

TO WHOM IT MAY CONCERN

Bosch Security Systems
Torenallee 49
5617 BA Eindhoven
The Netherlands

Product Test Report

BT-VS 2023-E-011

Product**DINION 7100i IR**

F.01U.390.686	NBE-7702-ALX	Bullet 2MP HDR X 4.7-10mm IP66/67 IK10
F.01U.390.687	NBE-7702-ALXT	Bullet 2MP HDR X 10.5-47mm IP66/67 IK10
F.01U.390.688	NBE-7703-ALX	Bullet 4MP HDR X 4.7-10mm IP66/67 IK10
F.01U.390.689	NBE-7703-ALXT	Bullet 4MP HDR X 10.5-47mm IP66/67 IK10
F.01U.390.690	NBE-7704-AL	Bullet 8MP HDR 4.4-10mm IP66/67 IK10

The above mentioned Bosch Security Systems products have been tested in accordance and were found to comply with the tests listed below which were conducted during the development phase of the product.

Safety approvals

Directive or standard	Description
Safety EU, 2014/35/EU (LVD)	Low Voltage Directive
EN 62368-1:2014 +A11:2017	Audio/video, information and communication technology equipment - Part 1: Safety requirements
EN 60950-22:2006 +A11:2008	Information Technology Equipment - Safety - Part 22: Equipment to be installed outdoors
Safety USA	
UL 62368-1, 2nd Edition, 2014-12-01	Audio/video, Information and Communication Technology Equipment - Part 1: Safety Requirements)
UL 60950-22, Edition 1, 12/19/2011	Information Technology Equipment - Safety - Part 22: Equipment to be Installed outdoors
Safety Canada	
CSA CAN/CSA C22.2 No. 62368-1, 2nd Edition, 2014-12	Audio/video, Information and Communication Technology Equipment - Part 1: Safety Requirements)
CAN/CSA-C22.2 No. 60950-22, Edition 1, 12/2011	Information Technology Equipment - Safety - Part 22: Equipment to be installed outdoors
Safety Australia	
AS/NZS 62368.1:2018, J62368-1 (2020)	Audio/video, information and communication technology equipment - Part 1: Safety requirements
Safety International	

IEC 62368-1:2014 (Second Edition)	Audio/video, information and communication technology equipment - Part 1: Safety requirements
IEC 60950-22:2005 (Edition 1), Issue Date 10/2005	Information technology equipment - Safety - Part 22: Equipment to be installed outdoors
IEC 62471:2006 EN 62471:2008	Photobiological safety of lamps and lamp systems

EMC approvals

Directive or standard	Description
EMC EU, 2014/30/EU (EMCD)	Electromagnetic Compatibility Directive
Emission	
EN 55032:2015 +A11:2020, Class B	Electromagnetic compatibility of multimedia equipment - Emission requirements
EN 61000-6-3:2007 +A1:2011 EN IEC 61000-6-3:2021	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for equipment in residential environments
EN IEC 61000-6-4:2019	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments
Immunity	
EN 55035:2017 +A11:2020	Electromagnetic compatibility of multimedia equipment - Immunity requirements
EN IEC 61000-6-1:2019	Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity standard for residential, commercial and light-industrial environments
EN IEC 61000-6-2:2019	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments
EN 50130-4:2011 +A1:2014	Alarm systems - Part 4: Electromagnetic compatibility - Product family standard: Immunity requirements for components of fire, intruder, hold up, CCTV, access control and social alarm systems
Emission / Immunity	
EN 50121-4:2016	Railway applications - Electromagnetic compatibility - Part 4: Emission and immunity of the signaling and telecommunications apparatus
EMC USA	
CFR 47 FCC part 15, Class B	Code of Federal Regulations, Radio Frequency Devices, Unintentional Radiators. Radiated Emission based on verification procedure.
EMC Canada	
ICES-003 (Issue 7), Class B	Information Technology Equipment (Including Digital Apparatus) — Limits and Methods of Measurement
EMC Japan	
VCCI-CISPR 32:2016, Class B	Voluntary Control Council for Interference. Electromagnetic compatibility of multimedia equipment - Emission requirements.
Basic standards	

EN 61000-4-2:2009	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test
EN 61000-4-3:2006 +A1:2008 +A2:2010	Electromagnetic compatibility (EMC) - Part 4-3 : Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test
EN 61000-4-4:2012	Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test
EN 61000-4-5:2006 EN 61000-4-5:2014 +A1:2017	Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test
EN 61000-4-6:2009 EN 61000-4-6:2014	Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields
EN 61000-4-8:2010	Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test

Environmental approvals

Directive or standard	Description
RoHS EU, 2011/65/EU EN IEC 63000:2018	Restriction of the use of certain hazardous substances (RoHS)
WEEE EU, 2012/19/EU	Waste Electrical and Electronic Equipment (WEEE)
Packaging EU, 94/62/EC	Packaging and packaging waste
N2580-1 (Bosch standard)	Central directive Bosch-Norm N 2580-1: "Prohibition and declaration of substances" Bosch-Norm N 2580-1 regulates prohibited substances and those rated declarable in materials, and it is part of the requirements for materials.
N33 6 (Bosch standard)	Design for Environment (DfE): Design and manufacturing rules

Management system

Directive or standard	Description
ISO 9001:2015	Quality management systems -- Requirements <u>Scope:</u> Development, production, installation and sales.
ISO 14001:2015	Environmental management systems -- Requirements with guidance for use <u>Scope:</u> Development, Production, Sales and After Sales.

