



# Parts List for Communications Cabling

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# 1. Viewing of samples

Samples of all small parts listed below can be viewed at:

University of Sydney ICT

316 Abercrombie St

Darlington NSW 2006

Please contact ICT's Communications Infrastructure Analyst Jennifer Sayers on (02) 8627 7840 to view them.

## 2. Racks

Almost all new installations at the University use lab racks (open frame racks) instead of cabinets. The rack sets have vertical cable managers.

### 2.1. New rack sets in communications rooms

For new communications rooms and replacement of racks in existing communications rooms, these racks are to be used:

Brand	Part no.	Description	How many to supply
Argent	OSA-4501-FRAME	45RU Open Frame (rack)	$n$
Argent	OSA-45CM300-250	45RU Vertical cable manager 300mm wide × 250mm deep	$2 \times n$
Argent	OSA-45CM300-450	45RU Vertical cable manager 300mm wide × 450mm deep	$2 \times n$
Argent	OSA-5ARG-H-BRACKET	H bracket	$2 \times n$
Argent	OSA-SPOOL-195	Cable slack spool 195mm long	$6 \times n$
Argent	OSA-5ARG-89151	Hold down bracket	$2 \times n$

**Table Racks-1: Racks parts for new and replacement rack sets**

The H bracket is used to join the front and back vertical cable managers together at the top. The hold down brackets fix the vertical cable managers to the floor. The hold down brackets are marked for left and right, but should be installed reversed, so that the bracket sits underneath the cable manager, not sticking out as a trip hazard.

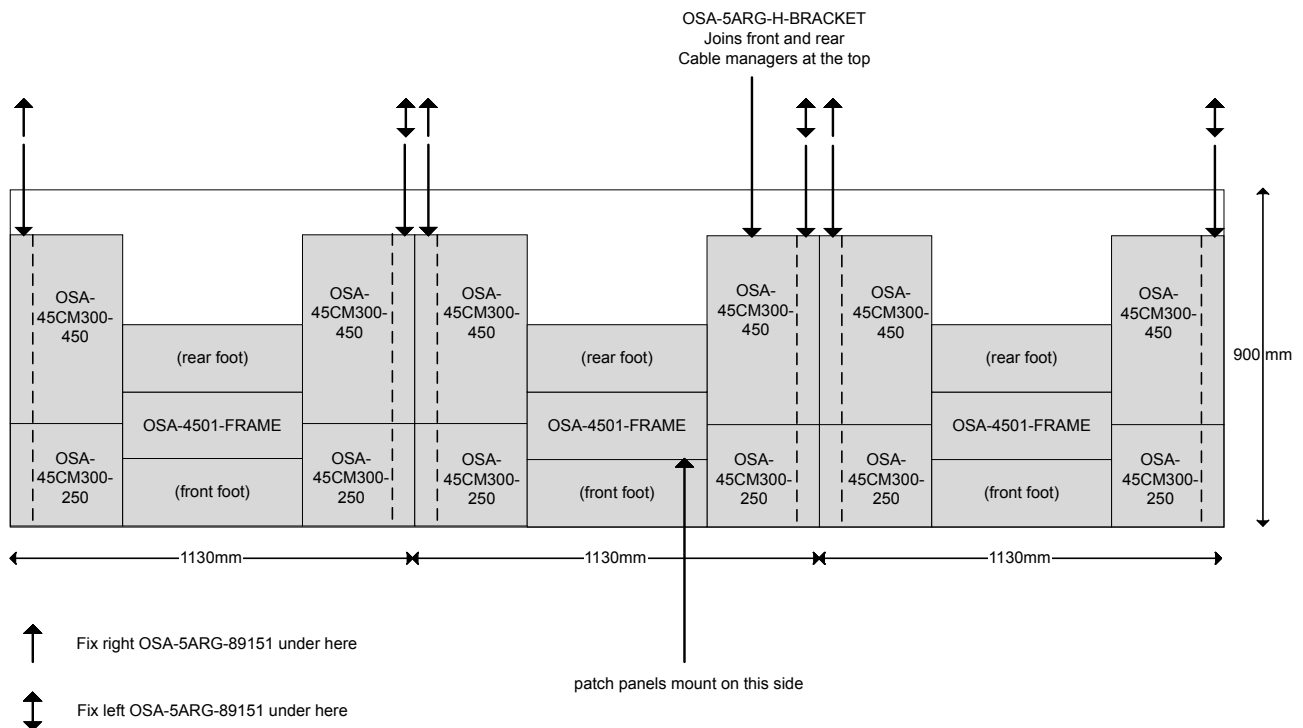
These 45RU racks may not fit in rooms with **low ceilings**. When they will not fit, obtain approval from ICT to supply a different model.

