



Infrastructure Services
Access Planning and Development

Procedure
007332 - A084

**AM 3x Multi-Service Access Platform
(NEC DSLAM) – Installation &
Commissioning Standard**

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1. PURPOSE

To provide guidelines for the installation and commissioning of AM 31 Multi-Service Access Platform for the rollout of NEC DSLAM's into the Telstra network. Currently this standard caters for release SR22 SP2. This document is available on the Telstra internal web-site – http://www.in.telstra.com.au/ism/dev_asamr4222/necdslamam31am35platform.asp. Contractors outside the Telstra Firewall are unable to access this site should be directed to TCSS or IPAC.

2. SCOPE

This document only covers the Telstra specific requirements for the installation of AM 31 and AM 35. Refer to NEC Handbook - AM 31 & 35 Multi-Service Platform & Filter Sub-rack Installation Guide. As far as network and customer-interconnecting infrastructure, the NEC AM 31 is very similar to the current Alcatel ASAM installations. In some cases within this document Telstra internal documents/websites are referenced, these are for information only and are specifically directed towards Telstra staff. Software updates and alterations are covered by other processes and specific references.

3. RESPONSIBILITIES

3.1. HEALTH, SAFETY & ENVIRONMENT

During this installation it is the responsibility of the installation contractor/company to understand and ensure the installer has detailed knowledge of, educated into and abides by current HS&E standards and legislation. The contractor and installer, prior to the commencement of installation, shall have obtained all appropriate licenses and competencies and their activities are performed in a safe and responsible manner.

3.2. EQUIPMENT PROTECTION



This equipment contains static sensitive devices. Handling procedures and precautions as outlined in the equipment operators' handbook and Technical Specification 014015 – Electrostatic Protection – Contractors Requirement shall apply.

Note: The ESD strap earth connection for the AM 31 rack is located on the upper RHS of the rack equipment rail.

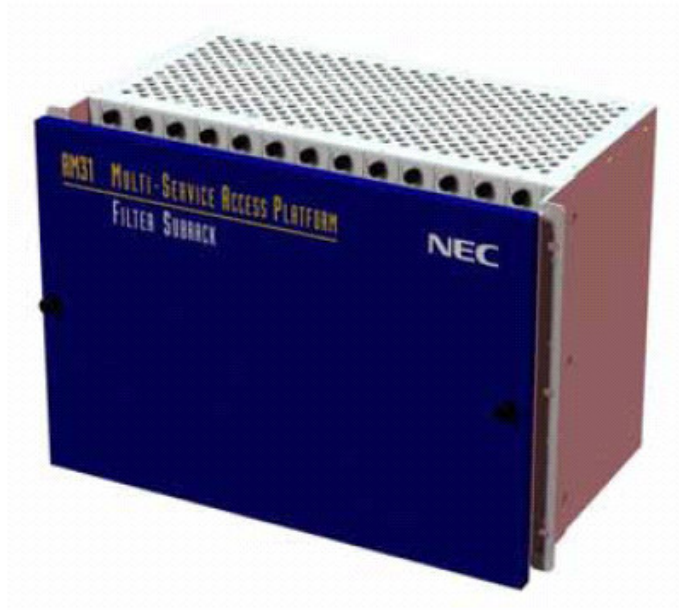


Do not power up AM 31 sub-rack unless all jumpers are set correctly. Refer to NEC installation documentation available from the NEC Web-site.



Laser warning - Under no circumstances shall an optical fibre, or connector that is connected to an optical source be viewed end-on with the naked eye or be directed at the skin. Some equipment types have a permanent 'Laser On' feature, eg. BRAS. In this case the transmit laser is in a permanently on condition.

AM31 Filter Subrack at a Glance



AM31 Subrack at a Glance



4. INSTALLATION GUIDELINES

For the Telstra NEC DSLAM rollout an AM 31 system will consist of up to 2 x 2200mm high racks, each of which can support up to 2 x AM 31 Access sub-racks and 2 x AM 31 Filter sub-racks as shown in Figure 1. The Telstra rack level convention is also shown within Figure 1 and is to be followed. The total number of ADSL lines per AM 31 system is 2,304 – 2 complete racks (each 600 x 300mm footprint). Note a fully loaded AM 31 system can support 2880 ports over 2.5 racks (576 ports per AM 31 sub-rack) but this support is not recommended. At a later date AM 33 will be deployed instead of AM 31. AM 33 is an integrated AM 31 Filter and Access sub-rack.

Weight of the AM 31 Rack (Access Sub-racks not included) is 60kg.

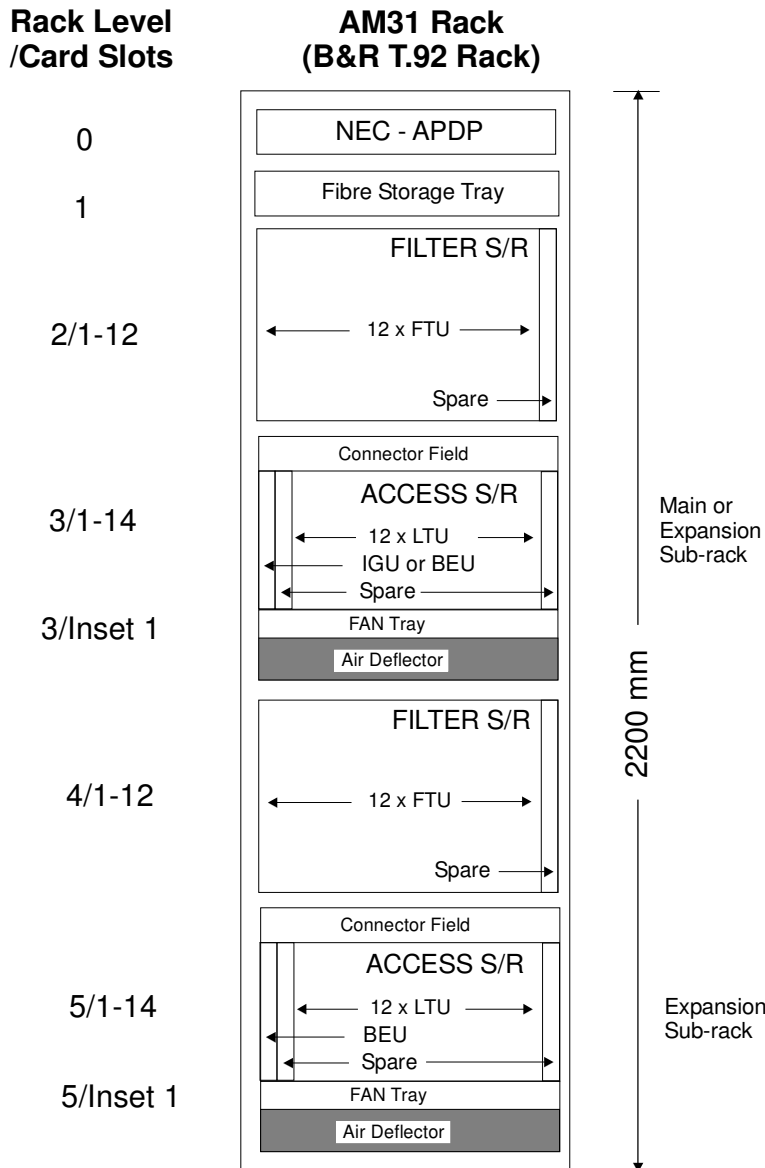


Figure 1 – NEC AM 31 Access Rack, Base/Expansion, 2 Racks/System, Total 2,304 ADSL Capacity

The rack is to be secured to the floor by using the standard B&R rack anchor points. The top of the rack is to be secured from both sides to the superstructure with B&R rack extensions kits/brackets (not supplied), the type will be dependant on the height of the superstructure.

If during an Access rack installation a full rack compliment is to be installed, due to MDF cable density issues, the sub-racks shall be installed from bottom up. If the sub-racks are to be installed at different times, the top sub-rack (Base or Expansion sub-rack) must then be installed first. MDF cabling to the top sub-rack shall be cabled through the centre top rack cable entry. MDF cabling to the lower Expansion sub-rack shall be cabled through the rack LHS cable entry.

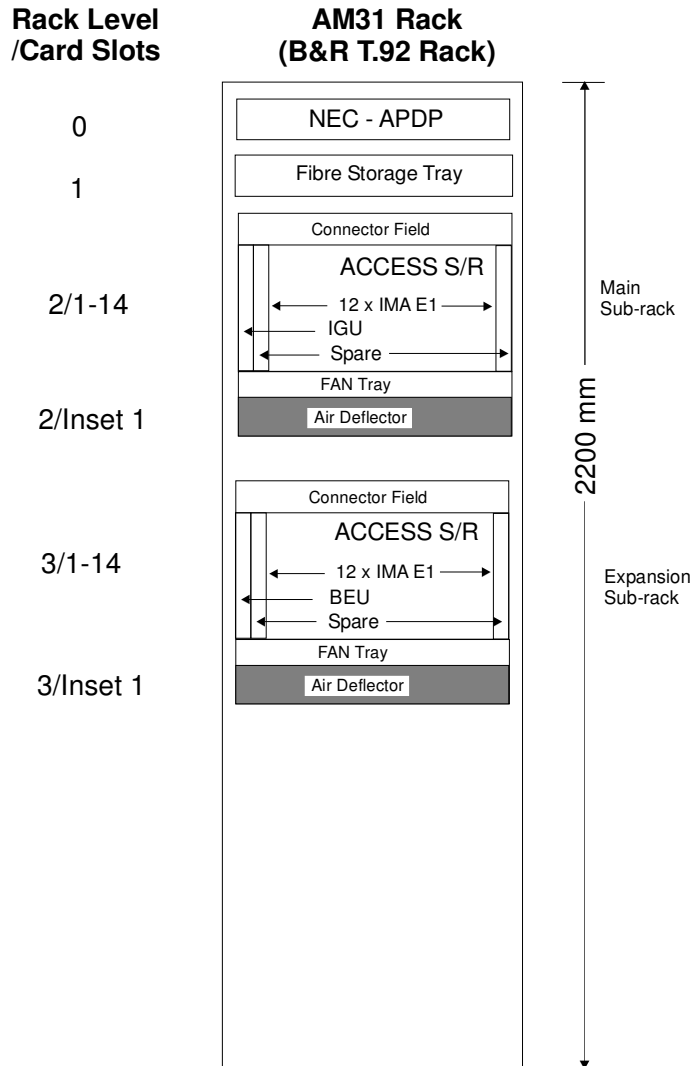


Figure 2 – NEC AM 31 Hub Rack, 1 Rack full System

A Hub rack installation, as shown in Figure 2, has a maximum of 24 x LTU-8E1-IMA cards to provide sub-tending to sub-tended sites. This equates to two sub-racks. If dimensioning rules only allow for one sub-rack to be used, it may also be installed within

this rack. Keep individual hub systems within the same rack, i.e. do not share a hub system between more than one rack. Depending on dimensioning rules, up to 3 individual hub systems may be installed within the same rack.

Optical Single Fibre Working (SFW) hubbing is now a default configuration, subtending to both AM 31 and AM 35.

Below in Figure 3, shows typical AM 31 installation within MTH, LTH and TAP (non-ARK) exchanges and potential growth using 600mm x 300mm rack footprint. Do not install against walls, eg. 300mm deep only. ARK and smaller exchanges have special thermal and power dissipation rules for AM 31 installations. Refer to Section 4.01.

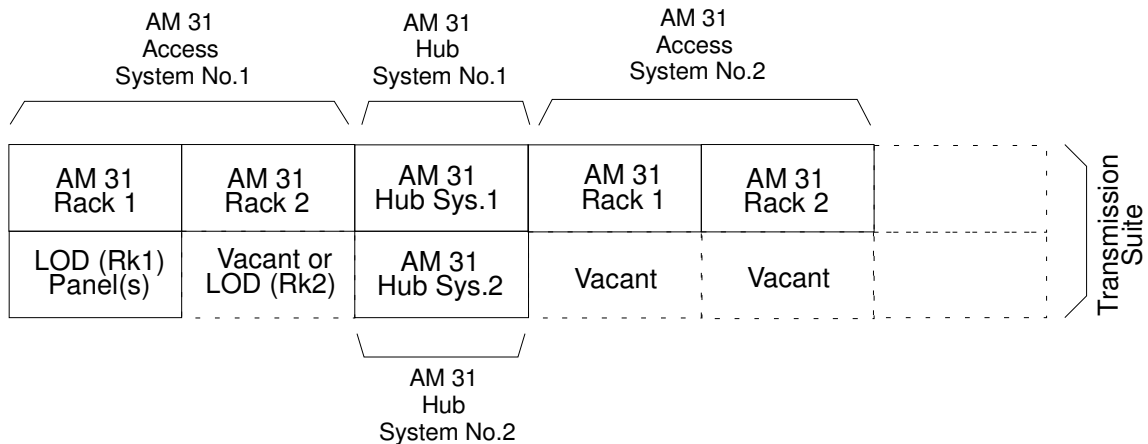


Figure 3 – Typical Floor Layout

Vacant rack footprints (see Figure 3) are designed within the layout to overcome excessive thermal and power usage. The AM31 rack behind the vacant footprint must be identified and marked not for use on the building floor plans. The AM 31 rack has a standard footprint of 600 x 300 mm. Telstra standard installation procedures as described in TM 00046 – Type 92 Racks shall be taken into consideration with the installation of these standard Type 92 racks.

If the rack is to be installed on a raised floor TM 00046 – Type 92 Racks shall also apply and the racks will require under floor brackets for support. If underfloor MDF cabling is also required, the AM31 is to be installed into a Type 92B rack (S/I 585/00141) together with rear door (S/I 585/00146) to allow for optimum cooling, remove AM31 air deflector.

If floor height to existing superstructure does not allow this rack (2200mm H) to be installed, a separate shorter rack will have to be provided by the constructor. These are sourced from Telstra serial/item listings. **Note:** a separate NEC APDP will also be required.

The preferred installed location for AM 31 rack is in the transmission area of the telephone exchange. This area supports the racking and infrastructure requirements of the DSLAM. In the initial design, the location and size should be taken into account together with –

- Further expansion of the AM 31 system.
- Other ADSL DSLAM installations.

- Closeness to the MDF.
- Thermal dissipation.
- Power availability

The installer shall fit within the Telstra standard Type 92 or 84 Transmission Superstructure, when designing the location and floor layout.

4.0.1. AM 31's Installed into Huts - Rules

When AM 31 is installed in a Hut, eg ARK Hut, the thermal/power design rules are more restricted and very critical in planning requirements.

The ARK Huts can have up to 10k lines. With a 20% - 40% ADSL take up, this would equate to a 2000 – 4000 customer growth in ADSL ports. The standard thermal requirement for exchanges is 300watt/m². Due to the thermal restrictions of an ARK Hut, eg. smaller ceiling heights, smaller area for thermal dissipation and less air movement we therefore cannot relax the 300w/m² rule in these locations. Power failure is also a major consideration – in this case heat generated will heat hut and will probably cause switch & transmission to cut-out before battery run down.

One standard rack (2 x AM 31 sub-racks) equates to 1152 ports with 1165watts typical (1 x AM 31 sub-rack equates to 576 ports with 582 watts typical). Finding double-sided suite space in these small exchanges is also a restriction, therefore many AM 31 rack installations will be required in a single-sided suite against a wall. The rack installed against a wall has a footprint area of 600 x 300mm plus half an aisle space in front = 350 x 600 (total thermal area = 650 x 600 = 0.4 m²) **0.4 of 300w/m² = 120 watts maximum for this rack.** Using vacant footprint adjoining this rack = 0.8m² = 240watts maximum.

The buildings design rules state to install sufficient air conditioning to keep power below 40 °C. If 45 °C is going to be exceeded DC power fan assistance must be installed to start at 35 °C and to keep below 40 °C.

Mobiles currently install air conditioning and DC assisted fans when using space in these huts. They use a figure of 2kw/m². A full DSLAM rack exceeds the Mobiles requirement, it consumes 2.9kw/m² - one sub-rack consumes 1.45kw/m².

Very strict thermal planning infrastructure must be applied when installing AM 31s into these situations.

4.0.2. Aisle Spacing

When AM 31 is installed in a transmission area, refer TM 00046 – Type 92 Racks, Layout of Transmission Areas. These rules shall be followed. This will give rules associated with normal aisle spacing (900 – 1200mm) and adjoining other obstacles, eg. DDF's, wall pillars, etc.

When AM 31 is installed in a hybrid situation, the highest minimum standard shall be used. Some examples of minimum aisle distances:

- Transmission – 900mm
- AXE – 800mm
- System 12 – 780mm.

4.0.3. Sub-Rack Details

Types of AM 31 Sub-racks - Definitions:

- Main Access Sub-rack.
- Expansion Access Sub-rack.
- Main Hub Sub-rack.
- Expansion Hub Sub-rack.
- Sub-tended Access Sub-rack.
- Access Filter Sub-rack.

Weights of AM 31 Sub-racks:

- Access Sub-rack empty but including Fan Tray & Air Deflector = 9.7kg.
- Access Sub-rack fully equipped (with ADSL cards) = 22.7kg.
- Filter Sub-rack empty = 5.5kg.
- Filter Sub-rack fully loaded (with FTU-48 cards) = 24.7kg.

Telstra does not plan to inter-mix Access and Hub sub-racks and cards of an individual AM 31 system.

With reference to Figures 4, 5A, 5B and 6 – AM 31 Access Sub-Rack Card Layout, slot 1 contains the Network (IGU [ATM 155 STM-1 optical SC], long or short haul) or IGU (8E1-IMA) for the Main or BEU for Expansion Sub-racks, slot 2 contains the standby Network/Bus card (Not used in Telstra). Slots 3 to 14 contain the LTU ADSL Line cards. Refer to the NEC Installation Guide data sheets for detailed descriptions of these cards. The sub-rack is to be equipped with LTU cards from left to right.

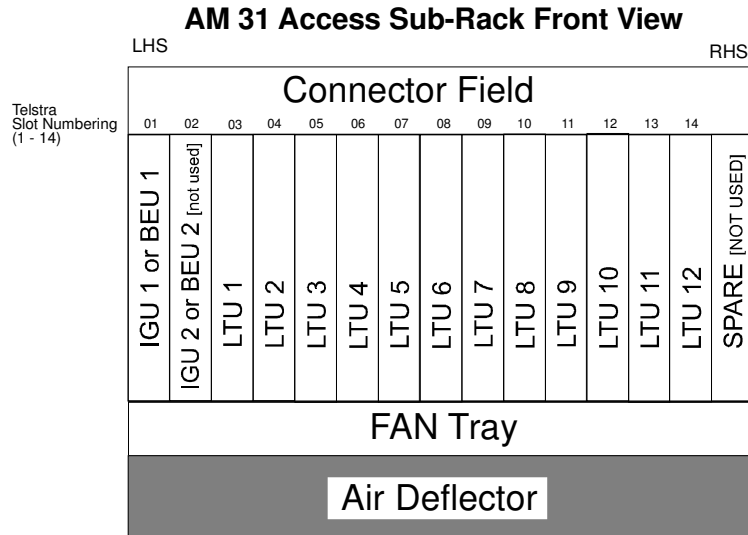


Figure 4 – AM 31 (Main or Expansion) Access Sub-rack Card Layout

With reference to Figure 5A – AM 31 Hub Sub-Rack Card Layout, slot 1 contains the Network/Bus card (IGU for the Main or BEU for Expansion Sub-racks) and slot 2 contains the standby Network/Bus card (Not used in Telstra). Slots 3 to 14 contain the LTU-8E1-IMA x 12 cards. Refer to the NEC Installation Guide data sheets for detailed descriptions of these cards. The sub-rack is to be equipped with LTU cards from left to right.

A maximum of 2 Hub sub-racks per Hub system.

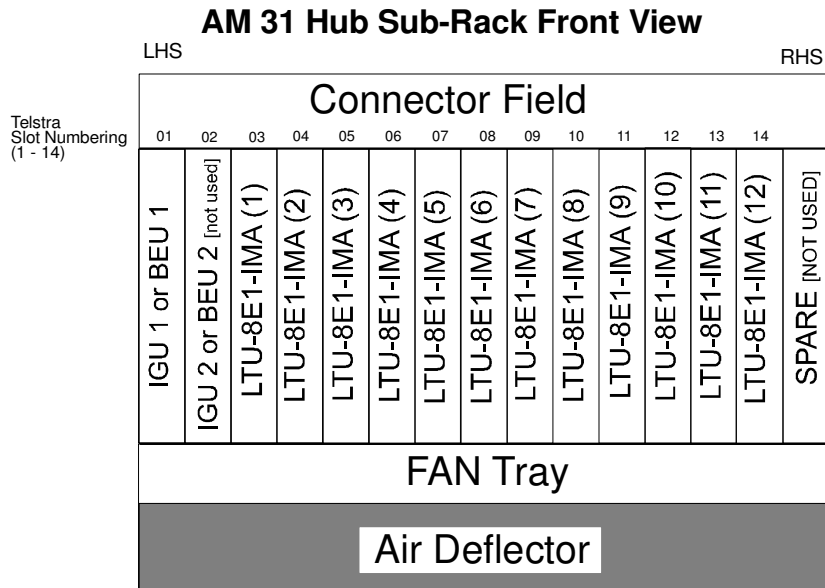


Figure 5A – AM 31 (Main or Expansion) Hub Sub-rack Card Layout using IMA

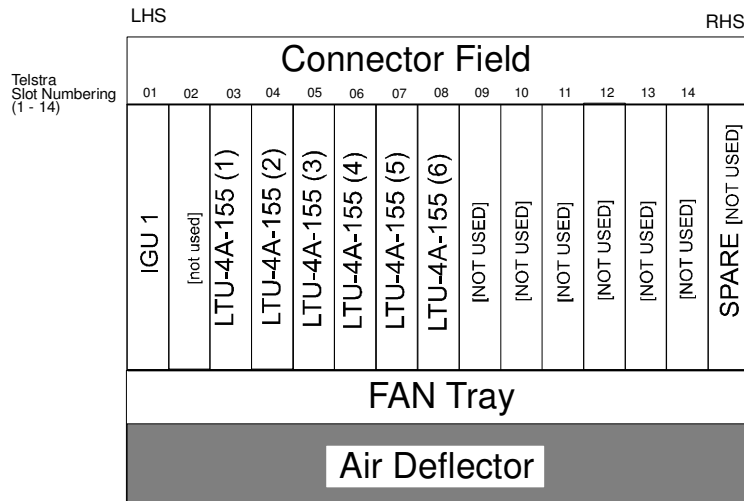


Figure 5B – AM 31 (Main or Expansion) Hub Sub-rack Card Layout using Optical STM-1

When Hub uses STM-1 optical interface, the maximum LTU cards allowed (due to dimensioning rules) is 6. Refer to Figure 5B above.

