STid SECURITY

PRODUCT INFORMATION NOTE

JUNE 2025

RESISTANCE OF THE ARCHITECT® READERS

STid Architect® Readers are engineered to deliver reliable performance even in the harshest environments. Designed with durability in mind, they are ideally suited for outdoor and industrial installations, where exposure to moisture, dust, extreme temperatures, and corrosion is a constant challenge.

Some models even come with a lifetime warranty — a clear testament to their robustness, long-term reliability, and build quality. This commitment reflects STid's confidence in the resilience of its technology.

In this document, you will find:

- Details on IP65-level protection
- Information about the UL 294 outdoor certification tests
- A non-exhaustive list of environmental and mechanical tests performed on the readers
- Best-practice recommendations for installation in harsh or exposed environments

IP65 LEVEL

All STid Architect® Readers offer IP65-level protection **excluding connectors**.

Their **internal electronic boards are coated** with a clear, protective varnish (visible as a shiny finish) **compliant with the IEC NF EN 61086 standard**, ensuring resistance to moisture, water spray, and dust — **making them suitable for outdoor** use.

What's the difference between "IP65 certified" and "IP65-level"?

Both terms imply a device is protected against dust ingress and low-pressure water jets from any direction, making it resistant to environmental elements. However, "IP65 certified" implies formal testing and sealing that prevents any contact between internal electronics and external elements.

Despite withstanding the same conditions, the Architect® Reader range cannot be IP65 certified because the design prioritizes modularity and eco-friendliness (no resin to recycle and full repairability) over complete encapsulation – hence the IP65 'level'. In our design, the electronics are in contact with air and may be exposed to dust or moisture, but they are protected by topicalization and a rugged mechanical design. This ensures IP65-level resistance in real-world use.

"IP65 level" indicates that the reader can withstand conditions typically requiring an IP65-rated product.

What does "excluding connectors" mean?

It means **the connectors themselves are not IP65-certified**.

IP65-certified connectors tend to be bulky, expensive, and unnecessary for typical access control applications. Our readers have been successfully installed outdoors for over 10 years without any functional issues, proving the reliability of the current design.

UL294 OUTDOOR CERTIFICATION

READERS TESTED

The ARC1S Blue, ARCS-A Blue, ARCS-B Blue, ARCS-IM Blue and ARCS-JM Blue readers have been **certified UL294 for both Indoor and Outdoor use**.

ARC1S Blue	ARCS-A Blue	ARCS-B Blue	ARCS-IM Blue	ARCS-JM Blue
Mullion Reader	**Standard Reader**	**Keypad Reader**	**Hybrid Standard Reader**	**Hybrid Keypad Reader**
				

ABOUT THE TESTS

UL294 is a safety standard published by Underwriters Laboratories (UL). It defines performance and compliance criteria for access control systems used in security installations. This includes environmental, electrical, and mechanical testing for components such as readers and associated control units. The following tests were successfully passed by the listed readers:

- **Rain Test**: the rain test apparatus consists of three spray heads mounted on a water supply rack. Water pressure is maintained at **5 psi** per spray head. The reader is positioned so that the maximum amount of water impacts the unit. The spray is directed at a **45° angle to the vertical**, targeting openings closest to live components.

- **Dust Test**: the product, in its intended mounting position, is placed in a sealed chamber of at least **3 cubic feet**. **2 ounces of cement dust**, with 20–50% relative humidity and able to pass through a **200-mesh screen**, is circulated for **1 hour** using compressed air or a blower. Air velocity is maintained at approx. **50 feet (164 m) per minute**. The product is then removed, mounted as intended, and powered for functional testing.

- **Salt Fog Test**: a salt fog is generated using a central dispersion tower supplied with humidified air (95% distilled water, 5% salt solution) at a pressure of **1.17–1.31 bar**. The internal temperature is maintained at **+35°C (+95°F)**. Samples are suspended vertically inside the chamber for **240 hours (10 days)**.

- **Variable Ambient Temperature Test**: the product must function correctly at its rated voltage in ambient temperatures ranging from **-35°C (-31°F) to +65°C (+149°F)**, simulating real outdoor conditions.

- **Humidity Test**: With the unit energized and operating at its maximum rated load, the reader is exposed to **85% relative humidity (±5%) at +30°C / +86°F (±2°C / ±36°F)**

for 24 hours. The product must continue to function normally during and after the test.

- **Moist Hydrogen Sulfide (H_2S) Test**: Test samples are placed in a closed chamber with gas inlet and outlet openings. They are exposed to moist hydrogen sulfide for **240 hours (10 days)**.
- **Carbon Dioxide (CO_2) Test**: the same procedure as the H_2S test is applied using carbon dioxide gas. Samples are exposed for **240 hours (10 days)** in a closed chamber.
- **Alternate Corrosion Test**: a **21-day corrosion cycle** is conducted to simulate extended exposure to corrosive environmental conditions.