Some other parts are available for this rack system. These other parts may not be used unless authorised by ICT:

Brand	Part no.	Description
Argent	OSA-45CM150-250	45RU Vertical cable manager 150mm wide × 250mm deep

**Table Racks-2: Rack parts requiring ICT authorisation for use**

These Argent racks fit into the standard comms room layout as follows:



**Figure Racks-1: Argent racks in a standard comms room layout**

**Important note:** This diagram shows assembly of the rack parts only. It does not show the required clearances around the rack set. Refer to the [Communications and Cabling Standard](#) for the clearances.

## 2.2. Expanding existing rack sets

To expand existing open frame rack sets, use matching parts. Many existing sets of racks are Rack Technologies brand.

## 2.3. Cabinet racks

Where a cabinet rack is required, obtain approval from ICT for the proposed model.

### 3. Safe Step

This is a large square plastic "box" for people to stand on.

If you are asked to install a 45RU rack, you must supply a safe step for the comms room if it does not already have one. Any model equivalent to the product below is acceptable.

<b>Part no.</b>	<b>Description</b>
Jaybro 47-SSTEP	Safe Step

**Table Safe Step-3: Example of suitable "safe step"**

## 4. Rack Power Rail

Allow for one rack power rail per rack.

Part no.	Description
Rack Technologies 9003-RB-CAP10F	10 way horizontal power rail, 10A, 2RU, captive plug

**Table Rack Power Rail-4: Rack Power Rail**

## 5. Fibre-optic Enclosures

Most of the fibre-optic enclosures on the market will not accommodate the detailed labelling used by the University. These enclosures are approved:

Brand	Part No.	Apertures	Notes
Fibre Equipment Management	FEM-112-LCD	12	Suits a 24 core cable
Fibre Equipment Management	FEM-124-LCD	24	Suits a 48 core cable
Fibre Equipment Management	FEM-248-LCD	48	Suits a 96 core cable

**Table Fibre-optic Enclosures-5: Approved fibre optic enclosures**

These trays are stocked at Optical Solutions Australia in Silverwater.

For termination of other cable sizes, obtain approval from ICT to supply a suitable tray from this product series.

### 5.1. Warranty clarification

All major manufacturers give the University fibre warranties when these FOBOTs are used, as the FOBOTs do not comprise a working part of the cabling system.

## 6. Horizontal patch cord managers

The type to be installed depends on the type of rack.

Type of rack	Brand	Part No.	Description	How many to supply
Lab rack with covered vertical patch cord management channel	Argent	OSA-1RUCM	1RU horizontal cable manager	4 per rack
Lab rack with patch cord management channel with open metal rings	Molex Premise Networks	25.B035G	Deep ring run panel	Follow existing pattern, generally one manager per two patch panels
Cabinet (rails set back)	Molex Premise Networks	25.B035G	Deep ring run panel	Follow existing pattern, generally one manager per two patch panels

**Table Horizontal patch cord managers-6: Horizontal patch cord managers**

A few existing cabinets have not had their mounting rails set back far enough to fit the deep Molex patch cord manager while still allowing the cabinet door to be closed. In this case, the following shallower patch cord manager is to be used:

Type of rack	Brand	Part No.	Description	Pattern to follow
Existing cabinet with rails not set back	Leviton	49253-LPM	Five-Ring Horizontal Cable Manager, 1RU, 4" metal rings	Follow existing pattern, generally one manager per two patch panels

**Table Horizontal patch cord managers-7: Shallower patch cord managers**

### 6.1. What not to buy

Any horizontal patch cord managers that are not on this list. In particular, all other models of Molex patch cord manager are not approved.

## 7. Class EA Wiring System (Category 6A)

Category 6A wiring system components must be the **shielded** type.

Note: No further 4 pair cable of lower categories is to be installed (e.g. Category 5e and Category 6).

### 7.1. Cable construction

All of these cable constructions are permitted:

- F/UTP
- U/FTP
- S/FTP
- F/FTP

Unshielded Category 6A cable ("UTP", U/UTP, "plain UTP") is not approved.

