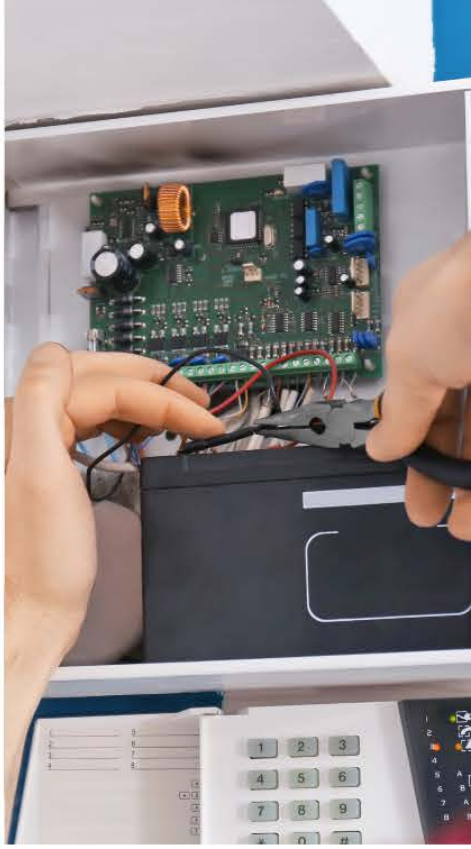
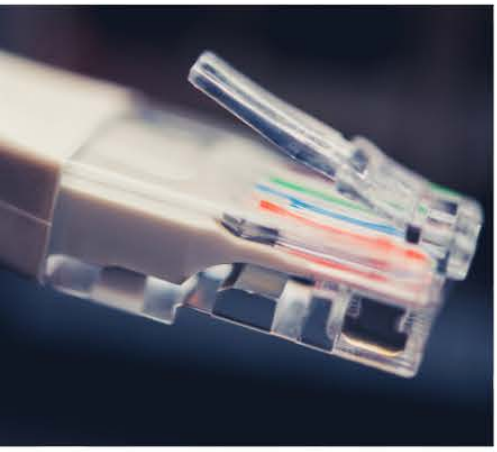




Guidance for the Prevention and Reduction of Dual Path Alarm Transmission Failures.

Introduction

A key benefit of Dual Path (DP) Alarm Transmission Systems (ATS) over Single Path (SP) ATS is to greatly increase ATS availability and therefore increase the probability of an alarm message from the site (hold up alarms, intruder, fire, etc) being transmitted promptly to an Alarm Receiving Centre (ARC), as there is less risk of a SP fault delaying the transmission.

DP ATS may utilise broadband, IP, wireless and mobile networks. Whilst these networks are generally stable and reliable, at times they can be noisy environments for ATS which monitor ATS paths and can report failures and issues in as little as 3 minutes.

These networks can be subject to sporadic localised and wider outages in addition they can be subject to ongoing maintenance, repair and upgrade activity leading to disrupted service. Such activity will generate ATS path failure and restore cycles, even for a very well installed ATS with otherwise very high availability performance.

1. Dual Path and Police Response

Simultaneous failure of both ATS paths when the IAS (Intruder Alarm System) is in the Set condition will also be considered as a confirmed alarm by the ARC, as detailed in BS 8243:2021, which will then request a police response. For this reason, there has been an increase in false alarms passed to the police due to DP failures and is of serious concern, particularly on radio DP ATS. Some general trends are driving this including:

- Market driven increase in the use of radio DP ATS.
- Technology driven change (withdrawal of legacy technology such as PSTN and 3G).
- Traditional SP technologies being upgraded to DP ATS.
- Ease of installation, particularly when replacing PSTN based communications technology.