With reference to Figure 5B – AM 31 Hub Sub-Rack Card Layout, slot 1 contains the Network/Bus card (IGU for the Main or BEU for Expansion Sub-racks) and slot 2 contains the standby Network/Bus card (Not used in Telstra). Slots 3 to 14 contain the LTU-4A-155 x 6 cards. Refer to the NEC Installation Guide data sheets for detailed descriptions of these cards. The sub-rack is to be equipped with LTU cards from left to right.

A maximum of one optical Hub sub-rack per system allowed if dimensioned fully with 6 x LTU optical cards. Each LTU-4A-155 has 4 individual STM-1 ports, giving a total of 24 ports maximum per Hub. The optical connectors are LC. Refer to ADSL Single Fibre Working, Installation & Commissioning Standard, 007332-A086 for rack layout. An Optical Hub (x1 sub-rack) may share the same IGU network card as a IMA Hub (x1 sub-rack) but serious consideration and control must be put into place to ensure the dimensioning rules are met.

With reference to Figure 6 – AM 31 Subtended Access Sub-rack Card Layout, Slots 3 to 14 contain the LTU cards and Slot 15 is vacant (Not used in Telstra). The Limit of maximum number of ADSL ports on an AM 31 subtended Access sub-rack (single sub-rack only) per IMA group –

- 1 x IMA Group (x 48 ports per LTU/FTU cards) = 1 x 2 Mbit/s (E1) = 48 ports. (Not recommended – use AM 35 solution).
- 2 x IMA Group (x 48 ports per LTU/FTU cards) = 2 x 2 Mbit/s (E1) = 96 ports. (Not recommended – use AM 35 solution).
- 3 x IMA Group (x 48 ports per LTU/FTU cards) = 3 x 2 Mbit/s (E1) = 144 ports.
- 4 x IMA Group (x 48 ports per LTU/FTU cards) = 4 x 2 Mbit/s (E1) = 192 ports.
- 5 x IMA Group (x 48 ports per LTU/FTU cards) = 5 x 2 Mbit/s (E1) = 288 ports. (Note: a statistical gain of 48 ports occurs).

- 6 x IMA Group (x 48 ports per LTU/FTU cards) = 6 x 2 Mbit/s (E1) = 336 ports.
- 7 x IMA Group (x 48 ports per LTU/FTU cards) = 7 x 2 Mbit/s (E1) = 384 ports.
- 8 x IMA Group (x 48 ports per LTU/FTU cards) = 8 x 2 Mbit/s (E1) = 432 ports.

AM 31 Subtended Access Sub-Rack Front View

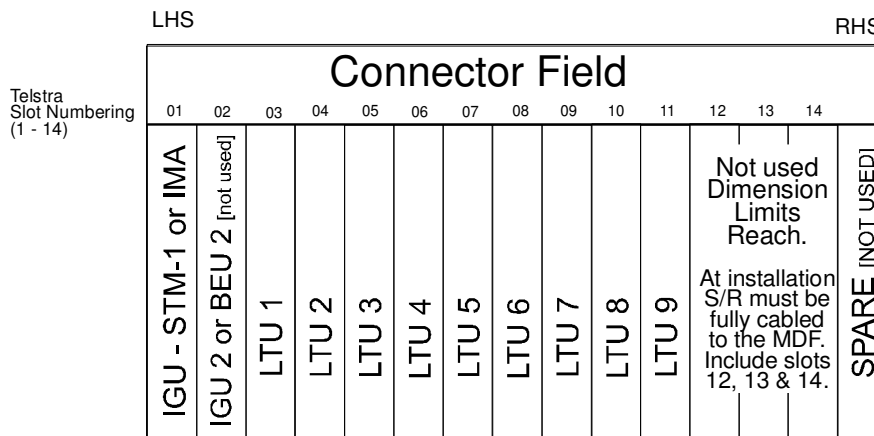


Figure 6 – AM 31 Subtended Access Sub-rack Card Layout

With reference to Figure 7 – AM 31 Filter Sub-Rack Card Layout, Slots 1 to 12 contain the FTU cards and Slot 13 is vacant (Not used in Telstra). Refer to the NEC Installation Guide data sheets for detailed descriptions of these cards. The sub-rack is to be equipped with FTU cards from left to right. This sub-rack does not require a power connection. Cables connecting the Access and Filter sub-racks do not require cable ties.

AM 31 Access Filter Sub-Rack Front View

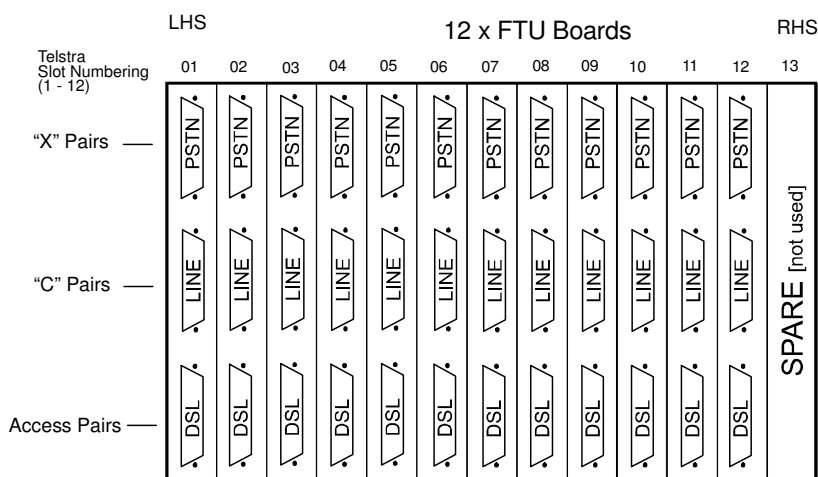


Figure 7 – AM 31 Filter Sub-rack Card Layout

At initial Installation, this sub-rack shall be fully cabled to the MDF in all situations. Care must be taken when inserting the "X" & "C" pair cable plug into the Filter card to ensure it is correctly secured into place – refer to the NEC Installation Handbook.

4.0.4. Single Fibre Working (SFW)

SFW can be used on the network side, i.e., between the DSLAM and the BRAS. This includes DSLAM to SDH and DSLAM to SDN. Also, SFW can be used on the Sub-tended network between the Hub and the subtended unit (AM 31 or AM 35).

This is now the default arrangement for all new installations.

Refer to 007332-A086, Installation and Commissioning Standard for all mandatory requirements for ADSL SFW.

4.0.5. Bus Extension Cables

With the expansion growth of an AM 31 installation (Refer to Figures 1 & 2) Bus Extension cables between racks are cabled in a star format from the Main Sub-Rack. Redundant cables are not deployed. The Main Sub-Racks have IGU cards installed while the Expansion Sub-Racks have BEU cards.

Individual Bus cables are connected to the bus ports on the Main Sub-Rack top LHS of Connector Field.

- Expansion S/R 1 (J49"A"), (NEC Shelf Id 2) is connected to Main Sub-Rack, Bus "A" (Connector J49).
- Expansion S/R 2 (J49"A"), (NEC Shelf Id 3) is connected to Main Sub-Rack, Bus "B" (Connector J50).
- Expansion S/R 3 (J49"A"), (NEC Shelf Id 4) is connected to Main Sub-Rack, Bus "C" (Connector J149).
- Expansion S/R 4 (J49"A"), (NEC Shelf Id 5) is connected to Main Sub-Rack, Bus "D" (Connector J150) (Expansion Sub-Rack 4 is not used in Telstra).

4.1. AM 31 Powering Arrangements – General

The AM 31 shall be installed using a 3 wire powering arrangement as described in Power & Earthing Design for NEC AM 3x 007 338 C13-7. This document does describe the LOD installation and powering standards. If loading allows, the AM 31 is permitted to share the existing ASAM LOD infrastructure. At high broadband growth sites the LOD is to be dedicated for ADSL use only. At small-to-medium growth rate sites the DSLAM may share LOD infrastructure (existing or new). The definition of small/medium growth rate site is one not exceeding the capacity of one AM31 DSLAM rack (2 x AM31 sub-racks) within 2 years of installation. Refer to section 4.1.1 for exclusive use LOD and shared LOD label formats.

HOD shall not be used for AM 31 Access deployment.

Typical Power consumption – Access Rack (non Hub):

- Access Sub-Rack (including fan tray) = 28 watts (x 2 for rack) = 56w.
- IGU = 19 watts (x 1 for rack).
- BEU = 10 watts (x 1 for rack).
- LTU-48 card = 45 watts (12 per sub-rack) = 540w (x 2 for rack) = 1080w.
- FTU-48 card – 0 watts.
- **Total typical power Access Rack = 1165 watts.**

Typical Power consumption – Hub Rack (IMA, 2 sub-racks per rack – 1 system):

- Access Sub-Rack (including fan tray) = 28 watts (x 2 for rack) = 56w.
- IGU = 19 watts (x 1 for rack).
- BEU = 10 watts (x 1 for rack).
- LTU-8E1-IMA card = 11 watts (12 per sub-rack) = 132w (x 2 for rack) = 264w.
- **Total typical power IMA Hub Rack = 349 watts.**
- **Note:** If a single Access Sub-Rack maximum is used for one Hub system the total power for this sub-rack is 179 watts. The sub-rack cannot be mounted in the same rack as a two Access Sub-Rack Hub system in the location as shown in Figure 3. This configuration will exceed the maximum power allowed per rack – this set-up equals 528 watts/rack.

Typical Power consumption – Hub Rack (Optical, 2 sub-racks per rack – 2 systems):

- Access Sub-Rack (including fan tray) = 28 watts (x 2 for rack) = 56w.
- IGU = 19 watts (x 2 for rack) = 38w.
- LTU-4A-155LH card = 28 watts (6 per sub-rack) = 168 watts (x 2 for rack) = 336w.
- **Total typical power Optical Hub Rack = 430 watts.**

Telstra standard power cable colours are Blue (negative) and Red (positive).

4.1.1. NEC APDP LOD/CB Label Details

Below shows an example of the LOD/CB interconnection labelling details required on the front panel of the APDP. Circuit Breakers 1 and 5 are used to power the APDP alarm circuitry. CB's 2 and 6 power the upper sub-rack. CB's 3 and 7 power the lower sub-rack. Until the APDP's are modified to individually control each circuit breaker alarm by NEC all circuit breakers are to be left in the ON position, irrelevant if the sub-rack is in use or not. The sub-rack feeds are to remain wrapped in the delivered plastic covers until sub-racks are ready for use. CB's 4 and 8 are not supplied and not used in Telstra.

NOTE: Earlier versions deliveries by NEC had the black laminated circuit breaker label showing Circuit Breakers 5 to 8 as 1 to 4.

APDP: GD/11B/7/0							
TESAMS IDF: Tie to 4/534/7 Pr 25a (Tie Block on wall adjacent to AC Mains boards)							
RF 1: GD/11B/2/2 CB6				RF 2: GD/11B/2/2 CB15			
CB1	CB2	CB3	CB4	CB5	CB6	CB7	CB8
Alarm	S/R 2	S/R 3	S/R 4	Alarm	S/R 2	S/R 3	S/R 4

NEC APDP Front Panel Label

LOD Labels:

GD/4B/4/1
CP- 20001090
SP- 10002935
ASAM/AM3x USE ONLY

NOTE: The above label “USE ONLY” field must indicate it is for ADSL use only. ASAM, AM3x or ADSL are all acceptable inclusions and each may use the same LOD. When a shared LOD is used (refer Section 4.1) this addition is not required.

CB1	CB2	CB3
GD/4B/5/0	GD/4B/5/0	GD/4B/5/0
A01	A02	A03

CB5	CB6	CB7
GD/4B/5/0	GD/4B/5/0	GD/4B/5/0
B01	B02	B03

4.1.2. NEC APDP

NEC have now altered the positive battery connector on their APDP. It is now suitable for use with Bootlace crimps.

However, for Dedicated HUB racks there is only one hole left vacant for the Rack Input positive battery cables. If you are supplying the rack from two separate sources then you require 2 positive battery cables.

As a temporary solution, NEC is going to re-arrange the alarm and sub-rack leads as per Figure 8 below. If your installation requires this arrangement, install as in Figure 8.

In the longer term NEC will supply a 9 way connector block with the input connections being in the centre as per the attached.

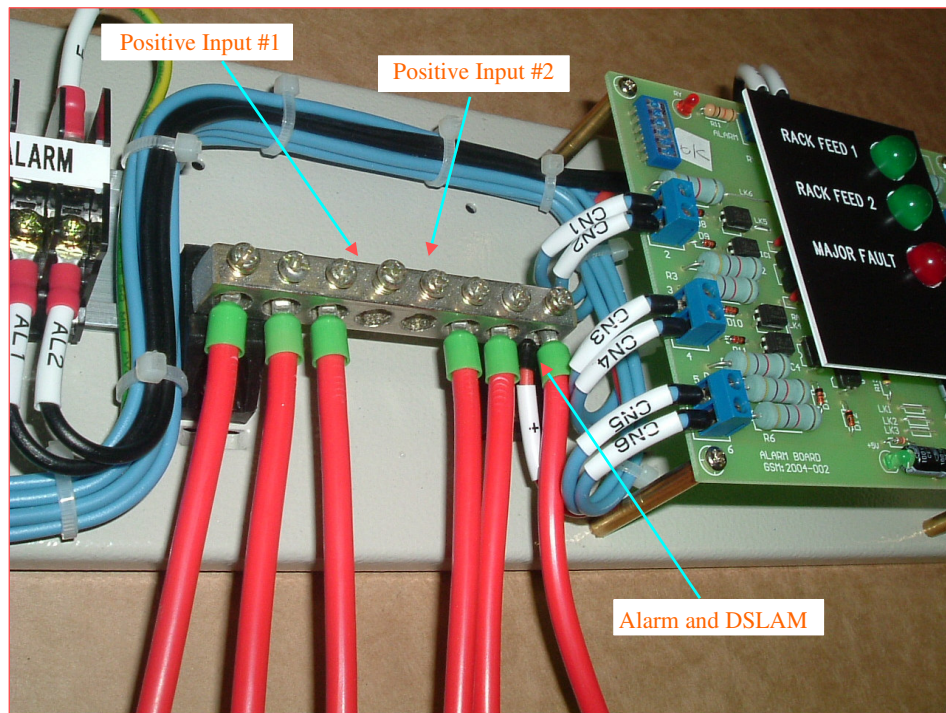


Figure 8 - APDP Alarm & Sub-Rack Cables

4.2. Earthing Practice

AM 31 shall be deployed using a 3-wire system as described in 007 338 C13-7.

The AM 31 is supplied in a standard Telstra Type 92 SDH rack. All sub-racks are earthed to the rack earth tree. The rack is isolated from the transmission superstructure. The AM 31 may share the already existing ASAM Isolated Bonding Network (IBN) and earth cabling to the SPC.

4.3. AM 31 Air-conditioning Arrangements

The typical maximum power dissipation of an NEC AM 31 rack is 1,165 watts. Due to the AM 31 power consumption the AM 31 LOD becomes part of the installation and uses passive space within as described in Figure 3.

The AM 31 LOD is located adjoining the AM 31 rack installation as shown in Figure 3.

For further understanding of Environmental, Air Conditioning Services, refer to 007 338 3-3.

Refer to Section 4.0.1 in this document for AM 31 installations within ARK huts.

4.4. AM 31 Fibre Management

A fibre storage tray (management tray) is to be installed directly under the NEC APDP at level 1 as shown in Figures 1 and 2. This storage tray is supplied with the AM 31 equipment.

Excess optical fibres are to be coiled neatly around the storage tubes. Care should be taken when exiting the storage sub-rack into the optical fibre channel inbuilt into the rack equipment rails.

Velcro collars are to be used to support the fibres in this channel. The IGU optical fibres are to be terminated on the OFDF.

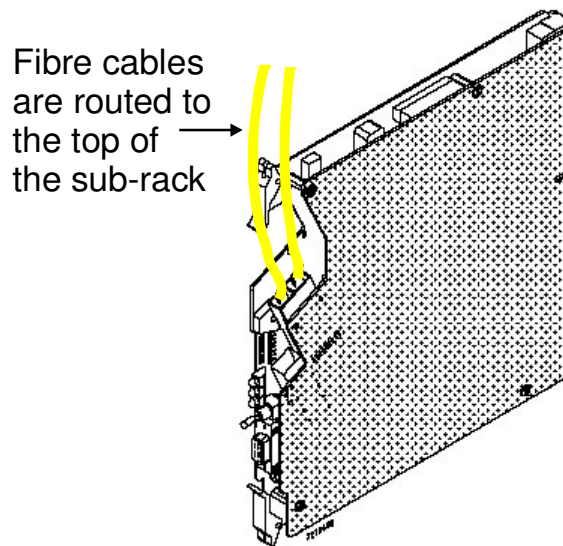


Figure 9 – IGU-A155-LH5 or IGU-A155-SH5

For management of optical fibres at hub sites refer to Single fibre working standard – 007332 – A086.

4.4.1. Optical Cabling in the Rack

Care shall be taken to ensure:

- Minimum bending radii is not exceeded and
- Optical fibre is protected and supported under all situations.
- Optical drop-offs from ducting must the rack and be secured.

Optical fibre cabling shall use standard transmission installation procedures as described TM 00138 A01 Optical Fibre Ducting and shall rigidly follow Optical Fibre Connector Cleaning procedure within TM 00044.

O/F ducting shall always be used for the transport of O/F patch-cords beyond the rack.

Use of patch-cords is a general Telstra requirement. Pigtailed are only to be used if the only OFDF interface is a splice. Use the Velcro straps supplied to support fibres to the appropriate locations at the sub-rack and storage tray.

4.4.2. Optical Cabling to the OFDF

Care shall be taken to ensure:

- Minimum bending radii is not exceeded and
- Optical fibre is protected and supported under all situations.

Optical Fibre cabling shall be installed using Telstra optical fibre ducting, Angle SC connectors (8⁰), pigtailed and splicing trays. The AM 31 IGU uses flat SC connectors. The AM 31 LTU and AM 35 use an LC connector.

Note: current Telstra OFDF's use angle SC optical connectors. Older OFDF's may use other optical connectors, eg. DIN connectors.

Optical fibre cabling shall use standard transmission installation procedures as described TM 00138 A01 Optical Fibre Cable & Ducting and shall rigidly follow Optical Fibre Connector Cleaning procedure within TM 00044.

At the OFDF the installer shall reference standard transmission installation procedures as described in TM 00183, Optical Fibre Distribution Frames.

4.5. AM 31 STM-1 Optical Interfaces

AM 3x supports S1.1 (optical Short Haul) and/or L1.1 (optical Long Haul) compliant interfaces in accordance with ITU-T G.957 on both the NEC IGU and LTU interfaces. The nominal reach of a S1.1 STM-1 interface is 15 kilometres and a L1.1 STM-1 interface is 40 kilometres as specified in ITU-T G.957. The AM 3x interfaces should be matched to the route conditions when deployed. The AM 31 IGU optical interface is an SC PC connector (Flat SC). The AM 31 LTU and AM 35 interface are LC connectors. Telstra standard optical interface is an Angled SC PC connector (ASC).

The design distances specified for Short Haul 15km and Long Haul 40km may be exceeded when using the following rules:

- SH limited to 15km maximum without an overall link test.

- LH limited to 40km maximum without an overall link test.
- If distances exceed these lengths a full end to end (OFDF to OFDF) insertion loss measurement @1310nm must be performed and 6dB is then added to this measured loss. The 6dB will allow for future additional losses, such as fibre ageing, laser deterioration, new pigtails/splices/connectors to be installed for this link, o/f maintenance/repairs, etc.
- **For Short Haul** - A full end to end (OFDF to OFDF) insertion loss measurement @1310nm must be performed for fibre lengths greater than 15km and the measured loss should not exceed 7dB. This approximately equates for SH to be limited distance of 20km with an overall link test.
- **For Long Haul** - A full end to end (OFDF to OFDF) insertion loss measurement @1310nm must be performed for fibre lengths greater than 40km and the measured loss should not exceed 23.5dB. This approximately equates for LH to be limited distance of 60km with an overall link test.

All BRAS optical interfaces have now been deployed with long interface cards. Connections between BRAS and AM 31 are a direct optical connection (commonly called “dark fibre”). When a mismatch of interfaces occurs between the AM 31 and the BRAS, i.e. over a short link, AM 31 has S1.1 interface, BRAS has L1.1 interface, insert a 10dB optical attenuator at the BRAS Equipment Out (Tx) port at the OFDF & or IOF (installed on the RHS of the interconnecting optical patch through-connect).

All 15K passport optical interfaces have been deployed with short haul interface cards. The AM 31 will only be deployed using an S1.1 interface, therefore no mismatch will occur.

All 7K passport optical interfaces are been deployed with long haul interface cards. When a mismatch of interfaces occurs between the AM 31 and the 7K passport switch, i.e. over a short link, AM 31 has S1.1 interface, 7K passport has L1.1 interface, insert a 10dB optical attenuator at the 7K passport Equipment Out (Tx) port at the OFDF & or IOF (installed on the RHS of the interconnecting optical patch through-connect).

As part of the end-to-end installation it is the responsibility of the constructor to complete the optical link between BRAS and the SDN/SDH.

4.6. AM 31 MDF Practice

All Corning (Siemens) S5000 MDF blocks installed for use for ADSL shall use the 128 pair type (for “C” & “X” pairs) irrelevant of the style of MDF used, eg, Conventional, QM-MDF, Single-sided or Double-sided.

The preferences included are a guide and are intended for Conventional Double Sided large station MDF's and QM-MDF's.