### 7.2. Patch panels

#### 7.2.1. The University specification

The University specification is as follows:

- Patch panels must be designed for termination of shielded Category 6A cable.
- Patch panels must be made of metal.
- Patch panels must have a flat area extending the full width of the panel from the inner edge of the left bracket to the inner edge of the right bracket. This area must be at least 9mm in height. This is where the strips of traffolyte labelling are to be fixed. Panels with two such areas (upper and lower) are preferred.
- A patch panel must have exactly 24 ports per rack unit.
- Patch panels with little transparent windows, paper labels or perspex or plastic label covers are not acceptable.

## 7.2.2. Approved patch panels

It is obligatory to install **rear bars**. If the rear bar is a separate part, it must be supplied and fitted.

Brand	Unloaded patch panel	Patch panel rear bar	Patch panel jack	Notes
Belden	AX106504-AP	AX105931 (purchased separately)	AX104562	Contact Sarath Pathuri at Belden for information.
CERTECH	PP24UKSH-NL	(Is an extension of the patch panel)	JKC6ASTP	Contact Thomas Boer at CERTECH
CommScope	1-279669-0, stocked at OSA	1711314-2 (purchased separately, must be supplied and fitted)	1711716-1 or 2153449-4. This colour variant of the 2153449-X series jack is the grey version, which we understand to be readily available.	This is an AMP Netconnect panel. It is all metal. The AMP panel with the plastic inserts with groups of six jacks is the wrong one. Contact James Oliver at CommScope for information.
Leviton	LE-4S255-S24	(Comes with patch panel)	LE-6ASJK-SW6	Contact Violeta Aleksoska at 4Cabling for information
Molex	ZPID-000002	(Comes with patch panel)	KSJ-00062-04	Contact Glenn Rockley at Molex for information. Molex U/FTP cable is approved.
R & M	R795810	(Comes with patch panel)	R813513	Contact Leigh Faulkner at R & M for information. R & M U/FTP cable is approved.
Siemon	TM-PNLZ-24-01	(Is an extension of the patch panel)	Z6A-S01	Contact Victor Holters at Siemon for information.

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panel)

### **Table Class EA Wiring System (Category 6A)-8: Approved patch panels and rear bars**

#### **7.2.3. Manufacturer sales support**

The contact name for each manufacturer is of the company representative who supplies samples to the University.

When selecting a patch panel, please confirm that sufficient stock of that panel has been reserved for you in Australia.

#### **7.2.4. Brands not in the table**

Panduit's panel was evaluated but was not approved because it was not considered robust enough for the University environment.

The approved CommScope panel is an AMP Netconnect panel. The equivalent Systemax panel was not approved because it is not compatible with the University's labelling requirements.

Clipsal is no longer approved because Clipsal no longer offers a patch panel which meets the University's requirements.

Multimedia Connect is no longer approved because this brand is no longer readily available in Australia.

Brands not mentioned in the table are not approved. A brand or model not already mentioned in this section may be submitted to ICT's Communications Infrastructure Analyst for consideration.

### **7.3. Underground grade data cable**

Occasionally it is necessary to run some Category 6A cable as underground cabling or in another situation where the cable may become wet. In this case, underground grade shielded Category 6A cable is to be used. Seek approval from ICT's Communications Infrastructure Analyst for any proposal to install underground grade data cable.

### **7.4. Data cable to Fire and EWIS panels**

Data cable installed from the communications rack to these panels is part of ICT's communications cabling installation and must therefore comply with this Parts List.

These cables are not legally part of the fire or EWIS system. The cable does not need to have a red sheath.

## 7.5. Patch Cords and Fly Leads

Patch cords and fly leads shall be the shielded type designated by the wiring system manufacturer as part of their Class EA shielded wiring system which complies with the latest published revision of the AS 11801 series standards.

Patch cords and fly leads shall have a conductor weight in the range 22 AWG to 26 AWG only. **"Skinny" leads with 28 AWG and 30 AWG conductor weights are not acceptable.**

Patch cords and fly leads shall have a minimum DC current carrying capacity under continuous operation of 0.75A on each conductor at operating temperatures of up to 60 degrees Celsius. (AS/NZS 11801.1:2019 Clause 6.3.3.8)

## 7.6. Shutters for telecommunications outlets

Shuttered TOs are generally not required and not preferred. However, they are required in some labs and in childcare centres.

