NEMA TS 40008-2023

Cyber and Physical Security for Intelligent Transportation Systems (ITS)

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Foreword

This NEMA technical publication, TS 40008-2023 *Cyber and Physical Security for Intelligent Transportation Systems (ITS),* was developed to meet the needs for security in the traffic control and ITS industries.

In the preparation of NEMA TS 40008-2023, input of users and other interested parties has been sought and evaluated. Inquiries, comments, and proposed or recommended revisions should be submitted to the concerned NEMA product subdivision by contacting:

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The NEMA 3TS Cybersecurity Working Group developed NEMA TS 40008-2023 under the auspices of the NEMA Transportation Management Systems and Associated Control Devices Section (3TS), of which it is a part. The following companies and their representatives were members of the working group:

ASSA ABLOY	Guerry Bruner (Chair)
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3TS section approval of NEMA TS 40008-2023 does not necessarily imply that all 3TS section members voted for its approval or participated in its development. When NEMA TS 40008-2023 was approved, the Transportation Management Systems and Associated Control Devices Section was composed of the following members:

ASSA ABLOY	www.assaabloy.com/group/en
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Temple, Inc.	temple-inc.com
Ver-Mac Inc.	www.ver-mac.com

Section 1
General

1.1 Summary

NEMA TS 40008 (previously known as TS 8), this standard, is designed to allow agencies and other transportation infrastructure owners to implement security of surface transportation electronic systems. The goal is to allow, using NEMA TS 40008, security to be implemented on both existing legacy systems, as well as new and planned future systems.

The security requirements proposed are designed to be practical to implement, and not place an excessive burden on agencies and implementers of transportation systems.

No security measures can ever be perfect and provide 100% security. The measures and requirements of NEMA TS 40008 provide a reasonable balance between the security needs and the reasonable needs to have transportation systems continue to function without requiring wholesale changes to the equipment, processes, and practices of the transportation community.

1.2 Scope

NEMA TS 40008 defines functional cybersecurity attributes along with minimum performance baselines that owners and operators of critical infrastructure transportation systems can use for procurement purposes. NEMA TS 40008 addresses the following products:

a) Signal display and signal elements, e.g., signal heads, pedestrian displays, and dynamic message signs (DMS).
b) Fixed, configurable, and programmable traffic controllers and associated cabinet devices, including traffic controllers, conflict monitors (e.g., MMU, CMU), ramp meters, and auxiliary devices.
c) Communications interface devices and systems, e.g., National Transportation Communications for Intelligent Transportation System Protocol (NTCIP) interface units, and other communication interface devices.
d) Software and firmware modules, e.g., application system software, and Transportation Management Center (TMC) software.
e) Mounting, protection, power supply, and fastening equipment, e.g., cabinets and enclosures.
f) Computing assemblies for transportation management systems, e.g., incident monitoring and reporting stations and toll collection and management stations.
g) Associated devices for transportation system management control devices, e.g., automatic vehicle location devices, weigh-in-motion systems, and detection devices such as loop detectors, traffic cameras, and ultrasonic sensors.

The security of other elements of a complete Intelligent Transportation System (ITS), such as communications networks, is outside the scope of NEMA TS 40008.

NEMA TS 40008 addresses the following areas of concern: physical security, local access security, communications security (between field and central system), and central system security.

For each of these areas, NEMA TS 40008 identifies potential threat areas and the severity of their consequences, prevention and mitigation techniques that manufacturers can use to minimize their impacts, and methods to effectively rate security performance.