Retrospective variations to these preferences apply and are acceptable for Conventional/Non Conventional single sided MDF's, where an existing MDF block, layout or a combination of cabling and jumpering conventions preclude this standard being adhered to. The existing conventions at site should be considered in every instance, with a view to providing the most efficient use of MDF space and be compliant with standard cabling and jumpering arrangements as appropriate.

4.6.1. Conventional MDF Practices

The MDF practice for AM 31 is described in document AM 31 MDF Labelling Standard, 007332 – A85, Part 1. Note the MDF layout for AM 31 is similar to that used with the ASAM but different to that used for CMUX with the “C” and “X” pairs located on separate blocks, side by side as shown in Figure 10. For CMUX the “C” and “X” pairs are on the same block. For Conventional MDF Installation practices refer to TM 00182-A02.

There must be two spare MDF adjoining verticals to allow initial side by side installation and future growth as shown in Figure 10. Due to MDF spacing issues and lack of adjoining verticals, non-adjoining side by side vertical may be used providing the “X” pair block remains on the LHS of the related “C” pair block. Refer to note in Figure 10.

If due to MDF space restrictions the above installation cannot be achieved, the blocks may use a single vertical with the “X” pair block installed above the related “C” pair block. If this cannot be achieved, the MDF may be extended. Sometimes this MDF extension may not be a viable option due to costs and available floor space. Under this circumstance the MDF line side may be used, but the installation must start from the vacant end. Refer to Figures 11a and 11b for examples of preferential order of MDF installation layouts.

Any growth pattern must be kept to a sub-rack, a minimum group of ten blocks (five “X” pair blocks and five “C” pair blocks). Corresponding “X” and “C” pair MDF blocks must be kept in the very close vicinity of each other and on the same side of the MDF as shown in following preference examples.

Care should be taken to sleeve groups of separated pairs between adjacent MDF blocks during installation.

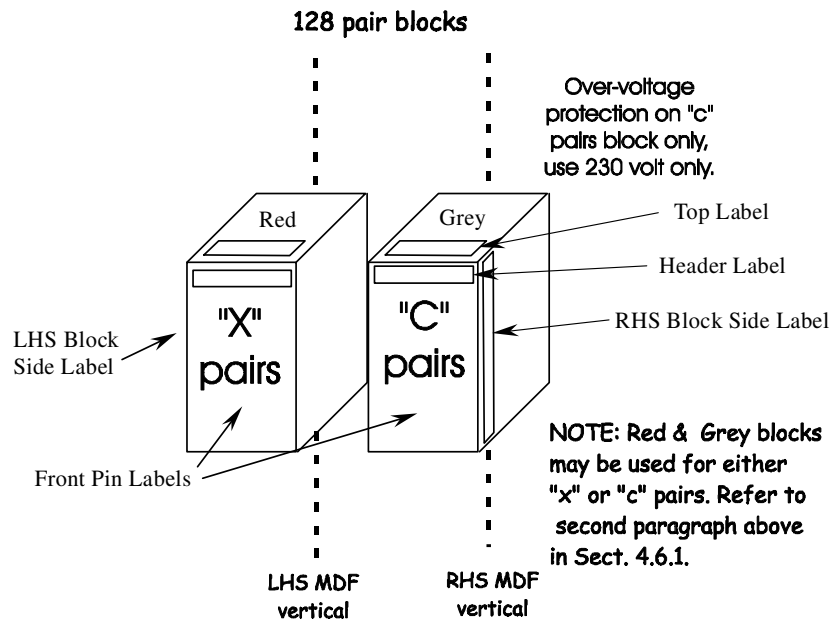


Figure 10 – Conventional MDF Block Installation
(Use same labels for QM-MDFs)

4.6.2. QM-MDF Practices

On QM-MDF's the "X" pair blocks are to be installed on the Equipment side, the "C" pairs are to be installed on the corresponding Line side.

As a second alternative installation – All MDF blocks used on the Line (cable) side. "X" pairs in block above the "C" pairs. Or 2 x "C" pairs on the right and 2 x "X" pairs on the left.

Follow all labelling and the installation requirements specified for QM-MDF's as described in reference - AM 31 MDF Labelling Standard, 007332 – A85, Part 2.

For QM-MDF Installation practices refer to TM 00182-A01.

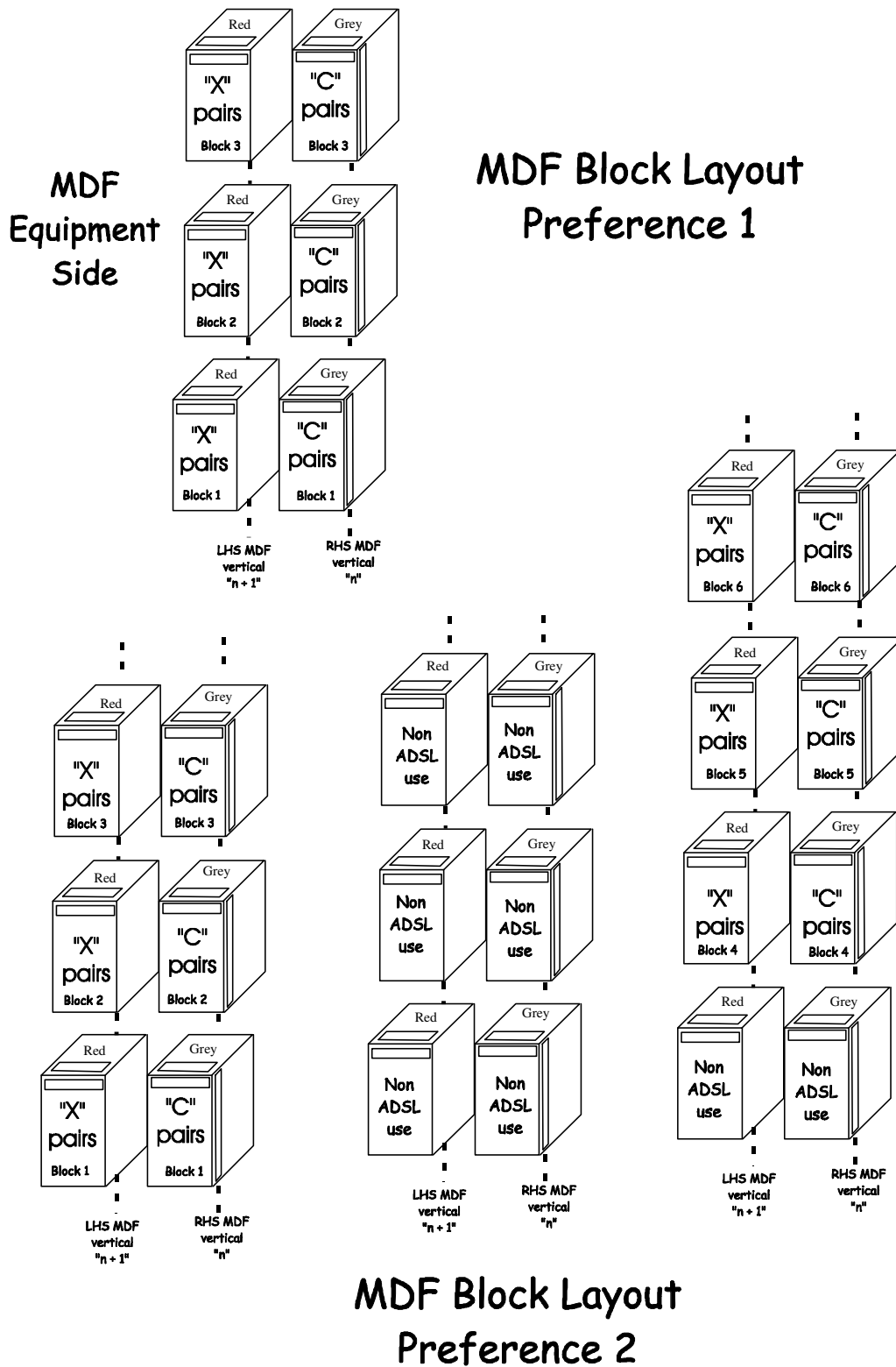
The QM-MDF sites (10 sites nationally) controlled by MDF Manager are;

QM-MDF MDF Manager Sites:

CHLT	Charlotte	Brisbane	KNST	Kent Street	Sydney
EDSN	Edison	Brisbane	CYSH	City South	Sydney
DALL	Dalley	Sydney	LONS	Lonsdale	Melbourne
PITT	PITT Street	Sydney	FRNM	Frankston	Melbourne
HMKT	Haymarket	Sydney	FLNF	Flinders	Adelaide

No over-voltage arresters will be required on QM-MDF's as they are already installed on the line side.

NOTE: At the completion of work performed on QM-MDF managed sites, contact QM-MDF Manager Support (03) 9634 2554 with details of installation.



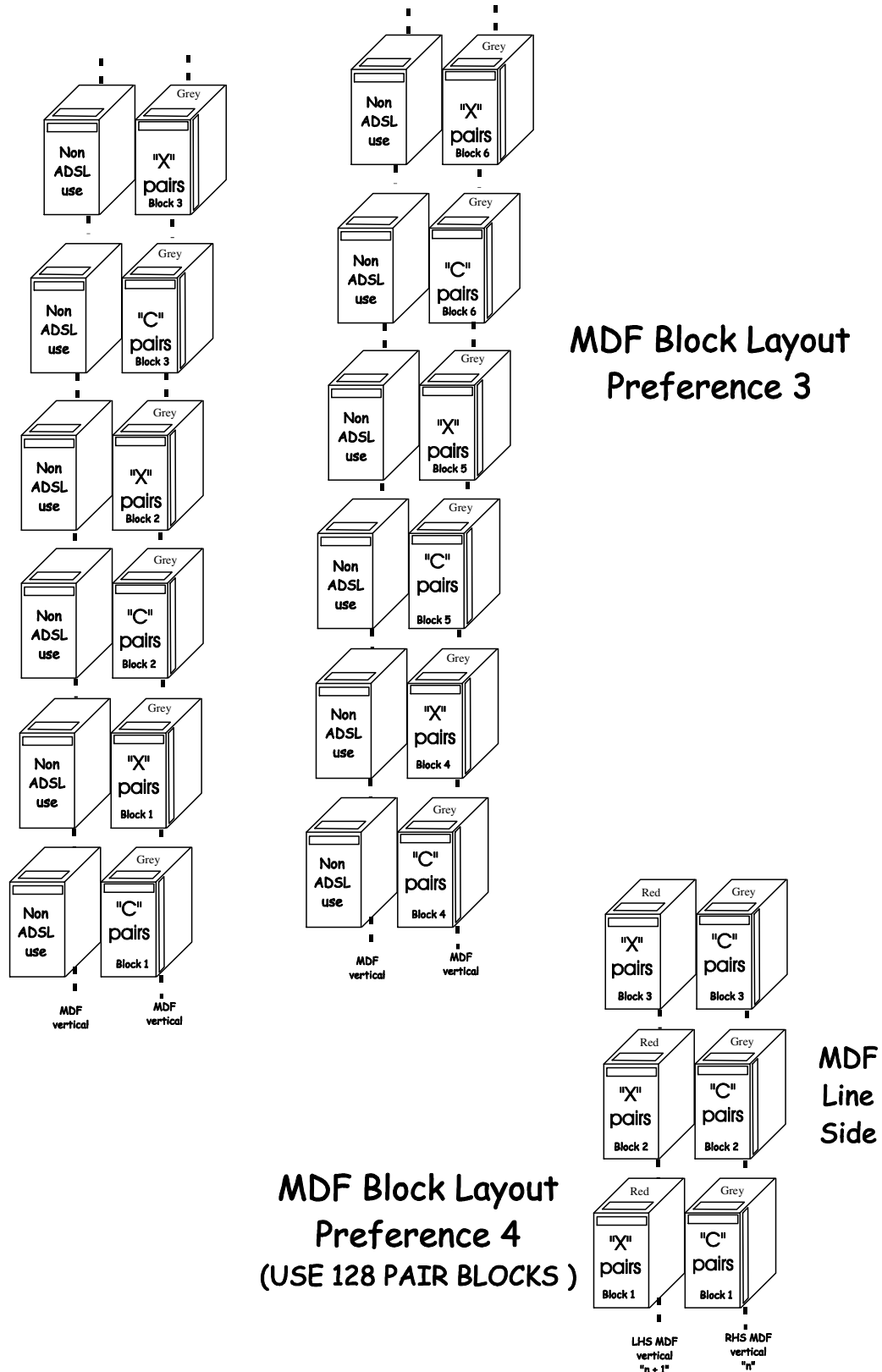
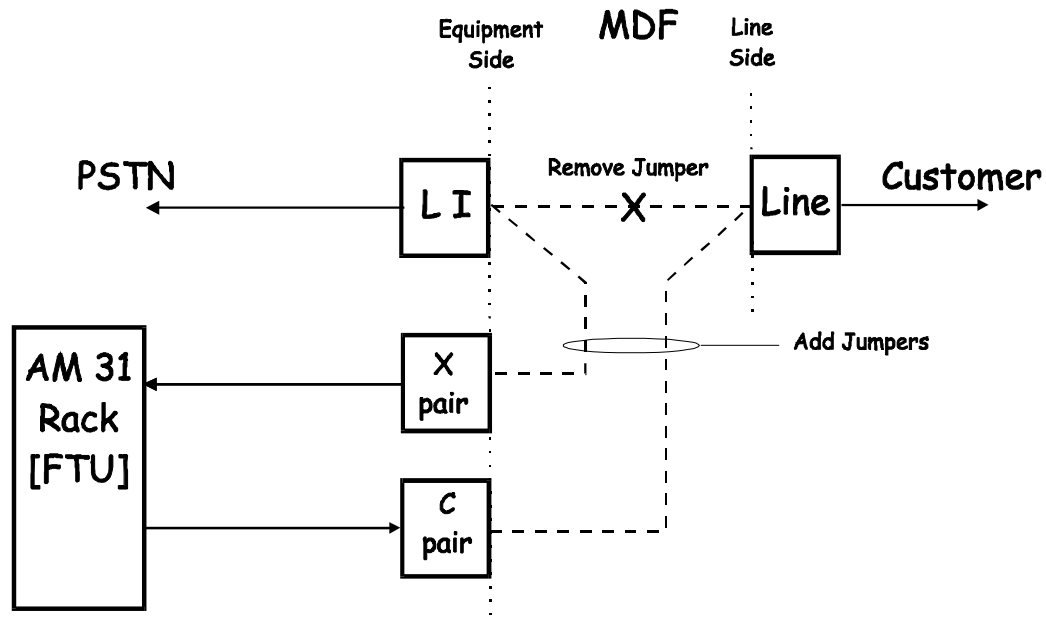


Figure 11b – Examples of the Conventional MDF Block Layout – Order of Preference

4.7. Customer ADSL Jumpering at MDF

The MDF jumpering is performed as shown in Figure 12 and by following the steps below. These steps are required to ensure customer's PSTN disconnection is kept to a minimum.

1. Prior to commencement of the jumpering process ensure the associated customer's line and splitter cards are installed in the AM 31 rack.
2. Run new jumpers ("add jumpers") between customer's MDF LI appearance & AM 31 "X" pairs Block and between customer's line appearance & AM 31 "C" pairs Block, refer to Figure 12.
3. Terminate both jumpers at the AM 31 Block ends only.
4. At LI MDF appearance, disconnect current jumper and terminate jumper from the AM 31 "X" pair Block.
5. At line side MDF appearance, disconnect current jumper and terminate jumper from the AM 31 "C" pair Block.
6. Test.



Note:

When monitoring ADSL lines, an ADSL in-line filter must be used with the Butt.

Figure 12 - MDF Jumpering

The jumpering technician will verify and test for correct jumpering. The test will be performed on the Line Side of the MDF at the customer appearance with an ADSL modem.

4.8. MDF Cable

The cable screen is not required for EMC reasons and therefore is not connected to an earth.

Before cutting back the MDF cable sheath at the MDF and removing/cutting the braid screen the lower MDF blocks must be covered. It has been found that small strands of braid have fallen onto and into lower blocks and are causing faults.

The cable butt at the MDF, prior to pair termination, is to be fitted with a collar to ensure the screen is isolated and must not contact the MDF iron-work.

On completion of installation of sub-rack to MDF cables, all pairs shall be tested for continuity.

4.8.1. MDF Colour Code

The 48 pair, 0.40mm, MDF to AM 31 cable colour code:

Pair	Colour	Mate	Whip	Pair	Colour	Mate	Whip
1	Blue	White	Blue	25	Blue	Black	Orange
2	Orange	White	Blue	26	Orange	Black	Orange
3	Green	White	Blue	27	Green	Black	Orange
4	Brown	White	Blue	28	Brown	Black	Orange
5	Blue	Red	Blue	29	Blue	Yellow	Orange
6	Orange	Red	Blue	30	Orange	Yellow	Orange
7	Green	Red	Blue	31	Green	Yellow	Orange
8	Brown	Red	Blue	32	Brown	Yellow	Orange
9	Blue	Black	Blue	33	Blue	White	Green
10	Orange	Black	Blue	34	Orange	White	Green
11	Green	Black	Blue	35	Green	White	Green
12	Brown	Black	Blue	36	Brown	White	Green
13	Blue	Yellow	Blue	37	Blue	Red	Green
14	Orange	Yellow	Blue	38	Orange	Red	Green
15	Green	Yellow	Blue	39	Green	Red	Green
16	Brown	Yellow	Blue	40	Brown	Red	Green
17	Blue	White	Orange	41	Blue	Black	Green
18	Orange	White	Orange	42	Orange	Black	Green
19	Green	White	Orange	43	Green	Black	Green
20	Brown	White	Orange	44	Brown	Black	Green
21	Blue	Red	Orange	45	Blue	Yellow	Green
22	Orange	Red	Orange	46	Orange	Yellow	Green
23	Green	Red	Orange	47	Green	Yellow	Green
24	Brown	Red	Orange	48	Brown	Yellow	Green

4.9. DDF Cabling

DDF cabling, block and jumper installation and practices shall comply with TM 00099-A01, this includes DDF Block labelling.

Cable labelling at both the equipment and DDF ends are to be labelled in accordance with this procedure.

4.10. AM 31 Labelling

Labelling shall be performed in respect to the requirements of the Telstra Operational staff as referenced in Standard Procedures 000-511 unless further information is specified in the Design Brief. In particular the labelling shall take into account:

- Rack Labelling – Refer Section 4.10.1.
- Sub-rack Labelling - Refer Section 4.1.1 and 4.10.2.
- Cabling identification from and to frames (MDF, DDF, OFDF & any other rack external cabling). Identification labelling at all interconnections shall be made, including such things as cabling into sub-racks, splice trays, etc. Labelling on cables located at the MDF block are not required. The label shall be a wrap-around self-laminating label for both copper and optical cords. E.g. for 8-pair twisted pair use Brady ELAT-19. Refer to Figure 13 below.
- LOD circuit breaker identification on APDP including Power Source – Refer Figure 8.
- Rack alarm indicator identification.
- Node identification as supplied by the Design Brief.
- The use of the Telstra rack levels as shown in Figures 1 and 2.
- The labels for the above are housed in standard Serial/Item sized self-adhesive plastic envelopes.
 - Serial 353 Item 517 – 75mm x 62mm.
 - Serial 353 Item 589 – 67mm x 40mm.
 - Serial 353 Item 590 – 52mm x 66mm.
 - Serial 353 Item 886 – 35mm x 203mm.

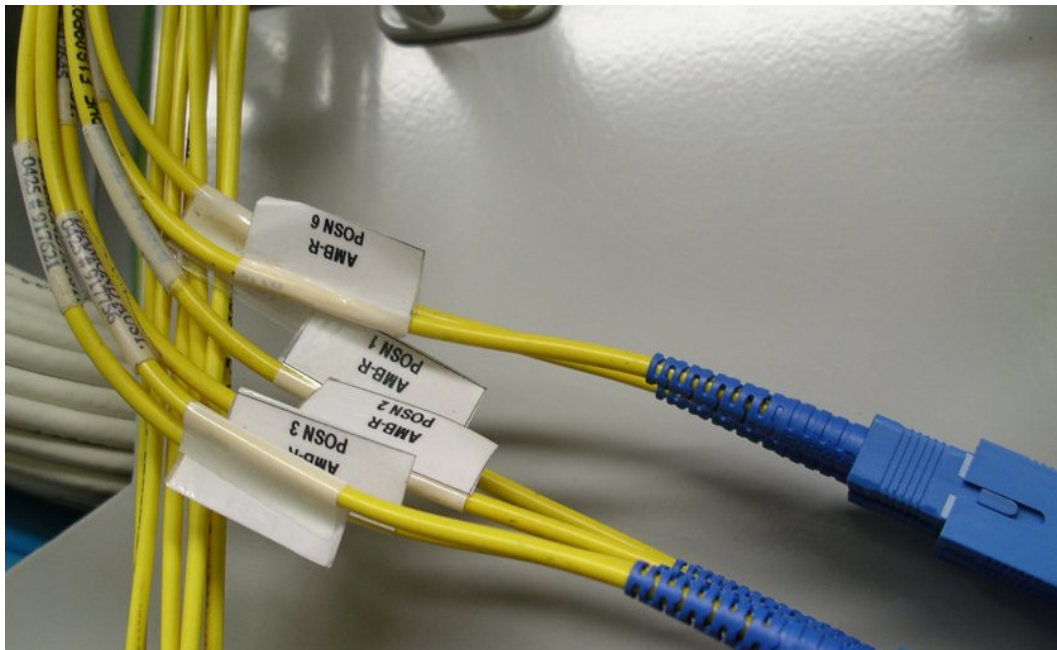


Figure 13 – Example of Brady Wrap-around Self Laminating Cable Lables.

4.10.1. Rack Labelling

The rack label (located top Centre on the Rack) shall contain the standard location format – Floor / Suite / Rack position. The 5 alpha AM 31 system code label is located on the top RHS of the rack.

Eg.

Rack 1: 9/1028/A, EXIFA – 1

Rack 2: 9/1028/B, EXIFA – 2

4.10.2. Sub-Rack Labelling

The AM 31 sub-racks are identified by a label (examples below) located at the lower front RHS Sub-rack flange mounting, of each sub-rack, refer to Figures 1 and 2 for AM 31 rack levels.

There are no labels required on the Fan trays.