INTERNAL & EXTERNAL TESTS

READERS TESTED

ARCHITECT® ONE MULLION READER (ARC1 & ARC1S BLUE)

Operating temperatures	-30°C to +70°C / -22°F to +158°F
Water and dust resistance	IP65 Level (excluding connectors) - Weather-resistant with waterproof electronics (CEI NF EN 61086 homologation)
Moisture resistance	0 to 95%
Saline environments	Compliant with DO-160F, Section 14, Category T (most severe environment for aeronautical equipment) Temperature: 35°C / 95°F / Salinity: 5% / Flowrate: 1.2 liters per hour / Duration: 96 hours
Shock resistance	IK10 certified
Fire resistance	Yes self-extinguishing - complies with UL94-V0
UV resistance	Yes - Casing material resistant to solar radiation
Liquid resistance	Water, ammonia (13% solution), H2O2 (20-volume stabilized oxygenated water)

ARCHITECT® STANDARD READER (ARC-A & ARCS-A BLUE)

Operating temperatures	-30°C to +70°C / -22°F to +158°F
Water and dust resistance	IP65 Level (excluding connectors) - Weather-resistant with waterproof electronics (CEI NF EN 61086 homologation)
Moisture resistance	0 to 95%
Saline environments	Compliant with DO-160F, Section 14, Category T (most severe environment for aeronautical equipment) Temperature: 35°C / 95°F / Salinity: 5% / Flowrate: 1.2 liters per hour / Duration: 96 hours
Shock resistance	IK10 certified
Fire resistance	Yes self-extinguishing - complies with UL94-V0
UV resistance	Yes - Casing material resistant to solar radiation
Liquid resistance	Water, ammonia (13% solution), H2O2 (20-volume stabilized oxygenated water)

ARCHITECT® KEYPAD READER (ARC-B & ARCS-B BLUE)

Operating temperatures	-30°C to +70°C / -22°F to +158°F
Water and dust resistance	IP65 Level (excluding connectors) - Weather-resistant with waterproof electronics (CEI NF EN 61086 homologation)
Moisture resistance	0 to 95%
Saline environments	Compliant with DO-160F, Section 14, Category T (most severe environment for aeronautical equipment) Temperature: 35°C / 95°F / Salinity: 5% / Flowrate: 1.2 liters per hour / Duration: 96 hours
Shock resistance	IK08 certified
Fire resistance	Yes self-extinguishing - complies with UL94-V0
UV resistance	Yes - Casing material resistant to solar radiation

SALIN ENVIRONMENT RESISTANCE TESTS

Description: continuous corrosion testing in a salt-fog saturated atmosphere.

Test parameters: the parameters were defined based on **Document DO-160F, Section 14** "*Environmental Conditions and Test Procedures for Airborne Equipment*" published by **RTCA**, which outlines salt fog testing procedures for aeronautical equipment:

- **Category T** - Represents the most severe saline environment for airborne equipment.
- **Temperature**: +35°C / +95°F
- **Salinity**: 5%
- **Flow rate**: 1.2 liters per hour
- **Test equipment**: SSC-400 DYCOMETAL salt fog chamber
- **Test duration**: 96 hours

The readers were **powered and fully operational** throughout the entire 96-hour test. **Reading and keypad functionality** were tested every 24 hours to verify continuous performance under corrosive conditions.

Results: At the end of the test, **the readers remained fully operational**. The LEDs functioned in Rainbow mode, data was successfully read and transmitted from the card, the device responded to external commands, and the UHF chip operated normally. A **light salt deposit** was observed on the surface of the reader, but it had **no impact on functionality**.

No salt deposits or signs of oxidation were found on the antenna or keypad ribbon cables.

The reader **connector blocks** showed **no oxidation**, and the **cable with connector** displayed **no salt residue or signs of corrosion**. Even the **non-tropicalized connector** showed **no visible oxidation**.