Reliability tests

Accordinging: EN 50130-5:2011 Alarm systems Part 5: Environmental test methods
Class IV, Outdoor in general

Test specification	Description
Dry heat (operational) (EN 60068-2-2:2007)	Temperature +70°C, Duration 16 hours.
Dry heat (endurance) (EN 60068-2-2:2007)	Temperature 55°C, Duration 21 days
Cold (operational) (EN 60068-2-1:2007)	Temperature -25°C, Duration 16 hours. <i>Bosch tested more severe at -40°C when PoE powered, and -50°C when 12VDC/24VAC powered.</i>
Damp heat, steady state (endurance) (EN 60068-2-78:2001)	Temperature +40°C, Relative Humidity 93%, Duration 21 days.
Damp heat, cyclic (operational) (EN 60068-2-30:2005)	Temperature +25°C to +55°C, Relative humidity 93%, 2 cycles.
Damp heat, cyclic (endurance) (EN 60068-2-30:2005)	Temperature +25°C to +55°C, Relative humidity 93%, 6 cycles.
Water ingress (operational) (EN 60068-2-18:2001)	Test procedure Rb1.1 or Rb1.2, 10min (Similar EN60529 IPX4). <i>Bosch tested more severe for class IPx6</i>
Sulphur dioxide (SO ₂) (endurance) (EN 60068-2-42:2003)	Temperature 25°C, SO ₂ Concentration 25x10e-6, RH 93%, Duration 21 days.
Salt mist, cyclic (endurance) (EN 60068-2-52:1996)	Temperature 15 till 40°C, RH 93%, 4 cycles, Duration 28d.
Shock (operational) (EN 60068-2-27:2009)	Halve sine wave pulse, duration 6ms, 3 pulses per direction, 6 directions. <i>Bosch tested with peak acceleration of 340 m/s².</i>
Impact (operational) (EN 60068-2-75:1997 Test Ehb)	Impact energy 1 Joule, 3 impacts per point (Similar to EN 62262 IK06 rating). <i>Bosch tested more severe at 20 Joule.</i>
Vibration, sinusoidal (operational) (EN 60068-2-6:2008)	Frequency range 10-150 Hz, 5 ms ² , 3 axes, sweep rate 1 octave x min ⁻¹ , 1 sweep cycles per axis functional mode.
Vibration, sinusoidal (endurance) (EN 60068-2-6:2008)	Frequency range 10-150 Hz, 10 m/s ² , 3 axes, sweep rate 1 octave x min ⁻¹ , 20 sweep cycles per axis.
Dust tightness (endurance) (EN 60529:1991 A1:2000)	Duration 8h (similar to EN 60529 IP5X). <i>Bosch tested more severe for class IP6x</i>

Additional reliability tests

Activity	Description
Environmental Type 4X (Raintight) UL50E, UL 60950-22, 4.2.5, 4.2.1, and Nema 4X	Type 4X Hose down Test, Icing Test, Gasket Tests, Impact Test at -50°C
Degrees of protection against external mechanical impacts (endurance) (IEC 62262:2002)	IK10, Impact energy 20 Joule, 5 impacts per exposed face → Operational: No degradation in functions IK10+, Impact energy 25 Joule, 5 impacts per exposed face → Operational: No safety related failures
Protection against foreign objects, water and access (endurance) (ISO 20653:2013)	IK6K9K
ISO 14993:2018 - Corrosion of metals and alloys	Accelerated testing involving cyclic exposure to salt mist, dry and wet conditions, 90 cycles (720 h)
MTBF (Mean Time Between Failures)	>263.702 h Calculation of used components according Siemens SN29500. >1.000.000 h Based on current field performance of predecessor products.
Operating temperature	-40°C - +60°C (PoE powered) -50°C - +60°C (12VDC/24VAC powered)
Cold start test	Until ambient temperature -40°C (tested according EN 60068-2-1:2007)
Traffic Controller Assemblies with NTCIP Requirements NEMA TS 2-2021	Compliant to the next chapters when using a TS-2 compliant power supply: 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.1.5, 2.1.9 and 2.1.10 Tested according chapter 2.2.7, 2.2.8 and 2.2.9
Quality (Q) and Reliability (Z) testing	Annual product compliance. Verification tests to secure that products remain compliant to the specified requirements.

Data subject to change without notice.

Eindhoven, October 2023