

Reference guide:

Assessing telephony wiring for Fire Indicator Panels and Lift phone services to be migrated to the NBN

Version 1.5

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Disclaimer: This reference guide has been developed to assist Registered Cablers when assessing the risk of power surges in telephony wiring for Fire Indicator Panel and Lift Phone lines. There are many other risks which might affect such wiring and those risks are outside the scope of this document.

While NBN Co has attempted to include useful information in this reference guide, Registered Cablers must make their own inquiries as to the currency, correctness and completeness of the information contained in this reference guide from time to time. By providing this reference guide, NBN Co does not accept any liability to any person and Registered Cablers should use it at their own risk and subject to their own expertise and judgment.

Registered Cablers must satisfy themselves that the testing methodology they choose to use is suitable for assessing compliance with all relevant laws and standards, including the latest issue of AS/CA S009 (as amended from time to time).

1 Purpose

NBN Co recommends that building owners engage a Registered Cabler to assess compliance of existing telephony wiring with Australian Standards. This reference guide is intended to assist Registered Cablers when assessing whether such telephony wiring complies with Australian Standards and, where wiring is found to be at risk of non-compliance, determining whether additional protective measures need to be undertaken when connecting Elevator Lift and Fire Indicator Panel line cabling to the NBN Co network termination device ("NTD").

Some Fire and Lift lines use *Special Applications Cable*, which in some circumstances (and particularly under fault conditions) may allow the induction of unwanted electromagnetic transients into the cabling connected to the NBN Co NTD. This can cause a disruption to the end-user service, including to Fire Indicator Panel and Lift Phone services.

As Fire and Lift lines are typically considered essential services, special care should be undertaken to protect these lines.

There may be a **risk of loss of life or injury** if there is a failure to assess compliance of existing telephony cabling with Australian Standards.

2 Scope

This document is intended to assist with assessing the compliance of existing telephony wiring with mandatory Australian Standards and identifying when there may be a requirement for additional electromagnetic transient suppression for Fire and Lift lines in the following NBN premises types:

- Multi dwelling units (MDUs) with either an elevator or a fire indicator panel
- Complex premises with either an elevator or a fire indicator panel
- Public Interest Premises (PIPs) with either an elevator or a fire indicator panel
- Single dwelling units (SDUs) with either an elevator or a fire indicator panel

This guideline has a limited scope does not cover overcurrent or specific lightning risk assessment, including wiring or other induction loops (water or gas pipe within building).

3 Assessment Guideline

Historically, special application cable may have been used in installations connecting Fire Indicator Panels and Lift lines to the PSTN. The construction of these cables is often untwisted parallel metallic conductors which may be in close proximity or within the same sheath as power-carrying cables.

Fire Indicator Panels and Lift lines are progressively being disconnected from the copper telephone network, following the rollout of the NBN in each area. When the NBN fibre install is complete in a particular area, residents in that area will be notified that the new network is ready and advised the date on which the old network will be switched off. At this stage premises in the relevant area will be able to connect to the NBN network before the existing PSTN is switched off, which generally takes place 18 months after the NBN fixed line network becomes available to a premises.

It is important that prior to connecting these lines to the NBN Co NTD, Registered Cablers conduct a risk assessment of these lines. Where wiring is found to be at risk, the Registered Cabler should determine whether any additional protective measures need to be undertaken when connecting the Fire Indicator Panel and Lift line cabling to the NBN Co NTD.

The following checklist is intended to assist Registered Cablers when assessing whether cabling may be at risk.

Please note: While NBN Co recommends that Registered Cablers refer to the factors in this checklist when assessing in-building telephony wiring, the below considerations are provided for guidance purposes only. Registered Cablers should satisfy themselves that the testing methodology they choose to use is suitable for assessing compliance with all relevant laws and standards, including the latest issue of AS/CA S009 (or the most up to date standard, as amended from time to time).