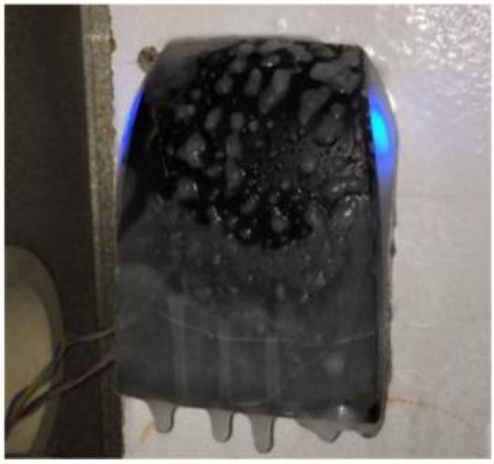
TEMPERATURE RESISTANCE TESTS

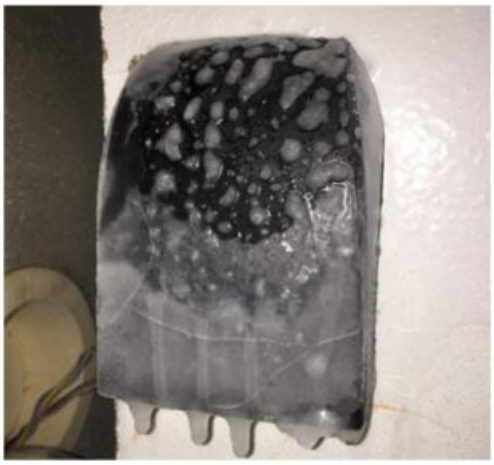
Description: extreme temperature resistance testing conducted in a **CLIMATS EX1421-HA** thermal chamber.

Test parameters:

- **High temperature:** Readers were exposed to temperatures up to **+70°C / +158°F** with **95% humidity** for **48 hours**, while continuously reading a **MIFARE® DESFire® EV3** card.
- **Low temperature:** Readers were subjected to **-50°C / - 122°F** for **4 hours**.
- **Additional condition:** Water was sprayed onto the reader to intentionally create **ice formation on the cover**.

Results: the **readers remained fully operational**, and no damage was observed on the outer casing.





WATER RESISTANCE TESTS

Description: water resistance testing to evaluate the reader's ability to remain operational under conditions simulating heavy and prolonged rainfall.

Test parameters:

- High-flow continuous spray from above using a hose for over 1 minute
- Outdoor exposure of readers for more than 2 years
- Exposure to an automated high-pressure spray system for several months, simulating intense rain:
  - Flow rate: 7 m^3/h (1.849 gal/h)
  - Duration: up to 2 hours per day during summer

Results: while **some humidity was observed inside** the reader casing, the **coating treatment** of the electronics ensured that the devices **remained fully functional**.

PHYSICAL RESISTANCE TESTS

IK EXTERNAL IMPACT TESTS

Description: mechanical impact resistance tests conducted to determine the level of protection provided by the reader's outer casing against physical shocks.

Test parameters: the tests were conducted by **LCIE** (Laboratoire Central des Industries Électriques) in accordance with **IK ratings** defined in **IEC 62262 (2002 edition)** and **NF EN 62262 (2004 edition)**:

- **Impact energy**: 5 joules (IK08) / 20 joules (IK10)
- **Number of impacts**: 5 on the front
- **Mass**: 1.7 kg / 60 oz (IK08) / 5 kg / 176 oz (IK10)
- **Drop height**: 30 cm / 11.81 in (IK08) / 40 cm / 15.75 in (IK10)

Results: **no damage** was observed that could compromise the protection of **internal components** or pose a risk to **user safety**.

IK10 test

Architect® ARC-A / ARCS-A Blue / ARCT / ARC-L standard readers are IK10 certified.

Test report no. 124505-650201.

IK10 test

Architect® One ARC1 / ARC1S Blue mullion readers are IK10 certified.

Test report no. 141657-685423.

IK08 test

Architect® ARC-B / ARCS-B Blue / ARC-M keypad readers are IK08 certified.

Test report no. 145623-697063.

FIRE TESTS

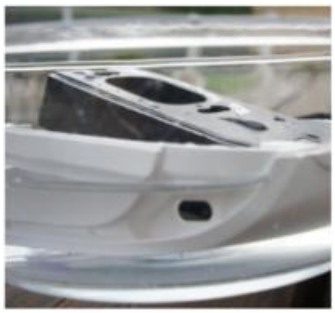
Description: test to assess the reader's resistance to fire and its ability to remain operational after direct exposure to flames.

Test parameters:

- **Duration**: 3 minutes
- Reader was **doused with petroleum** before being ignited

Results: the reader remained **fully operational** after the test. The **lower part of the outer casing** (made of **PC-ABS plastic**) **partially melted** due to prolonged exposure to residual flames. However, the **internal casing and electronic circuit board remained intact**, with **no impact on functionality**.

TESTS WITH OTHER LIQUIDS



Description: evaluation of chemical resistance by submerging reader casings in ammonia and hydrogen peroxide (H_2O_2)

Test parameters:

- **Duration**: 1 hour in each liquid
- **Test 1 liquid**: Hydrogen peroxide (H_2O_2) stabilized at 10%
- **Test 2 liquid**: Ammonia solution at 13% concentration
- **Reader casing tested**: ARC-A (black and white), ARC1

Results: **no damage** was observed on the reader casings. The **pad-printed STid logo and graphics** remained **fully intact**, showing **excellent chemical resistance**.