The Sub-racks label must contain, where relevant the following information:

- Traffic “D” & “T” codes.
- Floor/Suite/Rack/Sub-rack /Position details.
- “Q” codes.
- OFDF details.
- MDF details.

Eg.

GD/4B/5/3		GD/4B/5/2	
NWXTA	Slot 1-14	NWXTA	Slot 1-12
QNEWOE0016		QNEWOE0016	
J NWXT QT5A V101 DF: GD/14A/15/4/2/9&10		Refer to MITS for MDF Detail C - X pairs 1 – 576	
GD/4B/5/5		GD/4B/5/4	
NWXTA	Slot 1-14	NWXTA	Slot 1-12
QNEWOE0016		QNEWOE0016	
		Refer to MITS for MDF Detail C – X pairs 577-1152	

Notes:

1. “NWXT” is the RAU code.
2. “NWXTA” is the 5 alpha code.
3. “QNEWOE0016” is the PGS id.
4. “NEWO” is the ESA code

4.10.3. Cable Labelling

All cables and cable plugs in the rack are to be labelled with the sub-rack slot number.

MDF cables shall reference the FTU slot number 1 – 12, sub-rack location, pair range, X or C pairs and MDF block location.

Eg. - **MDF Cable Labels AM 31 End**

GD/1/E/3/1	MDF Location
X Pairs 1-48	
GD/4B/5/2/LT1	AM31 Location

Eg. - **MDF Cable Labels MDF End – not required**

Optical cables at the sub-rack must show the direction of transmission (Equipment In & Out), the card slot number and the relevant code details as explained in the Coding Rules, NEC DSLAM, Procedure 009 236 A074.

Eg. – **AM 31 Site – IGU-A155 – O/F Labels**

GD/11B/7/2/1	GD/11B/7/2/1	LIS
J QWB3 WBBK V101 Eq Out	J QWB3 WBBK V101 Eq In	Tx ID plus Eq In or Eq Out
F WOBB 5028/46	F WOBB 5028/45	Sheath Code / Fibre No.

Cables at frames (eg. DDF, OFDF, etc) must show the termination location details of where the termination occurs.

The cables delivered from NEC will refer to the NEC Equipment In or Out digital transmission directions. eg. Any reference to TX (NEC) and Equip. Out (Telstra) the cable will be labelled AM 31/33/35 Out and likewise RX (NEC) and Equip. In (Telstra) the cable will be labelled AM 31/33/35 In.

IBN earth cables extended to the SPC may be daisy chained with other ADSL DSLAM racks and shall be labelled “ADSL Use Only”.

Eg. – **AM 31-LOD Power Cables (AM 31 APDP)**

RF1	RF2	Batt Ret
GD/11B/2/2 – CB 6	GD/11B/2/2 – CB15	GD/11B/2/2 – Pos 7

Eg. – **AM 31-LOD Power Cables (LOD)**

GD/11B/7/0 – RF1	GD/11B/7/0 – RF2	GD/11B/7/0 – Batt Ret
CB6	CB15	Pos 7

4.10.4. MDF Labelling

Refer to Figure 10 for the MDF block layout. The MDF Labelling standards for AM 31 are described in the document AM 31 MDF Labelling Kits for Conventional & QMDF Standard, 007332 – A85.

The MDF Labelling Kits for the AM 31 MDF block pair numbering are available off the Telstra Serial List.

Note: Lead time is 10 working weeks

The complete ASAM kits will fit a fully installed AM 31 system of 2304 customers.

4.11. Alarm Facilities

Physical Circuit Breaker alarms are available at the NEC APDP and the LOD, as these are required to be extended to the Silcar alarms. All other AM 31 alarms are in-band.

4.11.1. TESAMS

Refer to above regarding the NEC APDP physical alarms. Check and test circuit breakers alarms on both the NEC APDP and the LOD are transferred to Silcar via AMS.

Commissioning testing will occur with AMS alarm group, contact (Bryn Bennett) (07) 3391 7519. This group will ensure the configuration of the AMS / TESAMS ports transmit too the appropriate area.

This is the AMS code assigned to all ADSL DSLAMs - PD0168 "DSLAM Dist fuse/CB fail" extension window 2 "DSL Access Multiplexer rack APDP CB fail", severity 5, N/O.

4.11.2. Alarm Checks

In-band alarms are to be verified at installation to remote management system. This can be achieved by the removal of a board from the sub-rack. Refer to Section 4.14.

4.12. Transmission Coding Rules

New transmission Coding Rules have been implemented for the NEC DSLAM's. Refer to Coding Rules, NEC DSLAM, Procedure 009 236 A074.

There are key differences between NEC DSLAM and other Alcatel DSLAM's:

- No new node codes if there is an existing ASAM at the location meaning that NEC and Alcatel equipment will share the same node code.
- The point above does not currently include CMUX.
- The digital circuit format for the ATM link to the BRAS is in a format consistent with the hub to subtended unit format thus providing consistent information in the link. This is different from ASAM recording of the digital link to the BRAS.

4.13. Method of Procedure (MOP)

A Method of Procedure (MOP) will be required with all Contracts. Responsibility for preparing the MOP rests with the Contractor. The size and importance of the project or job and the likelihood of effect on existing customers will determine the scope of the MOP.

Refer to 009474I14, <http://www.in.telstra.com.au/ism/nsdv/Resources.asp>

4.14. AM 31 Commissioning

The following commissioning tests shall be performed:

1. **AM 31 Power Up sequence.**
 - NEC AM 31 Power Up document is to be used to power up the AM 31. The voltages at the APDP are to be checked and recorded.
2. **Check the Operational Status of each card.**
 - NEC AM 31 Power Up document is to be used to check the operational status of each card.
3. **Alarm Monitoring checking AM 31 and all relevant Management Systems.**
 - Test Circuit Breakers on AM 31 APDP.
 - Remove and Re-insert Cards.
 - IGU/BEU.
 - One LTU per sub-rack.
 - Each Bus Serial Extender.
4. **ADSL Modem Synchronisation Test.**
 - For the first , 17th and 33rd ports on each LTU synchronise with modem, test to be performed at the MDF appearance and verified by CTO.
 - Note: ADSL modems used for these tests must from the Telstra certified listing, URL – <http://www.telstra.com.au/adsl/equipmnt.htm>
5. **End to End Testing**
 - For the first LTU port in each sub-rack download a test file. Access to a Test ISP is required to download a large file for speed check. The FTP Speed Check procedure is shown in Attachment 1 and shall be performed as part of the AM 31 commissioning tests (new start sites only, i.e. for all new transmission – not performed for augmentation).
 - Speed Limits (Speed Test) as specified in Attachment 1 shall be obtained, refer to following dot point.
 - The Speed Test is not a good indicator of the performance of the optical path. A guaranteed margin check for Sub-tended AM31 and AM35 must now be performed:
 - (a) insert an additional 10 dB attenuator at the line card between the Line Fibre and the WDM Line Port, and
 - (b) using the *PHY CPMSTAT* command three times, verify that the Line NE and Path NE registers do not change, and
 - (c) carry out the standard Speed Tests.
 - Server details are shown in Attachment 1. If the local State server is not available use an alternative State site.

4.14.1. Hub

Hub installation shall be commissioned prior to any subtended NE's (Network Elements). The Hub cannot be fully commissioned until the first subtended site is connected; only then a full End to End Speed Check test may be completed.

The Hub installing contractor must also install the first sub-tended site to complete their responsibilities with this commissioning process.

At the installation of each 4 port optical LTU card (LTU-4A-155) into a Hub sub-rack all four optical ports, including their corresponding VAM's if SFW, must be individually cleaned, tested and pinged. This test is achieved by;

- Clean all ports and patchcord connectors.
- Establish the optically sub-tended AM3X path on the allocated LTU port to the far end AM3X sub-tended equipment.
- Move the active WDM line fibre, in turn, to each line port of the four WDM's and get the CDO to successfully perform a PING test to the far end AM3X sub-tended equipment through each corresponding LTU port.
- At the completion of these commissioning tests the LTU must be reset to the planned operational port and request the CDO to complete the AM35 (or AM31) build.
- Leave all patchcord cabling between the non-allocated LTU ports and the VAM connected intact and in the correct positions. Place covers on VAM line ports.

4.14.2. AM 31 Optical Fibre Commissioning

For optical SDN or SDH STM-1 transport between BRAS and DSLAM, used standard commissioning processes for these infrastructures.

For direct optical connections (non SDN or SDH STM-1 transport) BRAS to AM 31, the following commissioning process shall be used. Ensure all optical connectors are cleaned prior to testing and before permanent connections are made.

Check the type of transport card used in the AM 31, i.e. Long Haul or Short Haul.

Note:

The BRAS uses both Long and Short Haul cards.

Step 1:

Measure and record the "Launch Power" at the AM 31 Tx ports and BRAS Tx - Eq Out port at the Monitor/Coupling tray. Refer to Table (Table 2/G.957 – Parameters specified for STM-1 optical interfaces) below to ensure the correct range of levels are obtained. Note; the 10dB attenuator may be installed in this BRAS Monitor/Coupling tray (Refer to Section 4.5).

Step 2:

Complete the connection of the fibre path for each direction.

Step 3:

Measure the received signal at the respective far ends i.e. the AM 31 Rx and BRAS Eq In port at the Monitor/Coupling Tray.

Step 4:

- At the AM 31 – Subtract the level measured at the BRAS Eq Out Port on the Monitor/Coupler tray (Step 1) from the level measured at the AM 31 Rx.
- At the BRAS – Subtract the level measured at the AM 31 Tx port (Step 1) from the level measured at the BRAS Eq In Port on the Monitor/Coupler tray.

Each of these figures shall be less than the calculated Insertion Loss provided in the Design Pack.

Step 5:

Ensure the received signal levels are 6dB higher than the minimum sensitivity figures quoted in the table below.

Note: These tests must be performed prior to the Speed Test (Appendix 1).

Also to refer to Speed Test, End to End Testing in Section 14.14.

Table 2/G.957 – Parameters specified for STM-1 optical interfaces

	Unit	Values	
Digital signal Nominal bit rate	kbit/s	STM-1 according to Recommendation G.707 155 520	
Application code (Table 1)		S-1.1	L-1.1
Operating wavelength range	nm	1261 ^{a)} -1360	1263 ^{a)} -1360
Transmitter at reference point S			
Source type		MLM	MLM SLM
Spectral characteristics:			
– maximum RMS width (σ)	nm	7.7	3 –
– maximum –20 dB width	nm	–	– 1
minimum side mode suppression ratio	dB	–	– 30
Mean launched power:			
– maximum	dBm	–8	0
– minimum	dBm	–15	–5
Minimum extinction ratio	dB	8.2	10
Optical path between S and R			
Attenuation range^{b)}	dB	0-12	10-28
Maximum dispersion	ps/nm	96	246 NA
Minimum optical return loss of cable plant at S, including any connectors	dB	NA	NA
Maximum discrete reflectance between S and R	dB	NA	NA
Receiver at reference point R			
Minimum sensitivity^{b)}	dBm	–28	–34
Minimum overload	dBm	–8	–10
Maximum optical path penalty	dB	1	1
Maximum reflectance of receiver, measured at R	dB	NA	NA
^{a)} Some Administrations may require a limit of 1270 nm.			
^{b)} See clause 6.			

4.15. Recording into Telstra's Databases

As part of the installation and commissioning process the recording of the complete installation details shall be entered into Telstra databases such as TRAC, NPAMS, MITS, Multiman, TESAMS, Netpower etc. This will be defined within the installation contract by Telstra's CMPI group.

Note - Netpower is only to be updated through the Silcar E-Forms process.

For fibre connection details, refer to Coding Rules, NEC DSLAM, Procedure 009 236 A074.

4.16. AM 31, Director & XDM Configuration Procedure

For details of configuration procedures for the AM 3x current release installations refer to NEC AM 31/33/35 Network Element Configuration Guide on the NEC Web-site.

4.17. AM 31 MITS Data Collection

It is a requirement that AM 31 inventory data is collected and provided to populate the MITS Data Tool and forwarded by e-mail by the installer to MITS EDI Loader in accordance with the process described in MITS Direct Data Transfer Interfacing - Data Format & Transport Mechanism Definition. Refer to Figures 1 and 2. This is done in a .CSV file format.

Rack Level 0 – ATRU – P (APDP) (to be called Sub-Rack 0)

For Rack Level 0, Floor/Suite/Rack/Sub-Rack/Card - **eg. GD/4B/5/3/x.**

AM 31 upper Fan Tray (First Sub-Rack to be called Sub-Rack 1- INSET 1)

Floor/Suite/Rack/Sub-rack/Inset/Card - **eg. GD/4B/5/3/1/x.**

Note: Secondary power distribution must now be recorded in MITS – this includes APDP circuit breakers.

4.18. Installation of Shark Robot Performance Monitoring Equipment

The Shark Robot Performance Monitoring Equipment is used to replicates an end user and will conduct a series of tests i.e. Authenticate, HTTP, FTP, PING and then close the session. This will be repeated over and over to prove the service is working as desired over the Telstra infrastructure.

Shark Robot performance monitoring shall always be installed to the first connected AM 31 to BRAS. It is the installer's responsibility to be aware of this condition, i.e. only one performance monitoring connection per BRAS. Initially there will be 25 BRAS's installed nationally. The installer shall inform both the C&CM contract manager and the responsible Telstra Shark Operational Staff of this occurrence. At these installations, the AM 31 ADSL Port 1 is reserved for the performance monitoring modem.

The AM 31 Planner will:

- Release order for the contractor for the Shark Robot build.
- For the install location of the robot – it will be assumed the responsibility of the Telstra Shark Operational Staff to forward this information to the AM 31 Planner who will then include it in the AM 31 Project Brief (Work Order) for these site/s.

The Telstra Shark Operations Staff will:

- Provide current spare rack capacity for this installation, otherwise they will provide a data rack & location to the planners.
- Arrange delivery of the robot equipment to the relevant contractor Project Officer for the installer as detailed in the Shark Robot Equipment Delivery List (the PC's are site specific and shall not be installed at alternative sites).
- Accept the Shark Robot.

The AM 31 installation contractor will:

- Install the Shark Robot infrastructure including the POTS and ADSL jumpers (MDF "X" and "C" appearances) to the robot.
- Co-ordinate the activities required to make the Shark Robot operational eg. The reception and installation of a configured robot from the responsible Telstra Shark Operational Staff located in Telstra Network Services, Enterprise Services, Platform and Product Integration, Broad-band Evolution (see below for the relevant contacts).
- Procure the ADSL modem and splitter via Telstra Serial/Item listing using a FIM order.
- With the assistance of tDC Submit the NEOS order for POTS FNN (record as infrastructure) and LI assignment for network infrastructure as an "in use service".
- Arrange the necessary cabling to the rack (from LI to rack via the ADSL MDF port "X" and "C" appearances).
- After the POTS installation, activate the first AM 31 port for an ADSL service [512/128kbit/s] to this FNN (use of tDC). Refer to Telstra Procedure 013 942 – ASAM Integration Process, Section 3.2.2.6. (no NEOS is required for the ADSL service).
- Upon commissioning of the Shark Robot contact tDC and block the first port on this AM 31 as an "in use service" and list this as Infrastructure. Instruct tDC to record, reserve and activate in the appropriate databases.

- Prior to leaving site the installation contractor will ensure the POTS service is working correctly (i.e. dial tone, loop line, etc) and then contact the Telstra Shark Operational Staff (see Checklist below).

The CMPI Contract Manager will:

- Arrange for the addition of the Shark Robot installation to the scope of works of the current AM 31 contract.

4.18.1. Shark Robot Equipment Delivery List

- Shark Robot desktop PC (Pre-configured and identified with specific LRD code).
- 240V Power Cable.
- 1 x Twisted Pair telephone cable – long (610 plug to RJ11).
- Instructional Brief.

Note: the PC keyboard, mouse and monitor are neither supplied nor required.

The ADSL Modem (S/I 903/00230) and ADSL Splitter (S/I 903/00346) are to be ordered separately via a FIM order.

4.18.2. Robot Installation Procedure

- See Figure 14 below for the installation layout.
- Place ADSL modem and Shark Robot PC into the reserved rack location. (Note: must be the designated robot for site per LRD code on robot packaging).
- Connect one short twisted pair telephone cable between the RJ11 port on the rear of the ADSL modem marked “line” and the RJ11 port on the ADSL Splitter marked “ADSL Modem”.
- Connect one short twisted pair telephone cable between the RJ11 port marked “Line” on the Internal PCI modem at the rear of the PC and the RJ11 port on the ADSL Splitter marked “local phone”.
- Connect the long twisted pair telephone cable between port on ADSL splitter marked “line” and the ADSL service point (i.e. POTS line).
- Connect Cat.5 Cable between RJ-45 port (10Base T port) at rear of ADSL modem and RJ-45 interface at rear on PC.
- Confirm set-up aligns with the Installation Cabling diagram below (see Figure 14).
- Connect ADSL modem power pack between ADSL modem and power point. Switch on power.
- Connect power cable between Shark Robot PC and power point. Switch on power.
- Shark Robot PC will boot and load automatically.

4.18.3. Checklist

- Ensure that the “power” and “line sync” LED's at front on the ADSL modem are lit green.
- Ensure that the LED above the “10Base T” port at the rear of the ADSL modem is lit green.
- Please now contact the responsible Telstra Shark Operational Staff - **Steve Hewett** on (03) 8549 1613 or alternatively **Julian Howden** on (03) 8549 1612 to register Shark Robot PC has been installed (escalation to John Livsey on (03) 8549 1845).

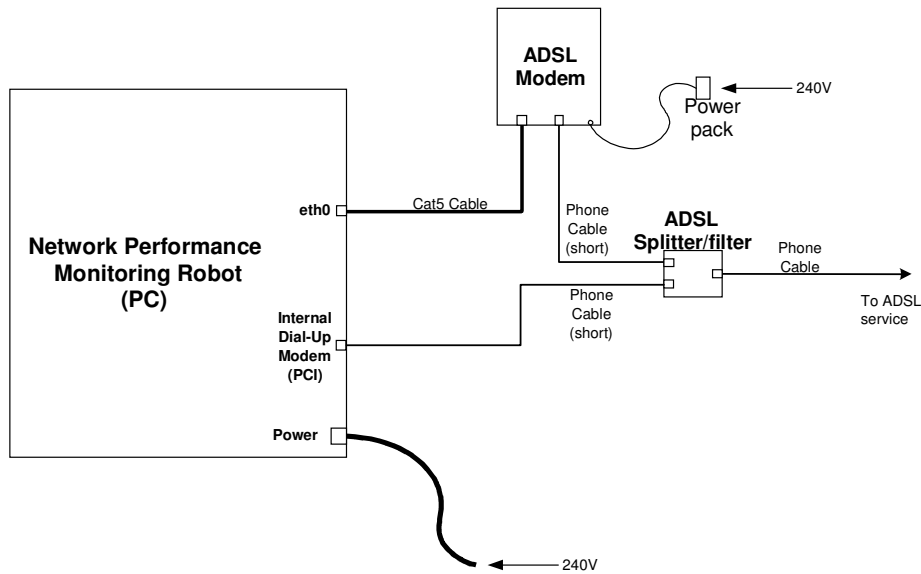


Figure 14 – Shark Robot Network Performance Monitoring Layout

4.19. AM 3x Serial/Items List

Serial/Item	Description	Manufacturer. Part No.
907/00000	CUSTOMER MULTIPLEX EQUIPMENT, NEC	
907/00001	RACK, 2.2M WITH APDP	
907/00002	SUBRACK, AM31 WITH FAN TRAY	N5765E
907/00003	PBA, ATM CONTROLLER 1310NM IGU-A155-SH5	E5853A
907/00004	PBA, ATM CONTROLLER 1310NM IGU-A155-LH5	E5853B
907/00005	PBA, ATM 8X2MBIT/S IGU-8E1-IMA-2	E5959A
907/00006	PBA, ATM 8X2MBIT/S LTU-8E1-IMA	R5845A
907/00007	PBA, ADSL LINE TERMINATION 48L LTU-48ADSL	E5881A
907/00008	PBA, BUS EXPANSION BEU-3	R5737A
907/00009	SUBRACK, FILTER AM31	N5809E
907/00010	PBA, PASSIVE LPF CENTRAL FTU-48-2	R5886A
907/00011	AM35, BASE MODULE 8E1/32ADSL	E5914A
907/00012	AM35, EXPANSION MODULE 32ADSL	E5922A
907/00013	AM35, FILTER MODULE 32ADSL	E5923A
907/00014	CABLE, AM31 POWER APDP TO SUBRACKS 3M	G54-7126-0A00
907/00015	CABLE, INTERCONNECT LTU TO FTU, 48 PAIR	G54-7147-0A00
907/00016	CABLE, BUS EXPANSION AM31 2M	G54-7105-0A00
907/00017	CABLE, BUS EXPANSION AM31 5M	G54-7105-0B00
907/00018	SERVER, DIRECTOR INMS/SMS H/W (RACK MOUNT)	DUAL-6213-B12
907/00019	SERVER, DIRECTOR-DC H/W (RACK MOUNT)	DUAL-6211-B12
907/00020	SUPPORT, DIRECTOR-INMS/SMS SUN	RSTS-6213-D21
907/00021	SUPPORT, DIRECTOR-DC SUN	RSTS-6211-D21
907/00022	SOFTWARE LICENSE, INMS/SMS PER DSL LINE	DSSL-6100-A01
907/00023	SUPPORT, NEC ENGINEERING MODEL PER ANNUM	EMOF-8000-A01
907/00024	FEE, ESTABLISHMENT NEC ENGINEERING MODEL	EMEF-8000-A01
907/00025	SOFTWARE LICENSE, DIRECTOR PC CLIENT	DSAL-6114-A00
907/00026	INTERFACE, DIRECTOR-DC TO XDM & DSL SA	DOST-6000-A01
907/00027	SERVER, INMS/SMS 250K LINES & 30 USER 1ST	CUAL-6000-C01
907/00028	SERVER, INMS/SMS 250K LINES SUBSEQUENT	CUAL-6000-C11
907/00029	SERVER, DIRECTOR-DC 750K LINE & 30 USERS	DUAL-6111-C03
907/00030	SERVER, INMS/SMS 250K LINES REDUNDANT	RUAL-6000-C01
907/00031	SERVER, INMS/SMS 250K LINE RED SUBSEQUENT	RUAL-6000-C11
907/00032	SERVER, DIRECTOR-DC 750K LINE REDUNDANT	RDCL-6111-C03
907/00033	SUPPORT, INMS/SMS PRODUCTION SUN SERVER	SSTS-6000-C01
907/00034	SUPPORT, DIRECTOR-DC PROD SUN SERVER	SSTS-6111-C03
907/00035	SUPPORT, INMS/SMS PROD RED SUN SERVER	RSTS-6000-C01
907/00036	SUPPORT, DIRECTOR-DC PROD RED SUN SERVER	RSTS-6111-C03
907/00037	SOFTWARE, DIRECTOR-PC-CLIENT MSI	CAPP-6000-A13
907/00038	SOFTWARE, DIRECTOR-INMS PING FUNCTION	CAPP-6000-A14
907/00039	SOFTWARE, DIRECTOR-INMS GLOBAL ALARM	CAPP-6000-A17
907/00040	SOFTWARE, DIRECTOR CORBA ALARM HEARTBEAT	CAPP-6000-A19
907/00041	CABLE, AM3X 48 PAIR MDF 15 METRES	G54-7145-0A00
907/00042	CABLE, AM3X 48 PAIR MDF 20 METRES	G54-7145-0B00
907/00043	CABLE, AM3X 48 PAIR MDF 25 METRES	G54-7145-0C00
907/00044	CABLE, AM3X 48 PAIR MDF 35 METRES	G54-7145-0D00
907/00045	CABLE, AM3X 48 PAIR MDF 50 METRES	G54-7145-0E00
907/00046	CABLE, AM3X 48 PAIR MDF 75 METRES	G54-7145-0F00
907/00047	CABLE, AM3X 48 PAIR MDF 100 METRES	G54-7145-0G00
907/00048	CABLE, AM3X 48 PAIR MDF 150 METRES	G54-7145-0H00
907/00049	CABLE, AM3X 48 PAIR MDF 200 METRES	G54-7145-0J00
907/00050	CABLE, AM3X IMA IGU TO DDF 15 METRES	G54-7144-0A00
907/00051	CABLE, AM3X IMA IGU TO DDF 20 METRES	G54-7144-0B00
907/00052	CABLE, AM3X IMA IGU TO DDF 25 METRES	G54-7144-0C00
907/00053	CABLE, AM3X IMA IGU TO DDF 35 METRES	G54-7144-0D00
907/00054	CABLE, AM3X IMA IGU TO DDF 50 METRES	G54-7144-0E00