Item	Description of electromagnetic induction cause	Decision	Record
1	Is there breach of minimum separation between the telecommunications cable and power cables?	(Visual inspection) If yes, apply tick →	
2	Is the location subject to interference from HV power systems (EPR or LFI)? (Refer Appendix H – AS/CA S009:2013)	(Visual inspection) If yes, apply tick →	
3	If the telecommunications conductors are part of a special application/travelling cable and share a common sheath with power cables, is the telephony portion unshielded or untwisted?	(Visual inspection) If yes, apply tick →	
4	If the telecommunications conductors within the special applications cable are shielded, is the shield ungrounded?	(Visual inspection) If yes, apply tick →	
5	Are the telecommunications conductors untwisted and unshielded in any portion?	(Visual inspection) If yes, apply tick →	
6	Are the adjacent power cables in trefoil configuration?	(Visual inspection) If no, apply tick →	
7	Is the telecommunications cable in proximity to switchboards, switchgear, contactors, relays, coils, motors, motor drives/controllers, pumps, compressors, capacitor banks, transformers or load switches?	(Visual inspection) If yes, apply tick →	
8	Is the geographic location of the site considered at high risk of lightning (see the criteria in AS4262.1 Section 3)?	(Assessment) If yes, apply tick →	
9	Does the telecommunications cable pass the standard insulation resistance test?	(Measurement) If yes, apply tick →	
10 (Lift phone only, if applicable)	Is there measurable induced noise/voltage >60v on the line whilst the lift car is in motion/operation and whilst the cable is not connected to a telephony service?	(Assessment – Lift Phone only, if applicable) If yes, apply tick →	

If there is a tick in any of the records column, then consider installing a Surge Protection Device (SPD) in accordance with AS/NZS 4117:1999 and AS/CA S009:2013 (section 10).

4 Installation of an SPD

Where a Registered Cabler decides that a Class 1 multi-stage (Silicon and Gas) Surge Protection Device (SPD) should be installed, the SPD should be located as close as possible to the NTD and the installation should be done in accordance with AS/NZS 4117:1999 and AS/CA S009:2013 (section 10). The SPD must conduct 190v Line to Line and 190v Line to Earth and have capacity of at least 8kA 9/20us peak waveshape.

The SPD must connect to a Communications Earth System or Protective Earthing system in accordance with AS3000:2007 and S009:2013 Part 20.20.



The SPD should be examined during every regular lift or fire panel maintenance cycle for physical damage and arcing. If damage is visible, it should be replaced. Where testing is practical, it should be carried out in accordance with AS/NZS 4262.2:1999 Section 7.2.

4.1 Relevant Standards:

Please note that the standards listed below are listed for reference only and there may be other relevant standards. Similarly, applicable standards may change over time and Registered Cablers should satisfy themselves they comply with all applicable current standards.

The main standard that wiring must be assessed against for compliance is the latest issue of AS/CA S009.

Standard	Name
AS/CA S009:2013	• Installation Requirements for customer cabling – Wiring rules
AS/NZS 3000:2007	• Electrical Installations - Wiring rules
AS/NZS 4117:2009	• Surge protective devices for telecommunications applications
AS/NZS 4262.1:1995	• Telecommunications overvoltages – Part 1: Protection of persons
AS/NZS 4262.2:1999	• Telecommunications overvoltages – Part 2: Protection of equipment
AS/NZS 60950.1:2011	• Safety of information technology equipment
ITU-T REC K.11	• Principles of protection against overvoltages and overcurrents
ITU-T REC K.20	• Resistibility of telecommunication equipment installed in a telecommunications centre to overvoltages and overcurrents
ITU-T REC K.21	• Resistibility of telecommunication equipment installed in customer premises to overvoltages and overcurrents
ITU-T REC K.39	• Risk assessment of damages to telecommunication sites due to lightning discharges
ITU-T REC K.44	• Resistibility tests for telecommunication equipment exposed to overvoltages and overcurrents – Basic Recommendation
ITU-T REC K.45	• Resistibility of telecommunication equipment installed in the access and trunk networks to overvoltages and overcurrents
ITU-T REC K.66	• Protection of customer premises from overvoltages
ITU-T REC K.72	• Protection of telecommunication lines using metallic conductors against lightning – Risk management
SAA HB101:1997	• Coordination of power and telecommunications low frequency induction