OTHER RESISTANCE TESTS

Various tests were conducted to simulate acts of vandalism using common tools and real-life abuse scenarios. The readers **withstood all attempts without losing physical integrity or functionality**.

Test methods included:

- **Utility knife:** superficial marks on the casing, no penetration
- **Hammer:** casing marked but not cracked or broken
- **Adjustable spanner:** no structural damage
- **Stamping / jumping:** no deformation or malfunction

- **Run over by SUV:** no significant damage, reader remained operational
- **Cigarette lighter flame:** localized surface discoloration, no effect on performance

The readers were also subjected to extreme stress scenarios to evaluate their mechanical and thermal resistance:

- **30 minutes in a heat chamber at +180°C / +356°F**
- **Fire exposure:** direct flame resistance up to **+2500°C / +4532°F**
- **Freeze resistance:** tested down to **-50°C / -58°F**
- **Concrete block impact test:**
  - **Drop height:** 3 meters / 10 feet
  - **Block weight:** 20 kg / 44 lbs
  - **Impact force equivalent:** 100 kg / 220 lbs

More information: watch our resistance tests

Crash test #1

Crash test #2

ADDITIONAL RECOMMENDATIONS FOR HARSH ENVIRONMENTS

ADDITIONAL MANUAL COATING

Description: isolated cases of corrosion (less than 0.1% of the readers) have been observed on Architect® readers installed in extreme environments, particularly:

- Marine environments (immediate proximity to the sea)
- Areas with high humidity and rainfall.

Different tests were conducted to determine the most effective additional protective measures to prevent such an effect. As a result, we recommend using **MG Chemicals' Premium Acrylic Conformal Coating 419E**.

- **Type:** Acrylic conformal coating
- **Part number:** 419E-340G
- **Main technical characteristics:**
  - Transparent after drying
  - Operating temperature: -65°C (-85°F) to +130 °C (+266°F)
  - Resistant to humidity and salt spray
  - Certified UL746E and IPC-CC-830C
  - Fast drying at room temperature or heat-accelerated
  - Compatible with repair and rework

Recommendation: The tests demonstrate the remarkable effectiveness of product 419E in protecting electronic boards from corrosion in harsh environments. The most effective method is the **application of a full coating**, including all the connectors.

We therefore suggest:

- Using product 419E for all the Architect® readers installed in saline or tropical environments.
- Applying a uniform layer over the entire board, including all the connectors if possible

Benefits of 419E (MG Chemicals):

- Excellent barrier against moisture and salt
- Easy spray application
- Reversible for maintenance (removable with MG Chemicals solvent)
- Significantly improves the durability of Architect® readers in harsh conditions
- Cost-effective compared to after-sales, replacement, or return costs

Application Guide:

- **Step 1**: Shake the can thoroughly.
- **Step 2**: Perform a test spray to ensure proper flow.
- **Step 3**: Tilt the board at a 45° angle and spray a thin, even coat from a distance of 20 to 25 cm (8 to 10 in). Spray consistently to avoid buildup. Start and finish each pass beyond the surface.
- **Step 4**: To avoid solvent entrapment, wait the recommended recoat time before applying additional coats.
- **Step 5**: Rotate the board 90° and spray again for full coverage.
- **Step 6**: Apply additional coats until the desired thickness is achieved (return to step 3).
- **Step 7**: Allow each coat to dry to the touch at room temperature before applying heat curing.
- **Step 8**: After use, clean the nozzle by inverting the can and spraying in short bursts until only propellant is released.

ADDITIONAL ACCESSORIES

We recommend to install additional accessories for Architect® readers installed in extreme environments, particularly:

- Marine environments (immediate proximity to the sea)
- Areas with high humidity and rainfall

Architect® One Mullion Reader *ARC1, ARC1S Blue*	Protective shield with gasket Part number: SHIELD-ARC1-B 
Architect® Standard Reader *ARC-A, ARCS-A Blue, ARCT, ARC-L*	Protective shield with gasket Part number: SHIELD-B 
Architect® Keypad Reader *ARC-B, ARCS-B, ARC-M*	Protection hood for keypad reader Part number: RAIN-COVER_01 

To increase resistance to impact and malicious physical actions, especially in exposed or high-risk areas, we strongly recommend using our protective shields.

These accessories are particularly suited for environments that are:

- **Exposed to public access**, such as **parking entrances**, **public transport stations**, or **unattended building exteriors**
- **Crowded or high-traffic**, like **stadiums**, **schools**, or **corporate lobbies**
- **At risk of vandalism**, including **urban areas**, **isolated outdoor sites**, or **industrial zones**

Architect® One Mullion Reader *ARC1, ARC1S Blue*	Protective shield with gasket Part number: SHIELD-ARC1-B 
Architect® Standard Reader *ARC-A, ARCS-A Blue, ARCT, ARC-L*	Protective shield with gasket Part number: SHIELD-B