907/00055	CABLE,AM3X IMA IGU TO DDF 75 METRES	G54-7144-0F00
907/00056	CABLE,AM3X IMA IGU TO DDF 100 METRES	G54-7144-0G00
907/00057	CABLE,AM3X IMA LTU TO DDF 15 METRES	G54-7135-0A00
907/00058	CABLE,AM3X IMA LTU TO DDF 20 METRES	G54-7135-0B00
907/00059	CABLE,AM3X IMA LTU TO DDF 25 METRES	G54-7135-0C00
907/00060	CABLE,AM3X IMA LTU TO DDF 35 METRES	G54-7135-0D00
907/00061	CABLE,AM3X IMA LTU TO DDF 50 METRES	G54-7135-0E00
907/00062	CABLE,AM3X IMA LTU TO DDF 75 METRES	G54-7135-0F00
907/00063	CABLE,AM3X IMA LTU TO DDF 100 METRES	G54-7135-0G00
907/00064	CABLE,AM3X IMA LTU TO DDF 150 METRES	G54-7135-0H00
907/00065	CABLE,AM3X IMA LTU TO DDF 200 METRES	G54-7135-0J00
907/00066	KIT,AM35 RIM INSTALL 3G480, 1 – 64 lines	A5963A
907/00067	KIT,AM35 RIM INSTALL 3G480, 65 - 128 lines	A5963B
907/00068	CABLE,AM3X IMA IGU TO DDF 150 METRES	G54-7144-0H00
907/00069	CABLE,AM3X IMA IGU TO DDF 200 METRES	G54-7144-0J00
907/00070	DELIVERY,AM3X RACK ONSITE	
907/00071	TRAINING,NEC DSLAM & EM OVERVIEW 0.5 DAY	
907/00072	TRAINING,NEC DSLAM & EM CONST/OPER 2 DAY	
907/00073	TRAINING,NEC DSLAM & EM FOR SYSTEM ADMIN	
907/00074	SERVER,INMS/SMS 100K LINES & 30 USER	CUAL-6000-D02
907/00075	SERVER,INMS/SMS 100K LINES REDUNDANT	RUAL-6000-D02
907/00076	PBA,INMS/SMS 50K LINES CPU & LICENSE	CBUT-6000-A01
907/00077	HARDDISK,INMS/SMS ADDITIONAL 6	HDUT-6000-A01
907/00078	SUPPORT,INMS/SMS 100K PROD SUN SERVER	SSTS-6000-E02
907/00079	SUPPORT,INMS/SMS PROD RED 100K SERVER	RSTS-6000-F02
907/00080	SUPPORT,INMS/SMS PROD/RED 50K SUN SERVER	CSTS-6000-A01
907/00081	SOFTWARE,DC CENTRAL SERVER LIST FUNCTION	CAPP-6000-A20
907/00082	MOUNTING FRAME,AM35 RACK IN TYPE 84 & 92	999-B00245-00
907/00083	CABLE,AM35 EXCHANGE POWER	G54-7151-0B00
907/00084	CABLE,AM35 BASE/EXP TO FILTER 78-78 PIN	G54-7154-0A00
907/00085	CABLE,ADSL TO MDF 32PR 15M	G54-7138-0D00
907/00086	CABLE,ADSL TO MDF 32PR 25M	G54-7138-0F00
907/00087	CABLE,ADSL TO MDF 32PR 50M	G54-7138-0H00
907/00088	CABLE,IGU BASE TO DDF 2X8 PAIR IMA 15M	G54-7157-0D00
907/00089	CABLE,IGU BASE TO DDF 2X8 PAIR IMA 35M	G54-7157-0G00
907/00090	CABLE,BUS EXPANSION SIDE ENTRY 0.60M	G54-7156-0B00
907/00091	CABLE,EARTH LEAD WITH 4 TAILS	G54-7160-0A00
907/00092	LEVEL 2 SUPPORT (PER ANNUM) NEC DSLAM	L2SS-8000-A01
907/00093		
907/00094	LEVEL 3 SUPPORT YEAR 04/05,NEC DSLAM	L3SS-8000-A02
907/00095	LEVEL 3 SUPPORT (BASE FEE),NEC DSLAM	L3SS-8000-A03
907/00096	REPLACEMENT SERVICE FEE,NEC DSLAM	
907/00097	LEVEL 3 SUPPORT (PER ANNUM) DIRECTOR	L3SS-8000-A01
907/00098	KIT,AM35 RIM INSTALL 1G & 2G, 1 – 64 lines	A5963C
907/00099	KIT,AM35 RIM INSTALL 1G & 2G, 65 - 128 lines	A5963D
907/00100	FAN TRAY,AM31 SUBRACK EXCL FILTER	D5767C
907/00102	RACK MOUNT FRAME KIT,AM35 IN EXCHANGE	A5967A
907/00103	RACK MOUNT CABLE KIT,AM35 IN EXCHANGE	A5968A
907/00104	SPARES KIT,AM31/AM31 HUB	S5973A
907/00105	SPARES KIT,AM31 SUBTEND	S5974A
907/00106	SPARES KIT,AM35	S5975A
907/00107	AUGMENT KIT,48 PORT ADSL	S5976A
907/00108	RACK KIT,ONE SUBRACK/FILTER SUBRACK	S5977A
907/00109	RACK KIT,HUB WITH ONE SUBRACK	S5978A
907/00110**	SINGLE FIBRE KIT,IGU-A155	A5981B
907/00111**	SINGLE FIBRE SUBTENDING KIT,LTU-4A155-LH	A5981C
907/00112**	SINGLE FIBRE KIT,AM35	A5981A
907/00113	APDP,NEC DSLAM RACK 2 SUBRACKS	E5964A
907/00114	CABLE,RIM EU 1G V6.1, 2X4PR TO OPEN 50M	G54-7165-0A00
907/00115	ADSL LONGLINE INTEGRATION FIRST PAYMENT	
907/00116	ADSL LONGLINE INTEGRATION RELEASE 1	
907/00117	ADSL LONGLINE INTEGRATION RELEASE 2	
907/00118	PBA,ADSL LINE TERMINATION 48L LTU-48-2	E5881B
907/00119**	AM35,BASE 155LH2/32ADSL2PLUS,1550NM TX	E5915C

907/00120	AM35,BASE MODULE 8E1/32ADSL2PLUS	E5914C
907/00121	AM35,EXPANSION MODULE 32ADSL2PLUS	5922B
907/00122**	PBA,ATM CONTROLLER 1550NM IGU-A155-5-LH	E5853D
907/00123**	PBA,4 PORT LT STM-1 LTU-4A155-LH	E5758B
907/00124**	RACK,DEDICATED HUB T92,APDP & FIBRE TRAY	A51-2146-N5985-0C00
907/00125**	KIT,VAM SUBRACK & 24W FIBRE STORAGE	A54-002-A5994-0A00
907/00126**	VAM MODULE,2 WDM WITH A/SC CONNECTORS	999-CU0031-M1
907/00127**	WDM,COUPLER HIGH ISOLATION FOR AM3X	QLFD-WDM02-S3ZZ
907/00128**	WDM,COUPLER HIGH ISOLATION FOR ASAM	QLFD-WDM01-S3ZZ
907/00129**	FIBRE STORAGE,24 WAY VENTED	999-CU0031-SR2
907/00130**	SUBRACK,VAM MODULE 21 FRONT MOUNT	999-CU0031-SR1
907/00131**	TRAY,O/F MANAGEMENT 1RU SLIDE	999-CU0031-ST1
907/00132**	FIBRE STORAGE,5 SPOOL FRONT PIVOTING	999-CU0031-SR3
903/00425	FILTER,ADSL BOARD RIM 3G CCF AP7 AP8 AP9	3AU 48851 ACAA
903/00426	BLOCK CONNECTORISED,RIM KRONE 5WAY 1G 2G	6467 1 034-10
EXTEL LONGLINE ITEMS		
907/01000	EXCHANGE UNIT,8 PORT C8SL-E1	AFAEE10807
907/01001	DSLAM,8 PORT ADSL R8AS-2S	AFAEE10811
907/01002	REGENERATOR,SHDSL, 2 SHDSL LINES REG-2S	AFAEE10813
907/01003	MOUNTING KIT,19" RACK FOR 2 C8SL UNITS	AFAEM01900
907/01005	LCT CABLE,RJ45-DB9F 2M FOR C8SL UNIT	ACTIEE2M00
907/01007	CABLE,DDF ATM BACKHAUL LL-ADSL 15M	
907/01008	CABLE,DDF ATM BACKHAUL LL-ADSL 30M	
907/01009	CABLE,DDF ATM BACKHAUL LL-ADSL 60M	
907/01010	CABLE,MDF TO C8SL LL-ADSL 20M	
907/01011	CABLE,MDF TO C8SL LL-ADSL 40M	
907/01012	CABLE,MDF TO C8SL LL-ADSL 60M	
29/00573	Label, AM35 MDF KIT IN EXCH SIEMENS S5000	

NOTE:

** = Used in SFW (Single Fibre Working) – Refer to 007332-A086

5. REFERENCES

Document Number	Title
008713a01	Network Operations Standard Definitions
008713f01	Suggestion for Improvement to Standard Procedures Form
000-511	GLOBAL OPERATIONS – Standard Procedure
009 236 A074	Coding Rules, NEC DSLAM
009 474 I14	Network Systems & DBoR Verification, Procedures & Processes
006500 A06	Telstra Care – Hazard Management, OPTICAL FIBRE EQUIPMENT LASER SAFETY
013 683	MITS Direct Data Transfer Interfacing - Data Format & Transport Mechanism Definition
013 942	ASAM Integration Process – Shark Robot
014015	Electrostatic Protection – Contractor Requirements
TM 00044	Optical Fibre - Optical Fibre Connector Cleaning
TM 00046	Type 92 Racks
TM 00046-A01	Telstra APDP
TM 00062	RIM
TM 00099-A01	Digital Distribution Frames (DDF)
TM 00138-A01	Optical Fibre Ducting
TM 00182-A01	QM-MDF
TM 00182-A02	Conventional MDF
TM 00183	Optical Fibre Distribution Frames (OFDF)
007332 - A085 (Parts 1 & 2)	AM 31 MDF Labelling Standard
007 338 C3-3	Network Engineering National Standard Power and Engineering Services Section, Environmental Paper, Air Conditioning Services
007 338 C13-7	Power and Earthing Design Criteria for NEC AM 3x - Platform (Network) Planning & Design Criteria
TAN 64	Technical Advice Note for RIM, Number 64
0095-0004 (NEC Document)	NEC AM 31/33/35 Network Element Configuration Guide
AM31 Handbook (NEC Doc)	AM 31 Multi-Service Platform & Filter Sub-rack – Installation Guide
AM35Handbook (NEC Doc)	AM 35 Multi-Service Platform & Filter Sub-rack – Installation Guide

6. DEFINITIONS

Terms, abbreviations & acronyms used in the document are included in this section. To encourage single definitions a combined Network Operations definitions document [008713a01](#) exists and is available on the Network Operations Document WEB site.

Term	Definition
ADSL	Asymmetric Digital Subscriber Line
AMx	Access Multiplexer
APDP	Alarm & Power Distribution Panel
ASAM	Advanced Services Access Multiplexer
BB	Broadband
CAN	Customer Access Network
CB	Circuit Breaker
CMUX	Customer Multiplexer
DIRECTOR	NEC Work Station
DSLAM	DSL Access Multiplexer
ESA	Exchange Service Area
GOC	Global Operation Centre
HOD	High Ohmic Distribution
IEN	Inter Exchange Network
LHS	Left Hand Side
LOD	Low Ohmic Distribution
MDF	Main Distribution Frame
MITs	Module Inventory Tracking System
OFDF	Optical Fibre Distribution Frame
NT	Network Termination
POTS	Plain Old Telephone Service
PSTN	Public Switched Telephone Service
RHS	Right Hand Side
STM-1	SDH Transport Module - 1
XDM	Cross Domain Manager

7. ATTACHMENTS

Document Number	Title
Refer Attachment 1	ADSL FTP Speed Test Procedure
Refer Attachment 2	AM 35 Specific Installation & Commissioning Guidelines
Refer Attachment 3	Expand DSL Specific Installation & Commissioning Guidelines

A1.0 ATTACHMENT 1, ADSL FTP SPEED TEST PROCEDURE

Speed Limits:

Download = > 140 kbytes

Upload = > 25 kbytes.

Server Details:

VIC 61.9.129.111

QLD 61.9.209.111

SA 61.9.225.111

NSW 61.9.193.111

WA 61.9.241.111

To perform a speed test perform the following steps;

Bold = "What you type in"

Italics = "PC response"

[] = Added information

Log onto the ADSL account.

Click start, programs, Command Prompt

cd <enter>

fieldftp.vic.bigpond.net.au <enter>

Connected to 24.192.2.253

220 ftp-serv- mel Microsoft FTP Service (Version 3.0)

User (24.192.2.253 :(none)): <userid> <enter>

331 Password required for headend

Password <password> <enter>

230 User headend logged in.

[dir = for a list of files]

ftp> hash <enter>

[Optional but useful to identify if the test is continuing or has failed]

ftp> get 10.meg <enter> [get = download a file from the server]

200 Port Command Successful

150 Opening ASCII mode data connection for 10.meg (10304641 bytes)

*** [wait a minute or so and/or watch the hashes]

226 Transfer complete

10304641 bytes received in XX.XX secs (XXX.XX Kbytes/sec)

ftp> get 0.5Meg <enter> [get = download a file from the server]

200 Port Command successful

150 Opening ASCII mode data connection for 5.meg (5275648 bytes)

226 Transfer Complete

*** [wait about half a minute and/or watch the hashes]

5275648 bytes received in XX.XX seconds (XXX.XX Kbytes/sec)

ftp> put 0.5Meg <enter> [put = upload a file to the server]

200 Port Command successful

150 Opening ASCII mode data connection for 5.meg (5275648 bytes)

*** [wait about 3 minutes and/or watch the hashes]

226 Transfer complete

5275648 bytes sent in XXX.XX seconds (XX.XX Kbytes/Sec)

ftp> bye <enter> [bye = exit from ftp]

Delete the files from the customers PC's.

del 10.meg

del 0.5Meg

exit [bye = exit from Command Prompt]

A2.0 ATTACHMENT 2

A2.1 AM 35 SPECIFIC INSTALLATION & COMMISSIONING GUIDELINES

A2.1.1 SCOPE

This document only covers the Telstra specific requirements for the installation of the AM 35.

The AM 35 wherever installed will be subtended off a Hub DSLAM. Currently this is an AM 31 Hub (refer to the main document), in the future this may evolve into other non-NEC DSLAMs.

This Attachment will only contain specific AM 35 requirements, refer to the main document for non-specific AM 35 details.

The AM 35 will be installed under limited control into RIM's, building complexes and small exchanges. One AM 35 system with expansion units (x 4) can cater up to 160 ADSL ports, i.e. 32 ports per module.

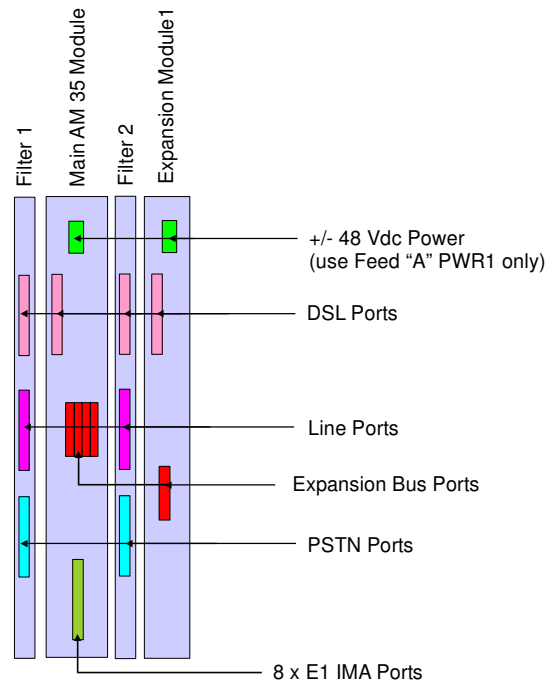


Figure A2.1 – NEC AM 35 with 1 x Expansion Unit

The AM 35 modules are fitted into a specific mounting frame. Refer to NEC AM 35 Installation Guide for instructions to the inserting of modules into this frame and the mounting of this frame into a specific RIM or exchange rack (Type 84 and 92).

The initial installation will consist of 1 x Base Module (Main), 1 x Expansion Module and 2 x Filter Modules – this equates to 64 ports (32 ports per section). The installation can be expanded in multiples of 32 ports to 160 ports (1 Base & 4 Expansion Modules) – The RIM roadside housing installations are limited to 128 ports.

The AM 35 for either RIM or exchange installation are supplied in kit form. Although all supplied components may not be used initially, these unused components must remain insitu with the installation.

Refer to Section 4.10 within the main document for AM 35 Labelling requirements, where applicable.

A2.2 CCF / MDF AM 35 INSTALLATION

The AM 35 modules support 32 ports (not 48 as in the AM 31), therefore CCF or MDF cables are 32 pair cables. Currently the 32 pair colour coding differs from the 48 pair – refer to the NEC AM 35 Installation document for these details. In the near future the 32 pair cable will change to follow the 48 pair cable. Refer to Section 4.8 of the main document.

It is important that the CCF cables from the AM 35 RIM kits are not mixed up as the pin numbers in the CCF connectors on the 1G and 2G vary with those on the 3G cables.

A2.2.1 “X” and “C” PAIR LAYOUTS

On the RIM CCF's the “X” pairs are terminated directly above the corresponding “C” pairs as in CMUX – refer to Table A2.1. In small exchanges the “X” and “C” pairs are terminated on separate MDF blocks, as currently performed in AM31.

To overcome any confusion -

1. All AM 35 terminating on Krone blocks will terminate the “X” pairs directly above the corresponding “C” pairs as in CMUX.
2. All AM 35 terminating on Siemens blocks will terminate the “X” and “C” pairs on separate MDF blocks as in the AM 31 and ASAM installations on either Conventional MDF or QMDF.

A2.2.2 “X” and “C” PAIR RIM CCF LAYOUTS

The following typical RIM CCF layouts in Figure 2.2 indicate AM35 ADSL “C” and “X” Pair appearances. These are intended as a guide for Telstra Customer Field Workforce and Contractor staff when jumpering ADSL services in RIM Housings. Some sites may vary from these layouts as Copper distribution pairs may be installed in the CCF in the locations these blocks would usually occupy. Use these layouts in conjunction with the RIM CCF Equipment Layout and Cabling Chart in Table A2.1.

Block layout counts Bottom to Top, Left to Right, as shown in the Example - Typical Block Layout below.