2. Selecting the appropriate ATS grade

Higher graded ATS support faster reporting times, and this also means that they report faults quicker than lower ATS grades. Additionally, the failure of a connection path on DP grades can also contribute to confirmed alarms. Therefore, selecting an inappropriate ATS can be detrimental for an installation and could be the leading factor in the loss of a URN. (Unique Reference Number)

For example:

- If a site has a DP4/DP3 ATS and there are multiple short network failures of only a few minutes each affecting both paths. This could generate multiple confirmed alarms and loss of the URN that is of no fault of the installer or the end user.
- If it were a DP2 ATS it is likely that this ATS would not generate any confirmed alarm because this level of ATS has longer fault reporting times meaning that only prolonged and meaningful network failures would generate fault reporting.
- For a single path ATS under the same circumstances, there would not be any confirmed alarms generated and no loss of URN.

If the resilience of a dual path ATS is required, it should be strongly considered whether path failures should be included as part of confirmed alarms.

3. Pre-installation guidance

Guidance and consideration in deploying DP ATS

As cited in PD 6662:2017 / DD CLC / TS 50131-7:2010 a risk assessment should take place, to determine the grading & design of the Intruder & Hold Up Alarm System (I&HAS). This should include the ATS category as documented in BS EN 50136-1 Part 1 – General requirements for Alarm Transmission Systems, as the chosen category can have a significant influence on the DP failure reporting times to an ARC.

The risk assessment should also consider as to whether it is appropriate for a police response where it is a likely risk that both paths of a DP ATS will fail simultaneously, for example, due to a poor common or shared signalling path and/or power cuts effecting the radio or IP path and whether it will prove reliable over time.

Recommendations when considering Radio DP ATS

In deploying a radio DP ATS, the following guidance should also be considered. Evaluate the building's structure, layout, and existing infrastructure, identifying potential obstacles and interference sources.

- Potential obstacles to consider:
    - Concrete and brick walls / multi-storey buildings / shopping centres. Structures of this type can significantly attenuate radio signals, reducing coverage and signal strength and signal penetration across floors can be challenging. Closed spaces, long corridors, and complex layouts can also create dead zones.
    - Physical obstacles & metal structures: Metal can reflect and block signals, causing dead zones or weak signal. Large equipment and other physical barriers can obstruct signal paths.

- **Electromagnetic Interference (EMI):**
    - HVAC Systems and industrial machinery: Motors and compressors in heating, ventilation and air conditioning systems can generate interference.
    - Power Lines and Electrical Installations: High-voltage power lines and electrical systems can cause interference.
    - Electronic Devices, Wi-Fi & Bluetooth: Computer equipment and other electronic devices emit electromagnetic fields that can interfere with radio signals. Wi-Fi and Bluetooth operate in similar frequencies to mobile and may cause interference.
    - In order to mitigate against potential obstacles or other interference, position radio antennas in elevated positions or improved line of sight to maximise coverage and ensure they are securely mounted to withstand environmental conditions. A signal analyser or tester should be used to assess proposed location for antennae.
    - Avoid reusing existing cables and antennae to ensure they match the requirements of the installed technology and are free from pre-existing faults.
    - Maintain a minimum of 2 metres between antennae if reasonably practicable.
    - Orientate antennae as per manufacturers' guidance.
    - Avoid sharp bends and kinks in antennae cables as these can degrade signal quality.
    - Ensure the power supply rating is adequate.
    - Perform testing to verify coverage, signal strength.
    - It is highly likely to be more problematic outside of large cities and towns, therefore unless it can positively be proven that the signal is strong and stable; please ensure the signalling paths are reliable before enabling any police response for Dual Path Failures.

Recommendations when selecting a LAN path connection

Installers should make their customer fully aware of requirements for LAN/IP signalling:

- A dedicated LAN port is provided adjacent to the alarm signalling device.
- Larger businesses and corporates will have their own network policies (e.g. firewalls, change control, IP addresses, fault reporting and network maintenance etc.). Installers to be familiar with their customers processes and timelines and plan accordingly.
- Wi-Fi: In addition to ensuring a strong and stable Wi-Fi signal is maintained at all times the customer must also be aware of the importance of ensuring the equipment remains matched to the Wi-Fi network name (SSID) and password.

