STEP BY STEP GUIDE TO INSTALLING YOUR OWN 2-WIRE, 2 OUTLET TELEPHONE SOCKETS

Please read these instructions thoroughly before you start.
They will help you avoid mistakes that could lead to service problems.

WARNING

Make sure you are clear of any 230V wiring before attempting your installation work.

ALWAYS provide at least 50 mm clearance between telephone and 230 V wiring.

1 - Before you start

PTC 226 Telecom "2-wire" 2 contact jackpoints

To differentiate these latest versions from previous types, they are being referred to as "2C" (two contact) jackpoints. These latest "2C" versions drop the requirement for an integral 1 microfarad ringing capacitor and now incorporate a BT socket with only 2 contact springs in place of the usual six. These are marked "2C" (2 inside a C).

These Telecom "2-wire" 2 contact jackpoints are compatible with the great majority of customer premises equipment now in service. While they are connected by means of a BT type mating plug, they no longer provide ringing current for any older 3-wire connected telephones remaining in service. In the relatively few cases where such telephones are connected via these new jackpoints, a simple plug-in ringing adapter will be needed.

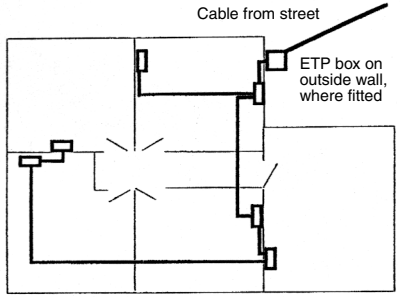
IMPORTANT: if there are already 2 wires in each slot (of existing jackpoints) or more than one M jackpoint exists then replace all jackpoints with 2 wire or 2 contact types

2 - Important notes about wiring

- Each 2-wire socket is connected to another one on the same line by ONLY two wires.
- One of these two wires is connected to a slot on one of the 3-way connectors. The other wire is connected to a slot on the other 3-way connector.
- With one wire per slot, any socket can be connected to the line wires (which may be thicker) and to two other sockets; or any socket may be connected to three other sockets.
- **Telephone sockets and ordinary white or grey cables are NOT to be used outdoors.**
- Sockets shall not be located in any place where they will be exposed to damp or condensation.
- Avoid installations in bathrooms, showers, on windowsills, near sinks or damp areas in kitchens, toilets and swimming/spa pools.
- Older equipment directly connected (not plugged-in) to the wiring is not always compatible with modem equipment.
- **Should you have such items, get Telecom to install your sockets and make equipment changes. If you have your whole installation converted to 2-wiring, any future additions will be much simpler.**

3 - Plan your cabling route

- Decide how many sockets you want, and where they are to be located.
- Each socket shall be mounted at least 300mm above the floor and preferably against one side of a timber stud.
- The cable to an additional socket can be connected to the nearest existing socket which has a spare slot on each of its connectors.
- Cable may be run above the ceiling, under the floor and inside walls, cupboards, wardrobes etc, but not anywhere outside the building.
- Do **NOT** lay cable on the ground under the house.



Make sure you have clear routes and avoid outside walls where possible.

- The cable **MUST NOT** be suspended across open areas under floors or above ceilings.
- It should run beside timber framing to which it can be clipped. This keeps the cable off damp ground and protects it from physical damage.
- Avoid running cable along the bottom plate of outside walls as these may be prone to dampness.
- Remember to provide for at least 50mm clearance from 230 V cables. **Do NOT use the power cable holes for telephone wiring.**
- If you have to run cable on the surface of walls, run it along the top of the skirting boards or on the scotia and around door and window frames, where it can be secured by clips.

4 - Use the right cable

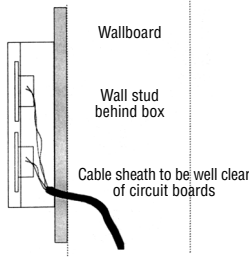
- For new work, use only cable having a Telepermit label on the pack. The new 4-wire cable with Blue/White and Orange/White pairs is recommended.
- If you are converting an existing installation to 2- wiring, the existing cables may be reused provided they are of an earlier standard type having solid (not stranded) wires. The wires may differ in colour to your new cable. This does not matter.
- Ensure that the cables are not damaged and are suitably routed. Run all the cables required to the additional sockets.