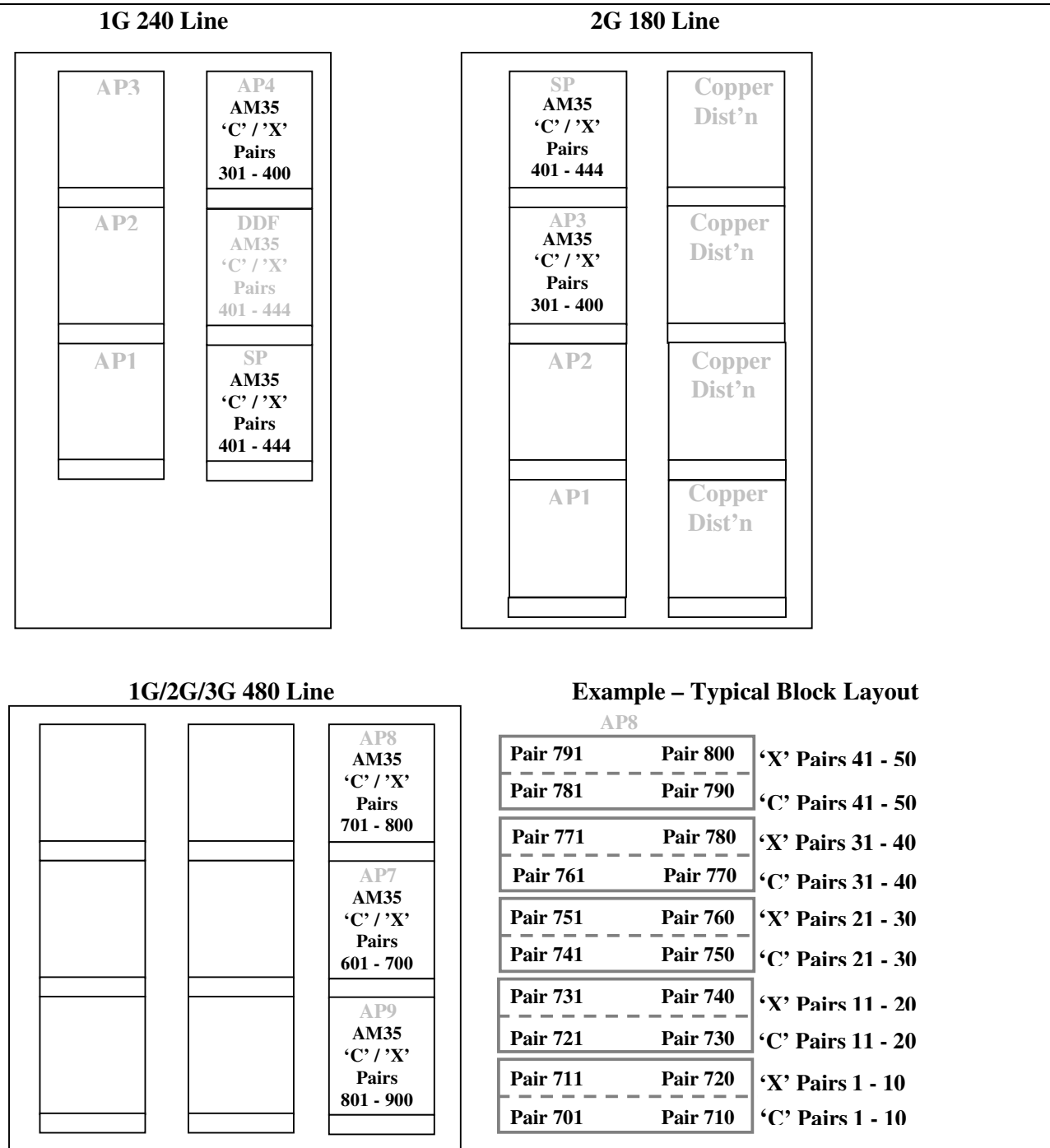


Figure A2.2 – RIM CCF Layout Label, Non-applicable CCF Layout

A2.3 AM 35 POWERING AND EARTHING ARRANGEMENTS

The AM 35 modules are supplied with dual “A” (PWR1) and “B” (PWR2) power feeds. The “A” feed shall only be used for all AM 35 installations, i.e. Single power feed from power source.

All AM 35 modules, including Filter modules, shall be connected to earth with the supplied earth cable.

A2.4 INSTALLATION INTO A RIM

The AM 35 is designed to be fitted into all versions of Telstra RIM's. AM 35 cannot be installed into a RIM if the RIM is fully populated to its capacity with Access Panels. The AM 35 will use power, transmission, thermal, DDF and CCF capacity ear-marked for the Access Panel it is installed in place of.

New DDF and CCF cables are supplied in kit form with the AM 35. DDF cables (Equipment In and Equipment Out) are supplied with 4 x 2 Mbit/s with a 2x3 way module connectors for direct connection into the Opto-mux. If a DDF exists within the RIM the 2x3 way module connectors are cut-off and disposed of and the cables are terminated onto the DDF. The cables' shields are not terminated at either end.

Optical sub-tending feeds to all AM 35 Base Modules is now the default. Sometimes the available spare fibre within the RIM has a DIN connector intact, an adaptor cord is available. For complete optical instructions refer to the Single Fibre Working Standard, 007332 – A086.

Although the AM 35 Base modules is capable of supporting 8 x E1 IMA circuits, the transport via the optomux will only free up a maximum of 4 x E1 IMA circuits.

Attach to all AM 35 RIM housings adjacent to the CCF the self-adhesive (peel back) CCF RIM Labelling Layout, as shown in Table A2.1, as supplied in Kit 1. NEC Part Number – 999-B00241-00. At installation of this label cross out the non-applicable CCF Layout with permanent ink, refer to Figure 2.3 below.

On this CCF label the PGS details must be indicated on the appropriate location – use permanent ink pen to transcribe.

Extract of Table A2.1
This label is attached to the internal RIM CCF door.
At installation cross out the non-applicable CCF layout, eg. 240 & 180 RIMs

Figure A2.3 – RIM CCF Layout Label, Non-applicable CCF Layout

For the 1G and 2G housings additional CCF 5 way Krone Connectorised Blocks may be required, refer to Serial/Item 903/00426.

The AM 35, 5 Alpha code is to be clearly labelled with weatherproof adhesive backed black lettering (75 point Helvetica medium font – 3M brand is recommended) fixed the external face of the RIM MEC door. The AM 35, 5 Alpha label shall be located 50mm below the existing RIM 4 Alpha label.

Although spare AP capacity may exist within the RIM housing, the planner must confirm the spare transmission capacity exists. This is dependant on the RIM configuration, eg, 180L 1G housing may only have 4 x E1, a fully non-integrated 480L RIM may have less than 8 x E1.

Refer to TM 00062 for particular RIM Installation Standards.

For all generations of 480 line RIMs the CCF AP9 (nominally Vacant) is to be altered and labelled as shown Figure A2.4 below.

RIM 480 CCF Label

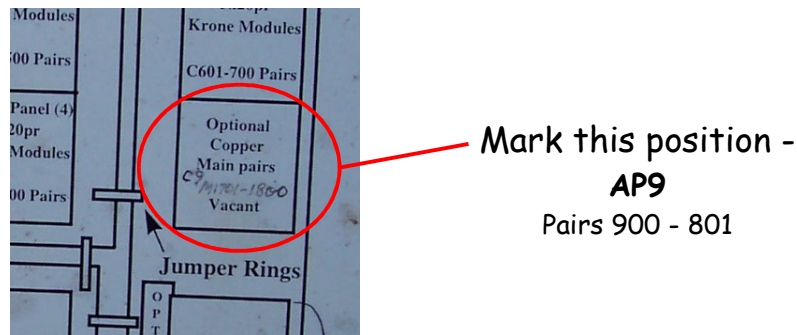


Figure A2.4 – 480 Line RIM CCF Label

A2.4.1 RIM INSTALLATION INTERNAL

RIMs internally installed within buildings (Telstra exchange and CPE), as distinct from roadside cabinets, shall use the AM 35 exchange sub-rack cradle, refer to Section A2.5 of this Attachment. In this case there will not be any RIM design restrictions or limitations for AM 35 use.

If the RIM is fully utilised:

- If non-integrated, separate transmission circuits will have to be used to support the AM 35 sub-tended link.
- If integrated, transmission circuits will be available within the RIM optomux to be used for the AM 35 sub-tended link.

If AM 35 infrastructure space is not available with the RIM, additional racking and power maybe required to support the AM 35. Physical alarms, external to RIM, will have to be managed, eg. Circuit Breakers. These alarms can be managed through the installation of a TESAMS sub-rack (with BIU, BIU 2W Modem, 16 channel I/O card) and using a Non Integrated RIM channel set up as 2 wire leased line to the local exchange and into AMS. Alternatively, the 34 Mbit/s Optomux Data Service Channel may be set up to carry TESAMS.

Depending upon the battery and rectifier rating, the AM35 rack may be powered from the RIM power equipment, to be determined from site survey.

A2.4.2 RIM HOUSING – 1G 240

Refer to NEC AM 35 Installation Guide for installation instructions pertaining to the cabling and cables, CCF, DDF, mounting of AM 35 modules, powering and specific labelling requirements. Refer to main document for all other labelling specifics.

Ensure Ferrite cores are installed with the cabling as described in the NEC document.

Refer to Table A2.1 for the CCF equipment layout and cabling details. A version of this table is part of the RIM installation Kit and is to be installed adjoining the CCF.

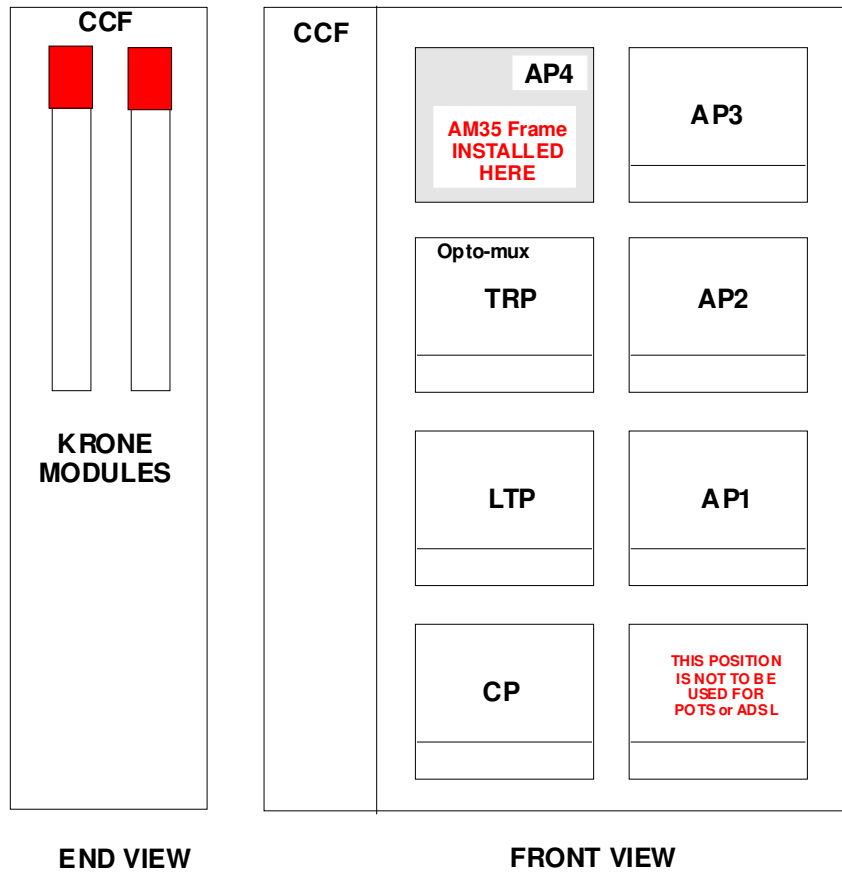


Figure A2.5 – Location of AM 35 in a RIM Housing - 1G 240

A2.4.3 RIM HOUSING – 1G 480

Refer to NEC AM 35 Installation Guide for installation instructions pertaining to the cabling and cables, CCF, DDF, mounting of AM 35 modules, powering and specific labelling requirements. Refer to main document for all other labelling specifics.

Ensure Ferrite cores are installed with the cabling as described in the NEC document.

Refer to Table A2.1 for the CCF equipment layout and cabling details. A version of this table is part of the RIM installation Kit and is to be installed adjoining the CCF. Refer to Figure A2.4. Refer to Figure A2.7 for storage of the excess CCF cables.

In this RIM housing there are two different releases, 6.1 and 8.2. This will impact the connection of the 2 Mbit/s cabling. Release 6.1 does not have a DDF, while release 8.2 does.

Attach a “Do Not Use This Access Panel Location” label provided in the AM 35 RIM Kit onto the rear of the vacant AP8 – refer to Figure A2.6. NEC Part Number – 999-B00242-00.

If AP9 (CCF block) is required for the AM 35 installation and is currently used by Main DA Pairs, outages will be necessary to re-arrange this termination block to suit. Main DA

Pairs are to be re-arranged to use the vacant (unused) AP9 pairs, i.e. not used by the AM 35 – refer to Table A2.1.

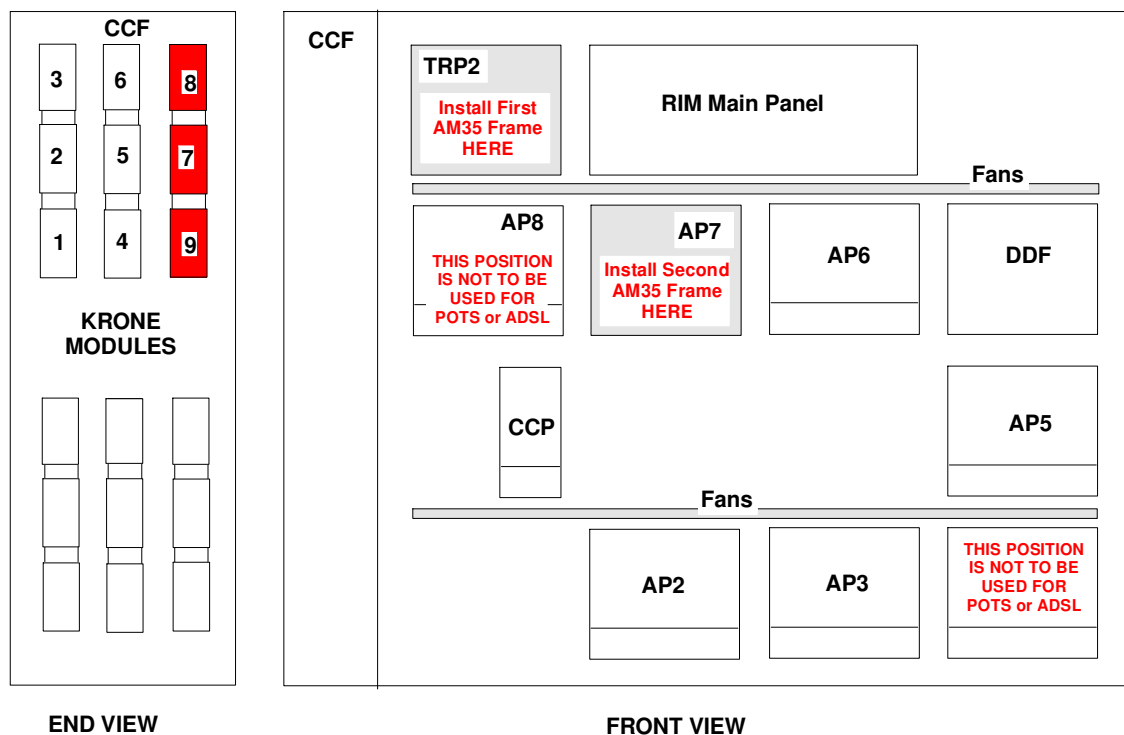


Figure A2.6 – Location of AM 35 in a RIM Housing - 1G 480

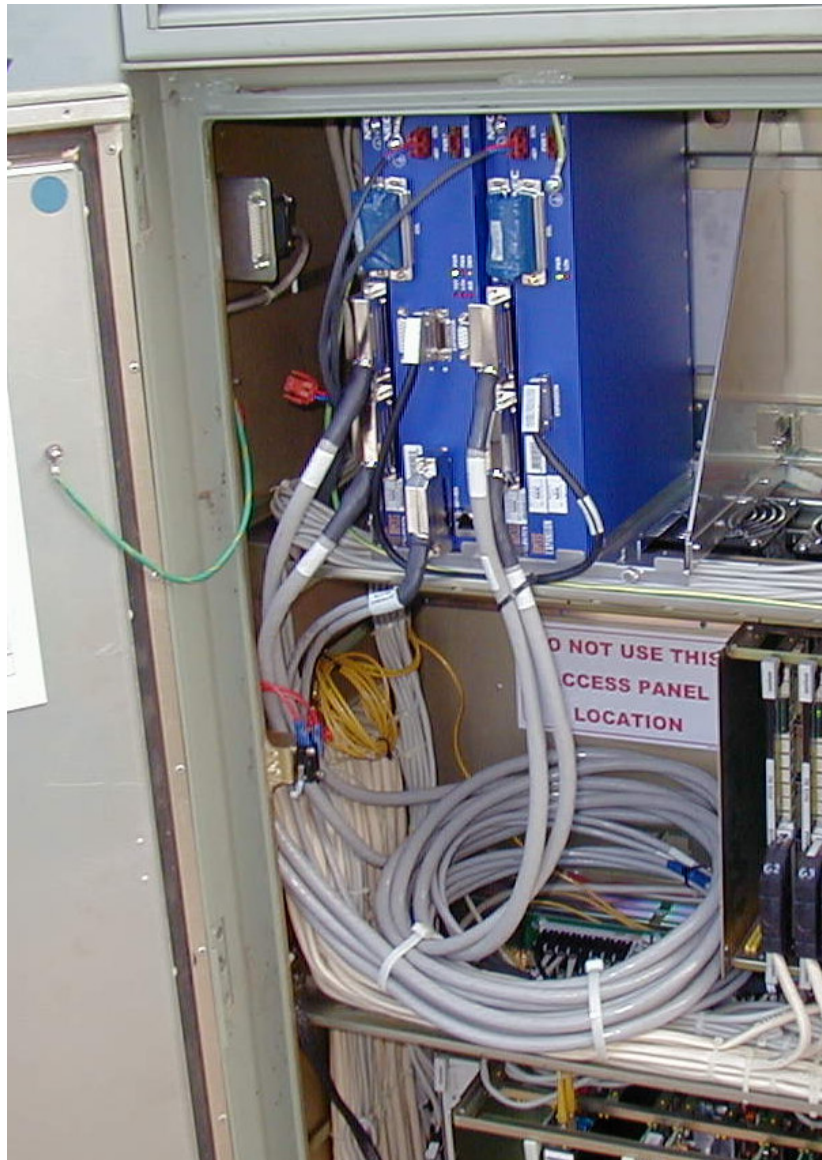


Figure A2.7 – Excess CCF/AM 35 Cables Storage in a RIM Housing - 1G 480

A2.4.4 RIM HOUSING – 2G 180

Refer to NEC AM 35 Installation Guide for installation instructions pertaining to the cabling and cables, CCF, DDF, mounting of AM 35 modules, powering and specific labelling requirements. Refer to main document for all other labelling specifics.

Ensure Ferrite cores are installed with the cabling as described in the NEC document.

Refer to Table A2.1 for the CCF equipment layout and cabling details. A version of this table is part of the RIM installation Kit and is to be installed adjoining the CCF.

In the 2G 180 RIM the AM 35 Mounting Frame (Serial/Item 901/56) must be mounted on an Alcatel recess rack adaptor plate. If this is not used the AM 35 cables and connectors will foul on the RIM door.

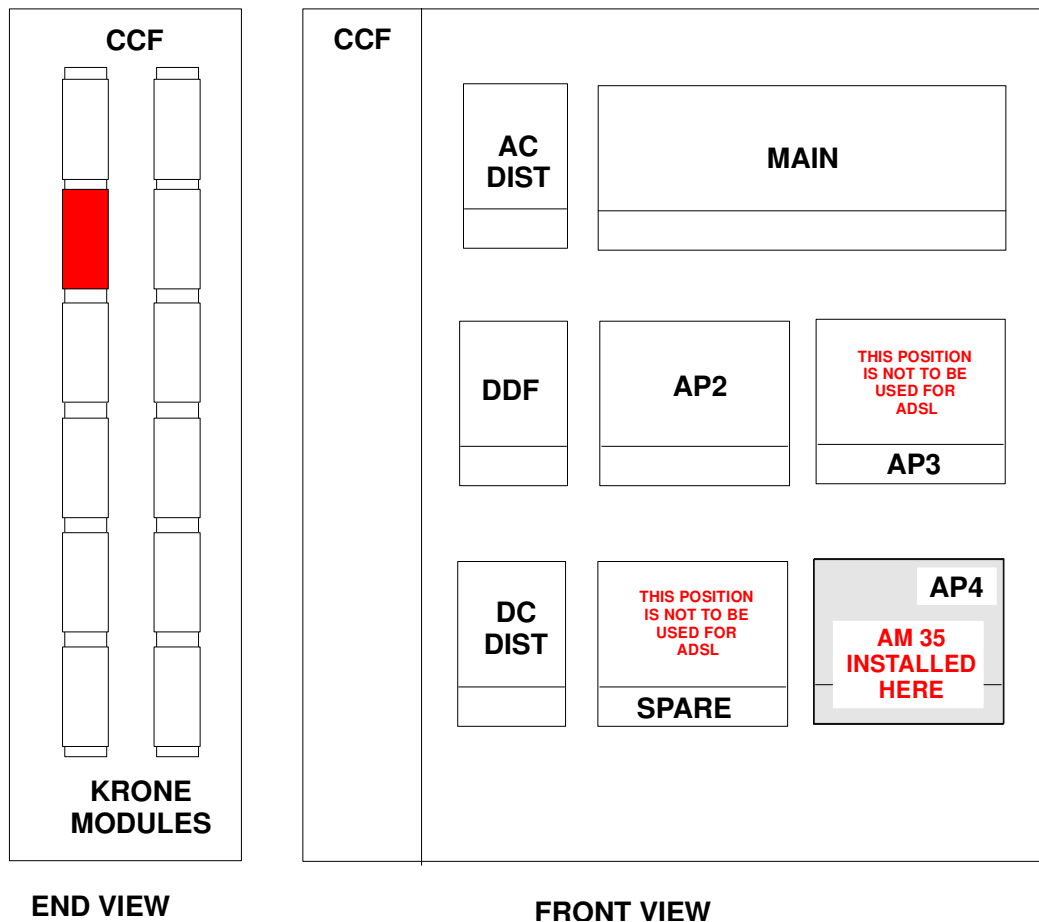


Figure A2.87 – Location of AM 35 in a RIM Housing - 2G 180

A2.4.5 RIM HOUSING – 2G 480

Refer to NEC AM 35 Installation Guide for installation instructions pertaining to the cabling and cables, CCF, DDF, mounting of AM 35 modules, powering and specific labelling requirements. Refer to main document for all other labelling specifics.

Ensure Ferrite cores are installed with the cabling as described in the NEC document.