4. Installed Systems

New Install / ATS Upgrade

Section 10.5 from the DD CLC/TS 50131-7:2010 application guidelines for I&HAS, recommends a Test Period. It is recommended that a test period also applies to a system, where the ATS has been added or upgraded, on an existing system.

Test period

Following the handing over of I&HAS it is recommended that I&HAS is tested for a period to be agreed with the client. During this period, I&HAS should be operated normally. To minimise the risk of unwanted alarms being generated during the test period, the means of notification should be inhibited. Alternatively, when an ATS has been installed, only the operation of any WD may be inhibited, the ATS remaining operational. The ARC should be instructed to inform only the installation company, alarm company or client in the event of an alarm condition being generated.

Any alarm conditions occurring during the test period should be investigated by the installation company, alarm company or client and corrective action taken. Following completion of the agreed period without unwanted activations I&HAS should be fully commissioned.

Dual Path systems: high quantity of intermittent dual path failures:

Where dual path signalling systems experience frequent failures the installer must undertake the necessary corrective action.

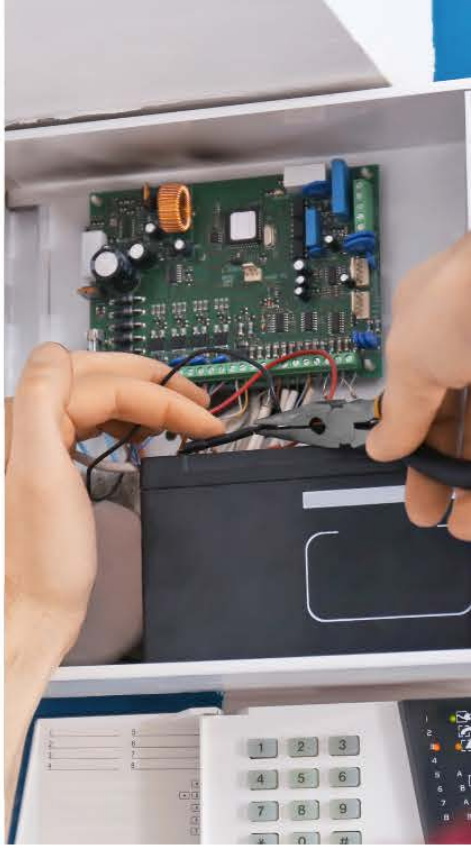
In the event corrective action (see below) proves unsuccessful, the installer to undertake a risk assessment and if necessary amend the ATS category. This could involve a reduction (i.e. DP3 to DP2) or switching to a single path solution.

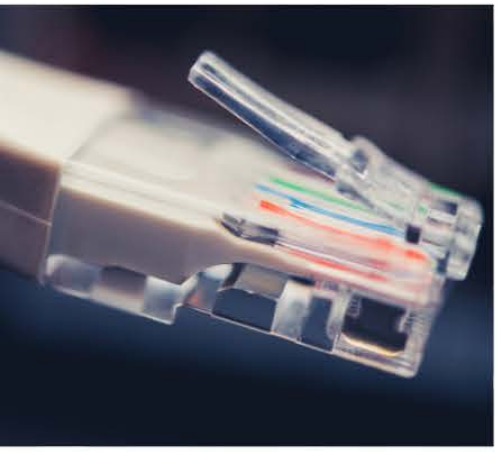
Note: downgrading an alarm signalling system will not resolve the issue but it will reduce the quantity of failures reported to the ARC and police as lower categories have longer reporting times. This should be agreed with the customer who may need to inform their insurance company and seek approval.

Corrective Action

Recommended maintenance activities could include (but not be limited to):

- Reconfigure the system path i.e. Dual Radio to LAN/Radio or LAN/Radio to Dual Radio.
- Implement physical changes to improve signal strength and reliability i.e. installation of high gain antenna, move location of the aerial etc.
- Contact the ISP (Internet Service Provider) to enquire about potential issues with your connection or to explore faster speeds or better options, switch to alternative ISP, if necessary.





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