NEMA Standards Publication IIC 1 v04

Digital Imaging and Communications in Security (DICOS)
Information Object Definitions (IODs)

A DICOS® Publication

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Foreword

The Digital Imaging and Communications in Security (DICOS) standard, this standards publication, is formally designated as NEMA IIC 1 v04. NEMA IIC 1 v04 is inspired by and relies heavily on elements of Digital Imaging and Communications in Medicine (DICOM). NEMA IIC 1 v04 adapts DICOM as necessary for security screening applications. While NEMA IIC 1 v04 was retained as the formal standard designation, NEMA IIC 1 v04 is referenced informally as DICOS v04.

DICOS v04 revises, corrects, and clarifies the predecessor standard, DICOS v03, reflecting “lessons learned” as a result of TSA implementation of the predecessor version of DICOS v03. Because significant functionality was not added or removed, the designation DICOS v04 was selected.

The predecessor of DICOS v04, designated as DICOS v03, was published in 2022.

> Note: The user’s attention is called to the possibility that compliance with this standard could require the use of an invention covered by patent rights. By publication of this standard, no position is taken with respect to the validity of any such claim(s) or of any patent rights in connection therewith. If a patent holder has filed a statement of willingness to grant a license under these rights on reasonable and non-discriminatory terms and conditions to applicants desiring to obtain such a license, then details may be obtained from NEMA.

Proposed or recommended revisions should be submitted to:

> NEMA Technical Operations Department
> National Electrical Manufacturers Association
> 1300 North 17th Street, Suite 900
> Rosslyn, Virginia 22209

The NEMA Imaging and Communications Council (IIC) developed DICOS v04. Council approval of DICOS v04 does not necessarily imply that Council Members voted for its approval or participated in its development. At the time it was approved, the Council was composed of the following Members:

a. Agilent Technologies https://www.agilent.com
b. Analogic Corporation http://www.analogic.com
c. Battelle http://www.battelle.org
d. Gilardoni S.p.A a Socio Unico http://www.gilardoni.it
e. Heathrow Airport https://www.heathrow.com
f. IDSS http://www.idsscorp.net
g. Leidos Security Detection & Automation https://www.leidos.com/markets/aviation/security-detection
h. NW Pro LTD https://www.nwpro.biz
i. Rapiscan http://www.rapiscansystems.com
j. Smiths Detection http://www.smithsdetection.com
k. Stratovan Corporation www.stratovan.com
l. TeleSecurity Sciences, Inc. http://www.telesecuritysciences.com

The council utilized three technical working groups (TWG). Technical Working Group 1 focused on correcting inconsistencies within the previous iteration of DICOS v03. Technical Working Group 2 focused on SDI/CDI. Technical Working Group 3 focused on updates for Bottle Liquid Scanner, Bulk Resolution Tool, Advanced Imaging Technology, and Enhanced Threat Detection.

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Section 1
Scope

The Digital Imaging and Communications in Security (DICOS) standard, designated as NEMA IIC 1 v04, provides a data interchange protocol and an interoperable, extensible file format to facilitate data information interchange (e.g., demographic information, X-Ray radiographs, CT images, material-specific information, trace detection signatures, threat assessment) of objects of inspection (e.g., checked luggage, carry-on luggage, parcels, and personnel) for security screening applications.

NEMA IIC 1 v04 is inspired by and relies heavily on elements of Digital Imaging and Communications in Medicine (DICOM). NEMA IIC 1 v04 adapts DICOM as necessary for security screening applications. NEMA IIC 1 v04 includes many references to elements in the DICOM standard. In text, these references take the general form, see DICOM PS X.Y. Other elements of NEMA IIC 1 v04, while initially inspired by DICOM, were updated for airport security screening applications. NEMA IIC 1 v04 reflects these adaptations.

> Note: From this point forward, while NEMA IIC 1 v04 is retained as the formal standard designation, NEMA IIC 1 v04 is referenced as its informal designation, DICOS v04.

DICOS v04 has added the ability to obtain data from Sensor Data Interface (SDI) and added the ability to report additional screening devices such as shoe scanner and air cargo and the ability to obtain raw and corrected data from the X-Ray detectors. Also included is BRT, BLS, and ETD.

DICOS v04 has ensured that it covers 95% of the image and meta data format requirements for High-Definition (HD) AIT (Advanced Imaging Technology) and Walk-Through AIT. The remaining 5% will be addressed by the AIT OEMs in DICOS v05. In an attempt to have unity between the standards, NEMA is working with the IEEE Committee on AIT image quality to ensure agreement in ordering formats and data.

1.1 References

The following standards (normative references) contain provisions that, through reference in this text, constitute provisions of DICOS v04. Additional documents and standards (other references) are referenced that might provide a complete understanding. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on DICOS v04 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated.

1.1.1 Normative References

1.1.1.1 National Electrical Manufacturers Association (NEMA)

NEMA *Digital Imaging and Communications in Medicine (DICOM) Part 1: Introduction and Overview*, ftp://medical.nema.org/medical/dicom/2011/11_01pu.pdf

NEMA *Digital Imaging and Communications in Medicine (DICOM) Part 2: Conformance*, ftp://medical.nema.org/medical/dicom/2011/11_02pu.pdf

NEMA *Digital Imaging and Communications in Medicine (DICOM) Part 3: Information Object Definitions*, ftp://medical.nema.org/medical/dicom/2011/11_03pu.pdf

NEMA *Digital Imaging and Communications in Medicine (DICOM) Part 4: Service Class Specifications,* ftp://medical.nema.org/medical/dicom/2011/11_04pu.pdf