Refer to Table A2.1 for the CCF equipment layout and cabling details. A version of this table is part of the RIM installation Kit and is to be installed adjoining the CCF. Refer to Figure A2.4.

Attach a “Do Not Use This Access Panel Location” label provided in the AM 35 RIM Kit onto the rear of the vacant AP8 – refer to Figure A2.9. NEC Part Number – 999-B00242-00.

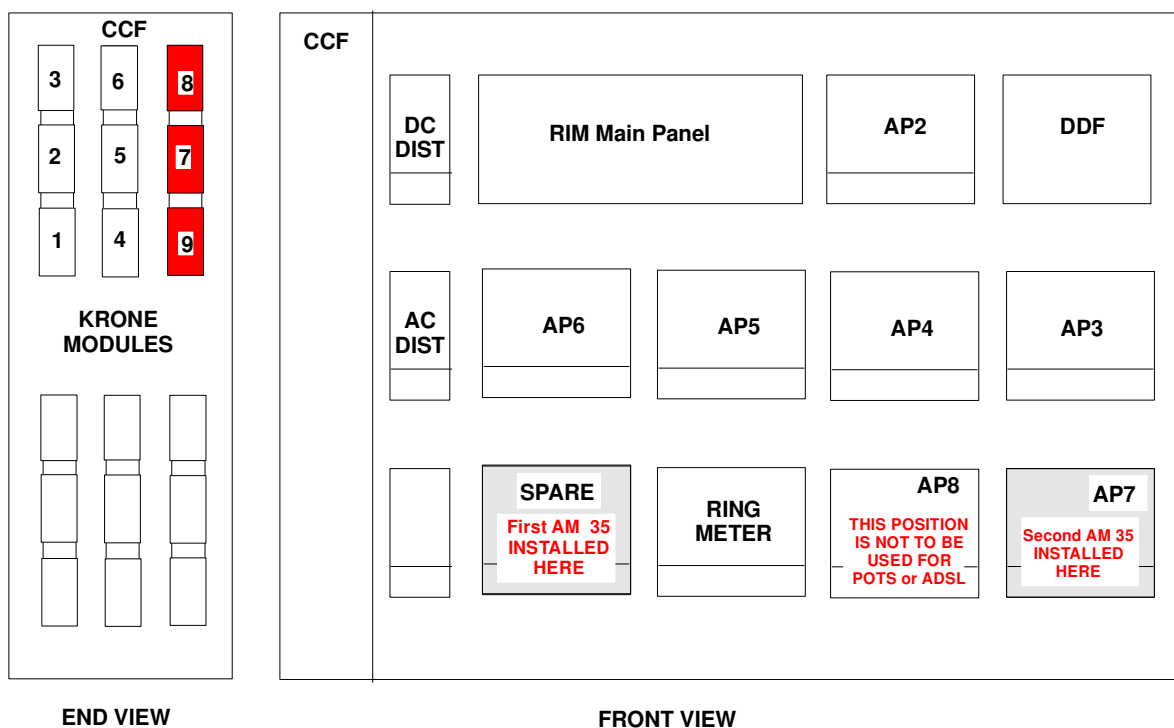


Figure A2.9 – Location of AM 35 in a RIM Housing - 2G 480

2G 480 Fan Setting:

The 2G housing is fitted has a fan controller with two settings. The 480H setting provides a fixed low feed voltage for the fans while the 240H setting provides a variable fan voltage adjusted based on the housing internal temperature. Under high temperature conditions, the 240H setting provides a higher fan speed and better cooling than the 480H setting. Refer to TAN64 (Technical Advice Note) for setting the fan to the 240 H mode when installing the AM 35.

A2.4.6 RIM HOUSING – 3G 480

Refer to NEC AM 35 Installation Guide for installation instructions pertaining to the cabling and cables, CCF, DDF, mounting of AM 35 modules, powering and specific labelling requirements. Refer to main document for all other labelling specifics.

Ensure Ferrite cores are installed with the cabling as described in the NEC document.

Refer to Table A2.1 for the CCF equipment layout and cabling details. A version of this table is part of the RIM installation Kit and is to be attached to door panel adjoining the CCF. Refer to Figure A2.4.

The equipment termination blocks must be replaced for the ADSL connections in the 3G 480 CCF. The current terminal blocks supplied in the RIM have filter capacitors on the board. These capacitors are unsuitable for ADSL frequencies. Use Serial/Item 903/00425 for the replacement.

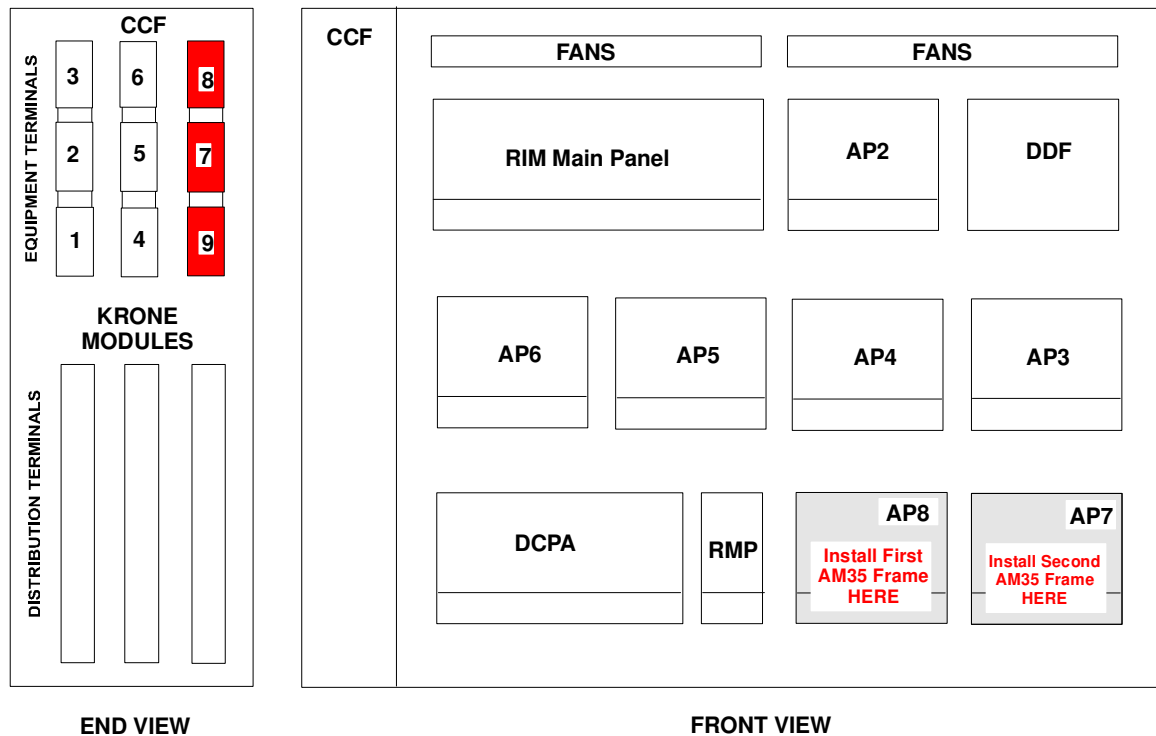


Figure A2.10 – Location of AM 35 in a RIM Housing - 3G 480

3G 480 Fan Setting:

The 3G housing is fitted has a fan controller with two settings. The 480H setting provides a fixed low feed voltage for the fans while the 240H setting provides a variable fan voltage adjusted based on the housing internal temperature. Under high temperature conditions, the 240H setting provides a higher fan speed and better cooling than the 480H setting. Refer to TAN64 (Technical Advice Note) for setting the fan to the 240 H mode when installing the AM 35.

A2.5 INSTALLATION INTO A SMALL TELEPHONE EXCHANGE

The AM 35 is designed to be fitted into both Type 84 and Type 92 racks (front and rear mounts) currently existing within the exchange – if space is available. The AM 35 will consist of up to 160 ports in 32 ports steps - 1 x Base Module and 4 Expansion Modules with supporting filter units.

The physical height within the rack for a full complete sub-rack is approximately 445mm (10RU). Refer to Figure A2.12 for the installation configuration of the AM 35 sub-rack.

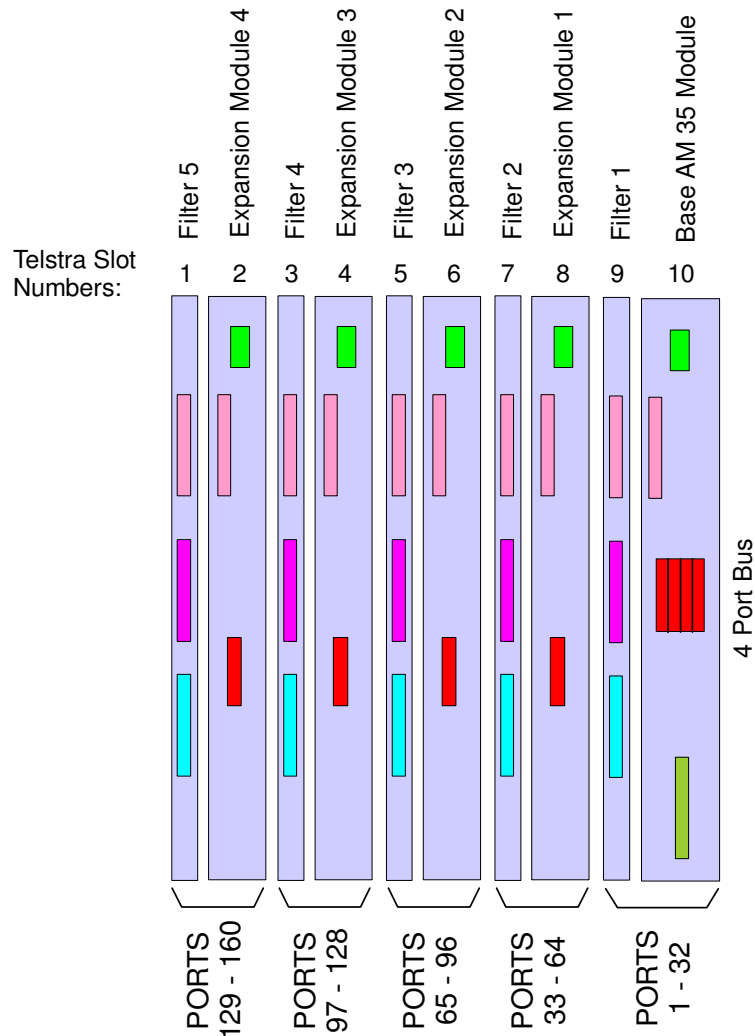


Figure A2.11 –AM 35 as Fitted into an Exchange Sub-Rack

Each module group (Base and Filters modules or Expansion and Filter modules) shall be installed from Right to Left into the AM 35 Sub-Rack on an as need basis starting with the Base module. Cabling (bus, power and MDF) will also be installed on an as need basis with the particular module group.

DDF cables are installed with the Base module. Exchange AM 35 installation will cable the full 8 x E1 IMA circuits to the DDF appearance. If optically sub-tended, cable to the OFDF, refer to the SFW document 007332 - A086.

The AM 35 has its own labelling kit for Corning (Siemens) S5000 MDF blocks when installed onto a Telstra exchange MDF – Serial/Item, 29/00573.

If the AM 35 is to be fitted into a new rack, the equipment mounting rails within this rack shall be set at the rear for 19 inch rear mount (Type 84). A standard Telstra APDP shall also be used. Do not use the NEC High Powered APDP. Refer to TM 00046-A01 for details of a standard Telstra APDP.

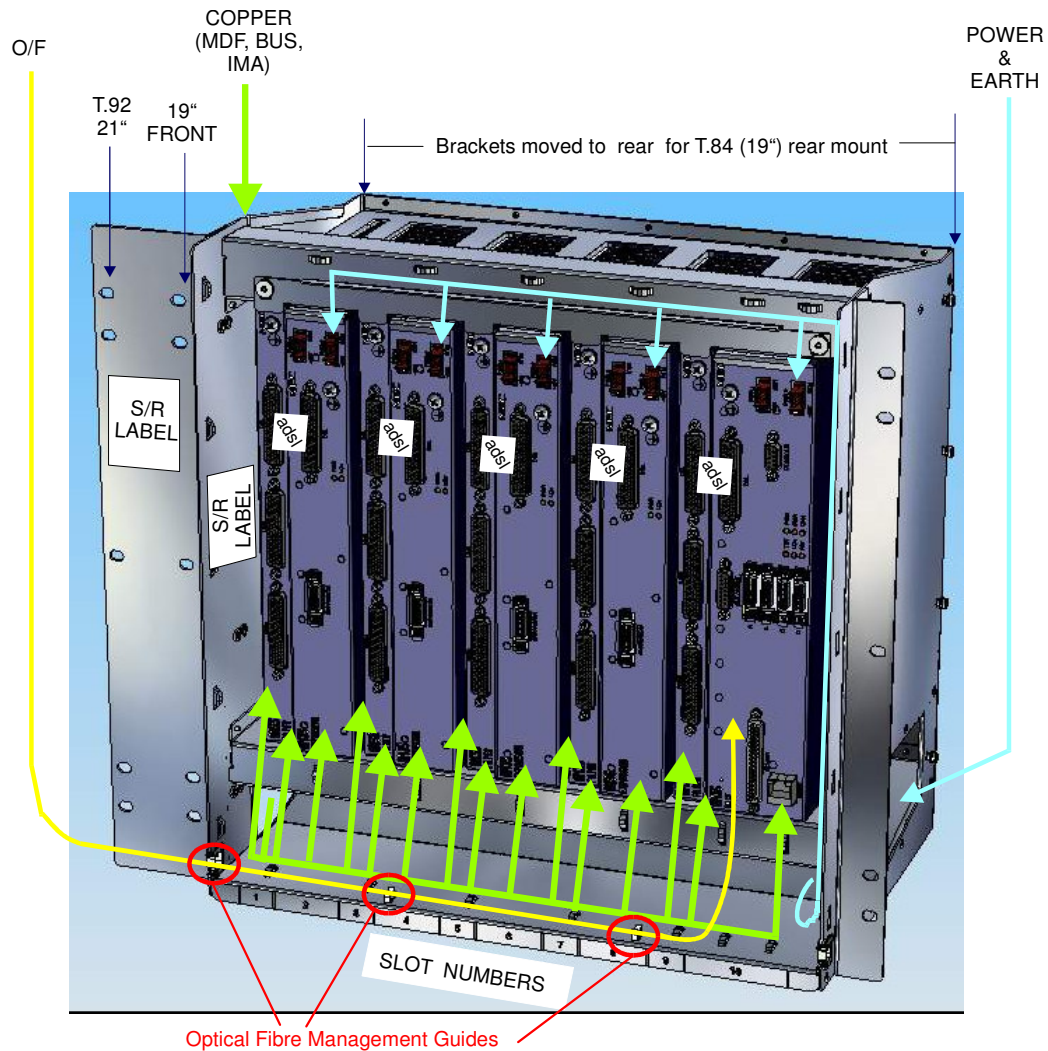


Figure A2.12 –AM 35 Exchange Sub-Rack Installation Configuration

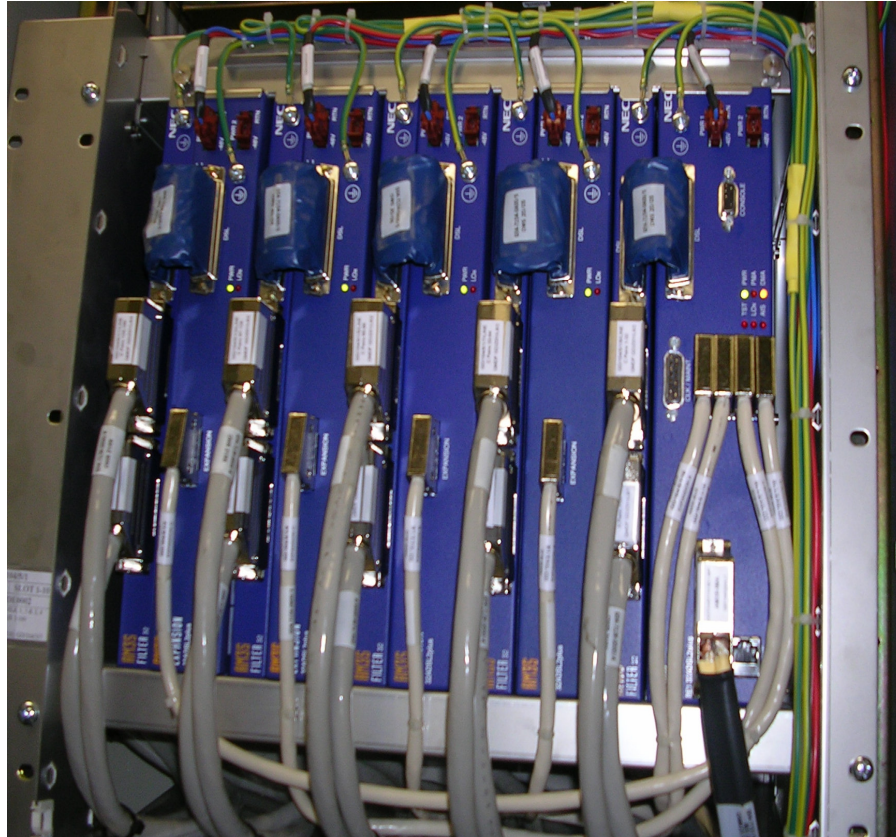


Figure A2.13 –AM 35 Exchange Sub-Rack Installation

Base Module Kit (Items to be ordered individually as shown below):

AM 35 Exchange Base Module Kit 1 consists of -

Sub-rack for both Type 84 & 92 mounting, 3 x Earth cable for all modules (with 4 tails),
Base to Filter cable and Power cable.

Individual Serial / Items -

- 907/00082 MOUNTING FRAME, AM 35 RACK IN TYPE 84 & 92
- 907/00083 CABLE, AM 35 EXCHANGE POWER CABLE, 4M
- 907/00084 CABLE, AM 35 BASE/EXP TO FILTER 78-78 PIN
- 907/00091 CABLE, 3 x EARTH LEAD WITH 4 TAILS (**NOTE:** 1 to 3 of these items maybe required).

Expansion Module Kit (Items to be ordered individually as shown below):

AM 35 Exchange Expansion Module Kit 2 consists of -

Power cable, Expansion to Filter cable and Bus cable.

Individual Serial / Items -

- 907/00083 CABLE, AM 35 EXCHANGE POWER CABLE, 4M
- 907/00084 CABLE, AM 35 BASE/EXP TO FILTER 78-78 PIN
- 907/00090 CABLE, BUS EXPANSION SIDE ENTRY 0.6M

MDF Cable requirements -

Order 2 x MDF cables of "x" length for each AM 35 Filter module.

- 907/00085 CABLE, ADSL TO MDF 32PR 15M
- 907/00086 CABLE, ADSL TO MDF 32PR 25M
- 907/00087 CABLE, ADSL TO MDF 32PR 50M

DDF Cable requirements -

Order 1 x DDF cable of "x" length (8 x E1 IMA) for each AM 35 Base module.

- 907/00088 CABLE, IGU BASE TO DDF 2X8 PAIR IMA 15M
- 907/00089 CABLE, IGU BASE TO DDF 2X8 PAIR IMA 35M

Cable Installations:

- **Power Cable installation** - Down RHS of rack, enters sub-rack from bottom through cable cut-out, cable tied to inside RHS flange, cable tied to top of sub-rack & then fed down to each module (individual cables to each module, Filter modules do not require power). On module, use power feed socket "A" (PWR1) only.

- **Earth Cable** – up to three cable sets will be required for a complete installation. The first cable is installed with Base module (provides earth for Base & Filter and Expansion 1 & Filter). These cables are for all modules with individual fly-leads attached to each module, including Filter modules. Terminate cable on Earth points as indicated on all modules. The AM 35 sub-rack frame earth shall be connected to the rack earth tree.
- **MDF Cable installation** - Down LHS of rack, enters sub-rack from bottom through cable cut-out, require individual cables for each module (installed when module is installed).
- **DDF Cable installation** – Installed with base installation, down LHS of rack, enters sub-rack from bottom through cable cut-out to base module.
- **Bus Cable installation** – From Base module to individual Expansion modules, down from Base through bottom of sub-rack and up to individual Expansion. Use cable area at the bottom of sub-rack to store excess cable.
- **Optical Fibre installation** – Refer to Sections 4.1, 4.2, Figure A2.12 and the Single Fibre Working Standard, 007332 – A086.

Sub-Rack Labeling:

Labelling is attached to the LHS, top, front or inside of the sub-rack flange – refer to Figure A2.12. Refer to main document, Section 4.1.1 and 4.10.2, for required details.

All other labelling issues are to be referred to the main document, refer Section 4.10.

AM 35 Exchange Powering Requirements:

The AM 35 sub-rack can be supported by current Type 84 and 92 APDP circuit breakers (4 Amp) – one feed per module. Two AM 35 sub-racks will use 10 APDP circuit breakers.

Typical power consumption for a Base module = 52.5 watts

Typical power consumption for an Expansion module = 42.5 watts

Typical power consumption for total AM 35 sub-rack (1 x Base, 4 x Expansions) = 222 watts.

The maximum AM 35 sub-racks at a site is two – refer to AM 3x deployment rules (if greater than two AM 35 sub-racks are required a subtended AM 31 is installed).

The typical current in a single rack of 2 x AM 35 sub-racks = 9.4 Amps. If rack APDP is fed by HOD source, the maximum total rack current is 10 Amps. Under these circumstances, Designer must take into account other power use within the rack when a second AM 35 sub-rack is to be installed.

A2.6 AM 35 COMMISSIONING

Refer to the main document for network, power, optical & copper transmission paths, MDF and ADSL commissioning requirements for all AM 35 (RIM & Exchange). Standard commissioning of the 2 Mbit/s ITU-T G.703 and G.704 circuits from the AM 35 to the RIM Opto-mux and then to the DSLAM Hub are to be performed.