5 - Wiring methods

- It is tidier to conceal your wiring in the wall, where it does not need securing and is protected from possible damage.
- Concealed wiring should be routed through the hole in the wallboard directly behind and close to the bottom edge of the mounting, making sure it is clear of any fixing screws.
- Take care not to damage the wall surface outside the area covered by the socket faceplate when drilling any holes in the wall.

6 - Mounting boxes

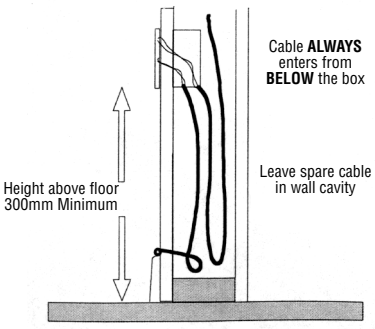
- 2-outlet sockets are the same size as power outlets and light switches. They must always be mounted vertically such that the shutters lift upwards and the '2 'is upright.
- For surface mounting, various types of matching electrical mounting blocks are available. eg, PDL 89. These provide wide openings for cable access and provide better protection against dust and moisture entering the socket.
- Drill a hole adjacent to or through the timber stud, of sufficient size to pass the number of cables being used
- Position the mounting so that the fixing screw holes are aligned over the stud and cover any cable holes made in the wall.
- For flush mounting, most standard electrical single gang flush boxes provide very little protection against dust and dirt within the wall cavity. Enclosed plastic flush boxes which mount on the wallboard between the studs of the wall are recommended. These provide for easier installation, but may require holes to be drilled low down in the back of the box to ensure the cables enter beneath the circuit boards. Simply cut the rectangular hole in the wall, pull the cable through a hole in the bottom, then fix the box in position. Alternatively, use an enclosed metal box which mounts against the stud, such as a Kenreid K/S.
- When access to the wall framing is available, mounting brackets can be fixed vertically to the side of a stud, as shown. For adequate protection of the sockets, these brackets should be used in conjunction with the shroud enclosed with the socket. Where no shroud is provided, a PDL 146S is recommended. Drill a 5 - 6mm hole in the bottom for cable entry.



Typical mounting block - other designs are also in common use, including those that mount directly into the wall board.

7 - Leave plenty of cable

- Ensure that at least 500mm of new cable can be pulled out from the wall at each socket position. Once you have fitted the socket this cable is pushed back into the wall to allow for future requirements.
- Cable(s) should ALWAYS enter via holes in or near the bottom of the matching surface mounting box, and generally close to one of the corners.
- Some types of mountng box have knockouts at mid-level, but these should preferably NOT be used.



- For surface wiring fixed to the top of skirting, the cable may be run up the wall to the socket. A 5 mm hole is drilled through the wallboard immediately above the skirting and directly below the hole at the socket position.
- EITHER drop a string down from the top hole and hook it out through the lower hole with a stiff piece of wire, then tie the string to the cable to pull it up, OR
- Push enough cable to reach the socket plus another 500 - 800 mm into the lower hole. Use a length of stiff wire with a hook formed on the end to pull the cable out through the upper hole.

8 - Connecting the sockets

- If a 3-wire installation is being converted to 2-wire, all the existing sockets should be removed. Disconnect each wire from the socket by gripping it with a hook or pliers immediately beside the connector and pulling the wire sharply upwards. Take care not to damage the wire insulation.
- Where more than one wire is connected to a slot, the top wires should be removed first.
- Fold back all the wires except those removed from connector terminals 2 and 5. The wires will connect to the replacement 2-wire socket.
- If the existing cable is too short to make a good termination as in 9 - 'Choosing the right wires', either new cable should be installed or the route shortened.
- The sheath of each cable should be stripped back to expose about 100mm of wire. Slit the end 20 to 30 mm of sheath lengthwise with a sharp knife and then, gripping the sheath and wires separately, pull them apart until sufficient wire is exposed. Cut off the stripped section of sheath.
- Do **NOT** cut around the the cable to strip off the sheath. This can damage the wires or their insulation.

