameras* (all type versions) differs from the AE-title of the *DIGID 3000 Rislink Server*.

3 SUPPORT FOR EXTENDED CHARACTER SETS

DIGID 3000 Rislink Server supports the following character sets:

- | | |
|--------------|----------------------|
| • ISO-IR 100 | Latin Alphabet No. 1 |
|--------------|----------------------|