If the wiring system does not offer shuttered jacks, a shuttered bezel should be used.

R & M and Commscope both offer shuttered bezels. The Commscope bezels (part 6467 1 116-07SH) are a typical "keystone" size and may suit some other brands of wiring system.

## 8. Faceplates for Telecommunications Outlets

**Clipsal 2000** Series faceplates are mandatory. This is because there is a non-removable area where the required traffolyte labels can be fixed.

Faceplates in the HPM Excel style or the Clipsal C2000 style are unsuitable because the labels are removed from the outlet when a painter takes the cover off. This can lead to labels being lost or mistakenly transferred to a different outlet. Our [Communications and Cabling Standard](#) does not permit those types of plates.

**Quad plates are not allowed** because there isn't enough room on them to fit our required labelling. Only use singles, duals and triples.



**Figure Faceplates for Telecommunications Outlets-2: Faceplates for telecommunications outlets**

### 8.1. Angled faceplate

The **Clipsal 2032 VHA** can be used to solve bend radius problems. This plate is shown on the right in the photograph above.

This plate is only available in 2 gang. If used for a single outlet, a blank must be fitted in the unused aperture.

The 2032-VHA can be used with either rear entry or side entry jacks to bring the cable in from different directions. Facing the RJ45 pins sideways is acceptable if the reason is to solve a bend radius problem.

## 8.2. Faceplate for security cameras and wall phones

The **Siemon Tamperproof Faceplate** is to be used with a Siemon Cat 6A shielded jack inserted at an angle. For cameras, the faceplate is to be mounted in a visible location next to the camera. For door phones where the outlet will be exposed, the faceplate sits just below the telephone handset, with the handset mounted at a height suitable for wheelchair users. The usual traffolyte labels are to be applied inside, with large font size Brother labeller repeating the information on the removable cover.

Brand	Part no.	Product	Notes
Siemon	MX-TFP-S-06-02	Tamperproof faceplate	Six colour variants are available. This part number is for white.

**Table Faceplates for Telecommunications Outlets-9: Faceplate for security cameras and wall phones**

Use Siemon blanks to block up any unused apertures in the plate.

**Please ask to see our mock-up of the required setup.**

## 8.3. Recessed faceplates for wall clocks

Outlets for wall clocks shall have a recessed faceplate similar to Lacey's TV part WPRPS02. CERTECH AVRPS02 may also be suitable.

## 9. Plaster Dust Protection

You must prevent plaster dust and other foreign matter from entering RJ45 sockets during building work.

Most jacks do not come with dust caps. In this case, you must use special sticky tape to protect the socket until handover. This applies to patch panels as well as telecommunications outlets.

These products have been approved because they do not leave a sticky residue. Do not use ordinary sticky tape, packaging tape or masking tape, as it will be very difficult for you to clean the glue off the jacks afterwards.

Some cabling technicians write temporary cable numbers on the tape with a marker pen. You are welcome to do this.

Brand	Product	Tape width
3M Scotch	#810 Magic Tape	24mm
Pritt	Invisible Tape	24mm

**Table Plaster Dust Protection-10: Tape for plaster dust protection**

If you need to get this tape in a hurry, there is an Officeworks store opposite the Ross Street gate of our Main Campus.

**Use of electrical tape is strictly forbidden because it is extremely sticky and leaves a lot of glue residue.**

## **10. Patch cord hanger**

One to be supplied and fitted per comms room, if not already present.

The patch cord hanger is a plastic hose reel hanger from a hardware shop. It is inexpensive.

## 11. Voice grade cabling parts

### 11.1. Voice grade cable

All indoor cable terminated on an MDF, a Krone frame or any other traditional telephone distribution frame shall be standard voice grade cable with a **cream sheath** (i.e. "Austel cable", "indoor telephone cable").

### 11.2. Disconnection modules ("Krone blocks") etc.

All disconnection modules for traditional telephone distribution frames shall be **genuine Krone (CommScope)**.

All parts of the telephone frame shall also be genuine Krone parts, unless otherwise approved by ICT.

### 11.3. Fire line connection hardware at MDF

The red-sheathed cable from the MDF to the fire panel is not a type which can be punched down on a Krone block.

ICT will free-issue the correct 2 pair block and a short piece of cream 2 pair cable to enable this connection to be made. These are the only parts which are to be used for the transition between the red cable and the telephone frame.