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PGS ID:

	1-32	Base	33-64[E1]	Exp-1	65-96[E2]	Exp-2	97-128[E3]	Exp-3																		
“C” – “X” pairs	KRONE CONNECTOR FIELD (CCF)										480 RIM (CCF)	240 RIM (CCF)	180 RIM (CCF)													
											(20 or 10 pair modules)	(20 or 10 pair modules)	(10 pair modules)													
X41-X50	41 _[E1/9]	42 _[E1/10]	43 _[E1/11]	44 _[E1/12]	45 _[E1/13]	46 _[E1/14]	47 _[E1/15]	48 _[E1/16]	49 _[E1/17]	50 _[E1/18]	791-800	AP8	391-400	AP4	291-300	AP3										
C41-C50											781-790		381-390		281-290											
X31-X40											31		32		33 _[E1/1]		34 _[E1/2]	35 _[E1/3]	36 _[E1/4]	37 _[E1/5]	38 _[E1/6]	39 _[E1/7]	40 _[E1/8]	771-780	371-380	271-280
C31-C40																								761-770	361-370	261-270
X21-X30	21	22	23	24	25	26	27	28	29	30	751-760		351-360		251-260											
C21-C30											741-750		341-350		241-250											
X11-X20	11	12	13	14	15	16	17	18	19	20	731-740		331-340		231-240											
C11-C20											721-730		321-330		221-230											
X1-X10	1	2	3	4	5	6	7	8	9	10	711-720		311-320		211-220											
C1-C10											701-710		301-310		201-210											
X105-X114	105 _[E3/9]	106 _[E3/10]	107 _[E3/11]	108 _[E3/12]	109 _[E3/13]	110 _[E3/14]	111 _[E3/15]	112 _[E3/16]	113 _[E3/17]	114 _[E3/18]	691-700	AP7														
C105-C114											681-690															
X95-X104	95 _[E2/31]	96 _[E2/32]	97 _[E3/1]	98 _[E3/2]	99 _[E3/3]	100 _[E3/4]	101 _[E3/5]	102 _[E3/6]	103 _[E3/7]	104 _[E3/8]	671-680															
C95-C104											661-670															
X85-X94	85 _[E2/21]	86 _[E2/22]	87 _[E2/23]	88 _[E2/24]	89 _[E2/25]	90 _[E2/26]	91 _[E2/27]	92 _[E2/28]	93 _[E2/29]	94 _[E2/30]	651-660															
C85-C94											641-650															
X75-X84	75 _[E2/11]	76 _[E2/12]	77 _[E2/13]	78 _[E2/14]	79 _[E2/15]	80 _[E2/16]	81 _[E2/17]	82 _[E2/18]	83 _[E2/19]	84 _[E2/20]	631-640															
C75-C84											621-630															
X65-X74	65 _[E2/1]	66 _[E2/2]	67 _[E2/3]	68 _[E2/4]	69 _[E2/5]	70 _[E2/6]	71 _[E2/7]	72 _[E2/8]	73 _[E2/9]	74 _[E2/10]	611-620															
C65-C74											601-610															
UNUSED											891-900	AP9 (Spare)		AP6 (under DDF)		AP4										
UNUSED											881-890															
X125-X128	125 _[E3/29]	126 _[E3/30]	127 _[E3/31]	128 _[E3/32]							871-880															
C125-C128											861-870															
X115-X124	115 _[E3/19]	116 _[E3/20]	117 _[E3/21]	118 _[E3/22]	119 _[E3/23]	120 _[E3/24]	121 _[E3/25]	122 _[E3/26]	123 _[E3/27]	124 _[E3/28]	851-860															
C115-C124											841-850															
X61-X64	61 _[E1/29]	62 _[E1/30]	63 _[E1/31]	64 _[E1/32]							831-840		431-444		331-344											
C61-C64											821-830		421-424		321-324											
X51-X60	51 _[E1/19]	52 _[E1/20]	53 _[E1/21]	54 _[E1/22]	55 _[E1/23]	56 _[E1/24]	57 _[E1/25]	58 _[E1/26]	59 _[E1/27]	60 _[E1/28]	811-820		411-420		311-320											
C51-C60											801-810		401-410		301-310											

Table A2.1 - RIM CCF Equipment Layout and Cabling Chart

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TELSTRA IN CONFIDENCE

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A3.0 ATTACHMENT 3

A3.1 LL-ADSL SPECIFIC INSTALLATION & COMMISSIONING GUIDELINES

A3.1.1 SCOPE

This document only covers the Telstra specific requirements for the installation of the LL-ADSL.

This Attachment will only contain specific LL-ADSL requirements, refer to the main document for non-specific LL-ADSL details. For the Alcatel CMUX requirements, refer to the Alcatel CMUX ECIC site for access to CMUX Technical Handbooks, Installation and Commissioning documents.

A3.1.2 INTRODUCTION

The LL-ADSL Equipment is defined in NEC AM Series Functional Specification for the Telstra Release 3, document number 0095-00083 Issue 2, Dated 7 September 2005.

The LL-ADSL Network Element comprises of three units, the C8sl Exchange Unit and the R8as Remote Unit and the Reg-2s Regenerator Unit.

The LL-ADSL components are manufactured by Extel using similar principles as their RAM 8 products. As such, the Installation and Commissioning principles for LL-ADSL are closely aligned. Much of the Installation and Commissioning requirements will refer to the Small Pair Gain Provisioning document set 001 058, as used for the RAM 8 product.

The LL-ADSL wherever installed will be subtended off a Hub DSLAM. The C8sl Exchange Unit can be subtended from either an NEC AM31 using an LTU-8E1-IMA card or an Alcatel CMUX using a PAIC card.

The LL-ADSL will be installed in exchanges and Telstra Access Housings.

One LL-ADSL system supports 1 x C8sl Exchange unit which in turn supports up to four R8as units. Each R8as unit supports up to 8 ADSL ports.

A simple Network Diagram is shown below in Figure A3.1.

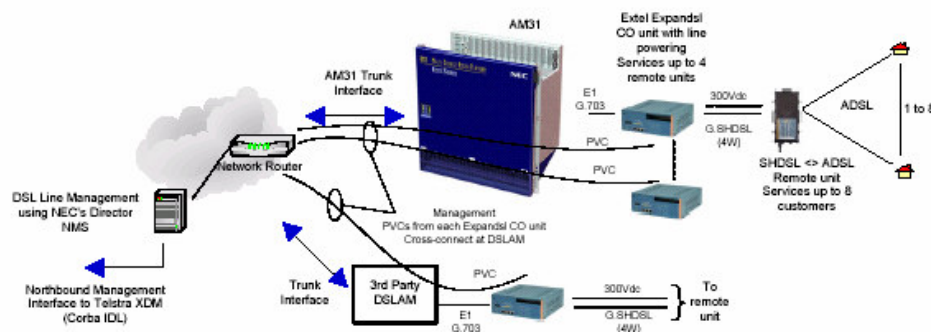


Figure A3.1 – LL Network Diagram

A3.1.3 HEALTH & SAFETY



Power feeds are to be disabled while working on CAN Electronic Systems and associated wiring.

The tags of Power Feed circuits shall have suitable insulators to prevent physical contact by personnel.

Refer to Small Pair Gain Provisioning Work Instruction 001058W18 Section 4 for details of suitable insulators.

A3.2 LL-ADSL INSTALLATION & COMMISSIONING

A3.2.1 Sub-Rack Mounting for C8sl Exchange Unit

The C8sl Exchange Units are fitted into a single rack mounted tray for installation into either 19, 21 or 23 inch Racks. Refer to the Extel expandsl C8sl/R8as/REG-2s DSLAM Installation & Maintenance Manual, Document Part No. ZSMAEEC8SI Section 7, titled Installation of Expandsl, "Install a C8sl unit" for detailed instructions.

A3.2.2 Exchange Unit Power Requirements

The worst-case C8sl power demand occurs when the C8sl is driving 4 x R8as with two REG-2s on each link to the R8as and all 8 ports on the four R8as units active. In this case, the C8sl would see 55mA@280VDC on each of the 8 pairs leaving the C8sl.

The current consumed by the C8sl in this worst-case scenario has been measured at 3.25A at 48V (i.e.: a constant power load of 156W).

As such, the following guidelines applies :-

- The minimum rating of the APDP circuit breaker used to power each C8sl unit shall be 4A.
- Where 6A circuit breakers are available, they should be used in lieu of a 4A circuit breaker feed.
- If the rack accommodating the LL-ADSL equipment is powered from a HOD source, the maximum permitted rack load under any circumstances is 10A.

Refer to Power & Environment Design Criteria for NEC-DSLAM Deployment Rules 007 338 C13-7 for full details.

A3.2.3 Exchange Unit Cabling

Exchange Unit Cabling consists of Power & Alarm Cabling, C8sl to DDF Cabling (to the HUB DSLAM) and MDF Cabling (for the SHDSL Links).

C8sl to DDF Cabling

This consists of provision of a pre-terminated cable from the C8sl unit to the DDF. This cable has been manufactured to cater for two C8sl units installed on the rack mount tray.

MDF Cabling (for the SHDSL Links)

As only 8 pairs in the cable are used, only these pairs should be terminated on the MDF block. This would allow 16 C8sl's to be terminated on a single EXCHANGE SIDE MDF block or in small sites allow the C8sl to share an MDF block.

C8sl MDF Block – Typical Layout

SHDSL 1	SHDSL 2	SHDSL 3	SHDSL 4	SHDSL 5	SHDSL 6	SHDSL 7	SHDSL 8	GD/105/H/1/1 QWDNDE???
SHDSL 1	SHDSL 2	SHDSL 3	SHDSL 4	SHDSL 5	SHDSL 6	SHDSL 7	SHDSL 8	GD/105/H/1/1 QWDNDE???
SHDSL 1	SHDSL 2	SHDSL 3	SHDSL 4	SHDSL 5	SHDSL 6	SHDSL 7	SHDSL 8	GD/105/H/1/1 QWDNDE???
SHDSL 1	SHDSL 2	SHDSL 3	SHDSL 4	SHDSL 5	SHDSL 6	SHDSL 7	SHDSL 8	GD/105/H/1/1 QWDNDE???
SHDSL 1	SHDSL 2	SHDSL 3	SHDSL 4	SHDSL 5	SHDSL 6	SHDSL 7	SHDSL 8	GD/105/H/1/1 QWDNDE???
SHDSL 1	SHDSL 2	SHDSL 3	SHDSL 4	SHDSL 5	SHDSL 6	SHDSL 7	SHDSL 8	GD/105/H/1/1 QWDNDE???
SHDSL 1	SHDSL 2	SHDSL 3	SHDSL 4	SHDSL 5	SHDSL 6	SHDSL 7	SHDSL 8	GD/105/H/1/1 QWDNDE???
SHDSL 1	SHDSL 2	SHDSL 3	SHDSL 4	SHDSL 5	SHDSL 6	SHDSL 7	SHDSL 8	GD/105/H/1/1 QWDNDE???
SHDSL 1	SHDSL 2	SHDSL 3	SHDSL 4	SHDSL 5	SHDSL 6	SHDSL 7	SHDSL 8	GD/105/H/1/1 QWDNDE???
SHDSL 1	SHDSL 2	SHDSL 3	SHDSL 4	SHDSL 5	SHDSL 6	SHDSL 7	SHDSL 8	GD/105/H/1/1 QWDNDE???
SHDSL 1	SHDSL 2	SHDSL 3	SHDSL 4	SHDSL 5	SHDSL 6	SHDSL 7	SHDSL 8	GD/105/H/1/1 QWDNDE???
SHDSL 1	SHDSL 2	SHDSL 3	SHDSL 4	SHDSL 5	SHDSL 6	SHDSL 7	SHDSL 8	GD/105/H/1/1 QWDNDE???
SHDSL 1	SHDSL 2	SHDSL 3	SHDSL 4	SHDSL 5	SHDSL 6	SHDSL 7	SHDSL 8	GD/105/H/1/1 QWDNDE???
SHDSL 1	SHDSL 2	SHDSL 3	SHDSL 4	SHDSL 5	SHDSL 6	SHDSL 7	SHDSL 8	GD/105/H/1/1 QWDNDE???
SHDSL 1	SHDSL 2	SHDSL 3	SHDSL 4	SHDSL 5	SHDSL 6	SHDSL 7	SHDSL 8	GD/105/H/1/1 QWDNDE???
SHDSL 1	SHDSL 2	SHDSL 3	SHDSL 4	SHDSL 5	SHDSL 6	SHDSL 7	SHDSL 8	GD/105/H/1/1 QWDNDE201

C 8sl Block 1	S/R: GD/105/H/1 From E201 to E???	MDF: 01 Zone: 03	Lv: 1 Bk: 6
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Refer to the following document for detailed installation instructions:-

- Xtel expandsl C8sl/R8as/REG-2s DSLAM Installation & Maintenance Manual, Document Part No. ZSMAEEEC8SI Section 7, titled Installation of Expandsl, “Wire the C8sl cables”.

A3.2.4 Alarm Facilities

Refer to Section 4.11 of the main part of this document for information about the required alarm facilities for this type of installation.

A3.2.4 Over-Voltage Protection

Refer to Small Pair Gain Provisioning Work Instruction 001058W18 Section 6 for details of Over-Voltage Protection requirements.

A3.2.5 Cable Pair Performance Testing

The quality of service provided to customers by Long line ADSL is critically dependent on the condition of the bearer pair/s. It is therefore, most important that the testing of the bearer pairs, as specified in this, is completed satisfactorily and meets the manufacturer's and Telstra's requirements.

All link pairs for Long line ADSL systems shall be tested using the tests detailed in Section 3 of 016472 and recorded on AO 016472F01 Acceptance Testing for Bearer Pairs.

A3.2.6 Mounting R8as Remote Unit

Remote Units should only be located in a CAN pit, unless there are sound commercial reasons for placing the RU within the customers property.

Refer to the following documents for detailed installation instructions:-

- Extel expandsl C8sl/R8as/REG-2s DSLAM Installation & Maintenance Manual, Document Part No. ZSMAEEC8SI Section 7, titled Installation of Expandsl, "Connect an R8as remote DSLAM".
- Small Pair Gain Provisioning Work Instruction 001058W18 Section 8.2.
- NEC Long Line ADSL Field Installation Practices Work Instruction 016472.

A3.2.7 R8as Remote Unit Cabling

The Remote Unit cabling consists of terminating the R8as cable tail to the appropriate pairs in the joint/pillar as defined in the project brief.

Refer to the following documents for detailed installation instructions:-

- Extel expandsl C8sl/R8as/REG-2s DSLAM Installation & Maintenance Manual, Document Part No. ZSMAEEC8SI Section 7, titled Installation of Expandsl, "Connect an R8as remote DSLAM".
- Small Pair Gain Provisioning Work Instruction 001058W18 Section 8.3.
- NEC Long Line ADSL Field Installation Practices Work Instruction 016472.

A3.2.8 Mounting REG-2s Unit

REG-2s Units should only be located in a CAN pit.

Refer to the following documents for detailed installation instructions:-

- Extel expandsl C8sl/R8as/REG-2s DSLAM Installation & Maintenance Manual, Document Part No. ZSMAEEEC8SI Section 7, titled Installation of Expandsl, “Connect a REG-2s Regenerator”.
- Small Pair Gain Provisioning Work Instruction 001058W18 Section 8.2.
- NEC Long Line ADSL Field Installation Practices Work Instruction 016472.

A3.2.9 REG-2s Cabling

The Remote Unit cabling consists of terminating the REG-2s cable tail to the appropriate pairs in the joint/pillar/cross-connect point as defined in the project brief.

Refer to the following documents for detailed installation instructions:-

- Extel expandsl C8sl/R8as/REG-2s DSLAM Installation & Maintenance Manual, Document Part No. ZSMAEEEC8SI Section 7, titled Installation of Expandsl, “Connect an REG-2s Regenerator”.
- Small Pair Gain Provisioning Work Instruction 001058W18 Section 8.3.
- NEC Long Line ADSL Field Installation Practices Work Instruction 016472.

A3.2.10 Labelling

Refer to the following documents for detailed labelling requirements:-

- Section 4.10 of the main part of this document.
- Small Pair Gain Provisioning Work Instruction 001058W18 Section 8.3.6
- NEC Long Line ADSL Field Installation Practices Work Instruction 016472

Below are examples of the labels to be used.

C8sl DDF Cable – C8sl END:

GD/105/H/1/1 ATM PORT	LIS (F/S/R/S/I) ATM PORT
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C8sl Subrack label (Position at Top/Centre of C8sl unit):

GD/105/H/1/1	Floor/Suite/Rack/Subrack/Inset
Q WDND E201	C8sl PGS ID
M WDNS WDNT M101	TRAC Facility code
DDF HI: GD/105/1/G/45/2/G45	DDF Location
GD/1/03/10/6/1	Floor,MDF ID,Zone,Level,Block
Pairs 1 - 8	MDF Pair Range
THIS EQUIPMENT HAS BEEN ENTERED IN MITS	

DDF Label – Shared Block:

LABEL "FRONT SIDE"	C8sl GD/105/H/1								Subrack Location System No Block Position
	1	2	1	2	1	2	1	2	
	G41	G42	G43	G44	G45	G46	G47	G48	
LABEL "FLIP SIDE"					WDNS WDNT M101				TRAC Link Code

LABEL "FRONT SIDE"	C8sl GD/105/H/1								Subrack Location Inset No Block Position
	1	2	1	2	1	2	1	2	
	G41	G42	G43	G44	G45	G46	G47	G48	
LABEL "FLIP SIDE"					WDNS WDNT M101				TRAC Link Code

DDF Label – Dedicated Block:

EQ IN GD/105/H/1		Reserved for C8sl		Reserved for C8sl		Reserved for C8sl	
1	2	1	2	1	2	1	2
C1	C2	C3	C4	C5	C6	C7	C8

WDNS							
WDNT							
M101							

EQ OUT GD/105/H/1		Reserved for C8sl		Reserved for C8sl		Reserved for C8sl	
1	2	1	2	1	2	1	2
C1	C2	C3	C4	C5	C6	C7	C8

WDNS							
WDNT							
M101							

[illegible]

C 8sl	S/R: GD/105/H/1	MDF: 01	Lv: 1
Block 1	From E201 to E???	Zone: 03	Bk: 6

A3.2.11 Commissioning

Commissioning of the LL-ADSL system requires several steps to be performed. They fall into five specific areas:-

- Network Element Initialisation (or turn-up).
- Sub-tending.
- Integration to the DSL Network.
- System Testing.
- Dbor Updates.

A3.2.12 Exchange Unit Cabling NE initialisation

Details for the initialisation of the Network Element can be found in the Extel expandsl C8sl/R8as/REG-2s DSLAM Installation & Maintenance Manual, Document Part No. ZSMAEEC8SI Section 7, titled Installation of Expandsl, "Turn up the C8sl".

A3.2.13 Sub-tending

The LL-ADSL can be sub-tended from NEC AM31 or alternatively from Alcatel CMUX equipment.

Subtending from NEC AM31 details can be found in NEC Long Line ADSL Network Element Configuration Guide Document No. 0095-00093.

Subtending from Alcatel CMUX details can be found in the CMUX ADSL BROADBAND INTEGRATION PROCESS UTILISING XDM AND NG-AWS Document No. 8AM 49151 0058 ASZZA.

A3.2.14 Integration to the DSL Network

The procedures for integrating the new Network Element can be found in the following documents:-

- CMUX ADSL BROADBAND INTEGRATION PROCESS UTILISING XDM & NG-AWS Document No. 8AM 49151 0058 ASZZA.
- NEC Integration Process XDM3.7/AMX Document No. 015 877.

Use of above documents required for integration is dependant on whether the LL-ADSL is sub-tended from an Alcatel CMUX or NEC AM31.

A3.2.15 Exchange Unit Cabling System Testing

Upon completion of the integration of the LL-ADSL system the following tests should be performed to ensure the system is ready for handover to Operations for acceptance into the live network.

- Refer to Section 4.14 Steps 4 & 5 of the main part of this document. These tests should be performed at the R8as pillar/joint as defined in the project brief.
- As the R8as is a sealed unit ie there are no separate replaceable items, the ADSL Modem Synchronisation Tests and the End to End FTP Speed Check Tests shall be performed on each of the 8 ports of the R8as under test.

A3.2.16 Dbor Updates

The constructor is to forward all as-built information to the DMC for recording in NPAMS, MITS, CPR, etc.

End of Attachment 3

8. DOCUMENT CONTROL SHEET

The latest authorised version of this document can be found on the Telstra Intranet at <http://gconline.in.telstra.com.au/doc/library/psihmpg.htm> The Network Operations Document Controller and the Network Operations Process Improvement Coordinator can both be contacted at:

Branch Process Effectiveness
E-mail ! GOC Process&Doc Feedback
WEB Site <http://gconline.in.telstra.com.au/doc/library/psihmpg.htm>
Phone 03 8549 0626

Contact for Enquiries and Proposed Changes

If you have any questions regarding this document contact:

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If you have a suggestion for improving this document, complete and forward a copy of *Suggestions for Improvements to Documentation* (Form [008713f01](#)).

Record of Issues

Issue No	Issue Date	Nature of Amendment
1.0	10/06/2004	First Draft & Installation Guide for comment
1.1	22/06/2004	First release after general comment & addition of AM 35
1.2	05/07/2004	Second release – AM 35 exchange additions, other changes.
1.3	12/07/2004	AM 35 RIM Fan settings, AM 35 power.
1.4	03/09/2004	MDF cable braid, QMDF alternative, Test all MDF pairs, Certified modems for testing, MOP, Hub s/r, Low height racks, RIM/AM35 labelling, 1G480 excess CCF cable, AM35 Exchange install, Codeing rules, Internal RIMS.
1.5	08/12/2004	Document References updated, Single Fibre Working, Optical LTU, AM35 Exchange APDP, Serial/item details.
1.6	15/06/2005	AM35 MDF kit, APDP CBs into MITS & numbering, MDF block allocation, Thermals in ARK huts, Optical LH & SH new transmission lengths, 155LTU power, Earth cable to SPC labels, updates, SFW now default, Commissioning – Modem Sync test.
2.0	09/09/2005	Expand DSL, Filter card connection,
2.1	08/11/2005	Under floor cabling, Sharing LODs, MDF cable butt, 4 port LTU commissioning, Speed test commissioning over optical path, 5 Alpha Label on RIM, Cable labels, CCF label, Scope.

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