



# **NS 208.2.3**

Telecommunications  
Substation Communications Cabinet Allocation  
Design Work Instruction

December 2009

Amendments included from: NSA1559 Feb 2010, NSA1577 May 2010



## SUMMARY

Network Standard NS 208.2.3 defines the quantity and broad function of communications cabinets to be deployed when designing communication systems in substations and depots.

## ISSUE

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Network Standard  
NS 208.2.3  
Telecommunications Substation Communications Cabinet Allocation  
Design Work instruction

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# 1 OVERVIEW

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The primary purpose of this document is to define the quantity and broad function of communications cabinets to be deployed when designing communication systems in substations and depots.

NS208 is a family of documents detailing the design of Communications Panels and associated infrastructure.

## 2 RELEVANT STANDARDS AND GUIDES

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### 2.1 Network Standards

In all instances where the requirements of this document conflict with a Network Standard, the Network Standard shall take precedence.

NS185 Major Substations Building Design Standard

NS205 Fibre Optic Cabling Installation – Cable Markers, Placement and Numbering

NS206 Earthing of Communications Assets

NEG-TC08.1.1 Telecommunications Dictionary

NEG-TC08.1.2 Telecommunications Reference

### 2.2 Australian Standards

In all instances where the requirements of this document conflict with an Australian Standard, the document with the more stringent requirements shall take precedence.

AS/NZS3000 Wiring Rules

AS1768 Lightning Protection

## 3 ALLOCATION

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### 3.1 Greenfield Sites

Communications cabinets shall be allocated at greenfield substations depending upon the envisaged present and future requirement for communications for protection schemes associated with the substation.

In all greenfield substations:

- Design and install two of Fibre Patch panels, denoted “Fibre Patch 1” and “Fibre Patch 2”, for termination of incoming optical fibres from other sites, and having diversity as specified in NS208 – Planning And Design Standards For Electrical Network Communications Assets.
- Design and install two of protection communications panels, denoted as “A Protection Comms” and “B Protection Comms”, for housing of electrical and electronic communications equipment required for power system protection, but not associated with any one protection scheme and having diversity as specified in NS208 – Planning And Design Standards For Electrical Network Communications Assets.
- Design and install one of general communications panel, denoted as “MPLS Equipment Panel”, for housing of general electrical and electronic communications equipment not associated with power system protection.

“Fibre Patch 1”, “Fibre Patch 2”, “A Protection Comms”, “B Protection Comms” and “MPLS Equipment” panels shall be interconnected to mitigate the risk of external optical fibre failure as per NS208.2.2 – Telecommunications Communication Cabinet Interconnectivity Work Instruction.

In substations in the Sydney CBD:

- Design and install one of Fibre Patch panel, denoted “CSACs Fibre Patch”, for termination of incoming CSACS optical fibres from other sites.
- Design and install four of communications panels, denoted as “CSACs Equipment Panel 1”, “CSACs Equipment Panel 2”, “CSACs Equipment Panel 3”, “CSACs Equipment Panel 4” for housing of general electrical and electronic communications equipment associated with the CSACs system.

In substations with underground 33kV, 66kV, 132kV feeders:

- Design and install one of fibre patch panel per 15 projected or installed underground 33kV, 66kV, 132kV feeders, denoted “DTS Fibre Patch x”, where x increments from 1 for each panel for termination of incoming distributed temperature sensing 24c optical fibre. It is noted that sensing electronics are not housed in the enclosure, but brought to site on an ‘as needs’ basis.

In all substations:

- Design and install one equipment panel denoted “Substation Security Panel” for termination of video and associated security optical fibres and cabling and housing of equipment associated exclusively with same.

**Notes:**

1. It is not expected that the Transmission Enhancement program will require additional physical hardware to be housed in communications enclosures within the substation building.
2. Additional firewalls, routing and switching equipment expected to be deployed as part of the substation (logical) security program will be housed in the “MPLS Equipment Panel”.
3. It is not expected that WiMax deployment will require additional physical hardware to be housed in communications enclosures within the substation building.
4. Provision for future expansion of the substation panel requirements in general is addressed in NS185 – Major Substations Building Design Standard

## 3.2 General Considerations

Allocation of enclosures shall be such as to enable the following:

- Optical fibre spatial diversity and electrical and electronic equipment diversity shall be maintained where duplicate protection communications into the substation is required or it is envisaged will be required in the future for all communications assets associated or expected to be associated with substation protection systems.
- Optical fibres and electronic communications equipment reserved for feeder or other protection systems shall not be accessible from within panels intended for any other purpose (eg MPLS Equipment panels, optical temperature sensing panels, CSACs panels).

## 3.3 Non Standard Design

In certain circumstances, particularly in existing substations, it may not be practical to install cabinets as detailed in this standard because of space constraints or other restrictions. In such instances, new optical fibre installation shall comply with Section 3.2 – General Considerations. Existing installations shall be modified where it is deemed practical and reasonable to do so to comply with the intent of Section 3.2.

Variation from the standard design in all instances (including retrofits into existing substations) shall only be undertaken following approval from :

1. A Senior Engineer or Manager responsible for the operation and maintenance of the optical fibre network and the protection schemes passing through and/or terminating at the substation, or
2. A Senior Engineer or Manager responsible for the design of the optical fibre network and the protection schemes passing through and/or terminating at the substation.

## **4 LABELLING OF EQUIPMENT AND SERVICES**

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All equipment, cables, (including patchleads) will be labelled.

Labelling of equipment and services associated with teleprotection and telecommunications shall comply with the requirements of NS217-Telecommunications Naming Standard Design Work Instruction



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#### Revision History

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| Removed three cabinet option | 27/05/ 2010 |

#### Document Control

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Manager – Standards & Communications

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