### 11.4. Patch panel for voice grade cable

Voice tie cables from the MDF to a rack (which are usually 25 pair) shall have their "rack" end terminated on the following CommScope patch panel:

Brand	Part No.	Product	Notes
CommScope	1711213-2	25-port phone panel	This panel is stocked at OSA in Silverwater

**Table Voice grade cabling parts-11: 1RU patch panel for voice tie termination at racks**

### 11.5. Lift distribution frame (Lift FDP)

This is the demarcation point between the telephone technician and the lift technician.

For existing lifts, a metal surface-mount box is to be used. For new lifts, the installation is to be flush with the surrounding wall; usually there is a little door in the cladding of the lift shaft, giving access to the frame behind the door.

All door-locking mechanisms must be compatible with the University's BiLock system.

Table Voice grade cabling parts-12 below summarises the suitable parts for the Lift Distribution Frame:

<b>Brand</b>	<b>Part no.</b>	<b>Product</b>	<b>Notes</b>
B & R	A20	Internal telecom BD, 2 module	Frame in metal enclosure for indoor surface-mount retro-fits. Also suitable for recessing in new work (use surround). Compatible with University BiLock. Product does not come with a record card - this must be obtained separately.
ADC Krone	6455 1 016-00	FDP, 20 pair with earth	Plastic frame suitable for use behind a little door which has been constructed separately. The plastic cover of the frame may be left off, provided that the back of the little door has a facility to hold the record card securely.
ADC Krone	6455 1 016-01	FDP, 20 pair without earth	(Same notes as for variant with earth.)

**Table Voice grade cabling parts-12: Suitable parts for Lift Distribution Frame**

For glass lifts, or outdoor lifts, obtain approval from ICT for suitable parts.

## 12. Underground optical fibre cable

All underground optical fibre cable is to be Prysmian SM@RTCORE external underground loose tube optical cable or approved equivalent.

Prysmian SM@RTCORE has a nylon outer jacket. It is not equivalent to an "indoor outdoor" type cable.

## 13. Underground conduit

All underground communications conduit is to be:

- white
- marked "Communications" or "Telecommunications"
- manufactured to Telstra conduit dimensions, not AS 2053.2 ("electrical") conduit dimensions.

For example, a Telstra "50mm" conduit has an inside diameter of 54.4mm. A white "50mm comms conduit" manufactured to "electrical" conduit dimensions has an inside diameter of only 44mm.

Telstra-dimension conduits have a wider range of conduit fittings available, including temporary plugs and pipe bushes.

[www.iplex.com.au](http://www.iplex.com.au) is a good reference for the different conduit sizes.

These requirements do apply to lead-in conduits cast into slabs. The lead-in conduit is to be supplied and installed by the manhole builder (see next section), not an electrical contractor.

## 14. Communications pits and manholes (access holes)

All communications pits and manholes are to be reinforced concrete, cast in situ, and built to current and historical PMG/Telecom Australia/Telstra designs.

All plastic pits are banned.

All pre-cast cement pit types are banned.

All products from ACO Polycrete are banned, except as spare parts.

Pits and manholes are only to be built by a specialist contractor recognised as a qualified manhole builder by Telstra. Where excavation is at a location with live communications cables running through it, "built" includes excavation as well as construction. Where no live cables are present, excavation by others shall be at the discretion of the specialist contractor.

Three suitably qualified contractors are:

Company	Contact
Consol Services Australia	Mr Paul Littlechild, 0419 118 339, pblcoms@bigpond.com
Line-tel Pty Ltd	Mr Dominic Cannon, 0418 677 809, dominic@line-tel.com.au
P & S Network Services	Mr Peter Dimovski, 0407 773 188, peterdimovski@live.com.au

**Table Communications pits and manholes (access holes)-13: Table of qualified contractors**

Electrical contractors, please note that the University's [Communications and Cabling Standard](#) prohibits electrical contractors from being involved in underground communications work. If an electrical contractor has been asked to price underground communications work by a builder, they must pass the job back to the builder, and ask the builder to contact a suitable Telstra manhole builder.

# APPENDIX

## APPENDIX A Glossary of terms

<b>Abbreviation</b>	<b>Name</b>
FDP	Final distribution point
FOBOT	Fibre Optic Break Out Tray
ICT	Information and Communications Technology
RU	Rack unit
TO	Telecommunications outlet