9 - Choosing the right wires

• Select from each cable the pair of wires to be used. The types of cable now recommended for new work, have a Blue and White pair with an Orange and White pair. The White wires may be striped in some cables.

• If yours is a brand new installation or you are adding another line, always use the Blue and White pair for the first telephone line.

• If you need Telecom to visit your home to connect your line to its network, make sure you let the installer know if you have had to use the other pair. Leave a note securely attached to the cable end or a length of light-coloured PVC tape folded over the pair concerned and marked with a waterproof pen.

• Many earlier cables have different wire colours, in which case, the Red and White pair are generally used for the first line. The Orange and Black pair are normally used for a second line.

• Where it is not possible to use these standard colours another pair will have to be used. In this case, you may connect different wire colours on the same strip of three terminals.

• Whichever pair is used, it is essential that the same pair is used at both ends of the same piece of cable.

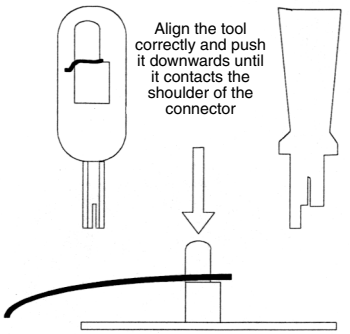
• Separate the selected pairs from the others in the cables. Do not cut these others off but fold them back out of the way.

10 - Using the insertion tool

• Use ONLY the proper inserter tool to connect the selected wires. Never use a screwdriver or anything other than the tool to connect the wires as this will cause damage.

• Try inserting the tool into the empty slots before you start. It will slide easily into a slot only when held the correct way around. Some tools have a moulded symbol on the face, as shown. These should have the wavy 'tail' (depicting the wire) towards the outer side of the socket.

• The tool must be turned around when it is used on the connector on the other side, so that the wire symbol still points outwards.



• Take care not to damage the tool by forcing it into the slot the wrong way around.

• DO **NOT** STRIP THE INSULATION OFF THE WIRE at the connector.

• Make sure that the two wires of a pair are kept together. DO **NOT** use the White wire of one pair with the coloured wire of another pair.

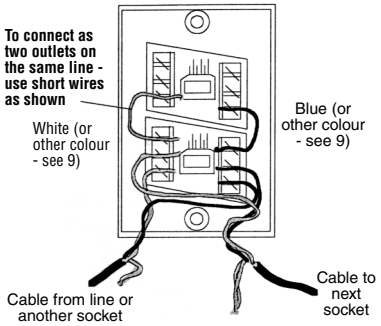
• Check that all the wires selected for connection have undamaged colour insulation. Cut off the ends where there is damage because the connector relies on gripping the insulation on both sides of its housing. Normally, the end 10mm of an old wire needs to be cut off before reconnection.

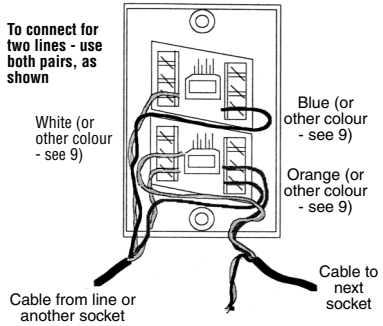
• The White (or alternative) wires from each pair will be connected to the left side 3-way connector and the Blue (or alternative) wires to the right side connector, when the socket is held as shown in the diagrams.

• Connect only **ONE** wire per slot.

• Note that the two sockets can be connected as two outlets on the same line or as one outlet per line where two lines are installed, as shown in the diagrams.

• Place the socket against a firm surface, take each wire in turn, place it across the connector slot from the outside with the free end just past the edge of the connector housing towards the centre.





- With the inserter tool held the correct way around, each wire can be pressed into the slot with moderate force until it stops. Do **NOT** rock or twist the tool.

. If it is necessary to remove and reconnect a wire, make sure that the insulation over full width of the connector housing is undamaged, before reconnecting.

. Pull gently on the wires to ensure they are firmly secured in the slots. If they are loose, check the tool is not damaged and push the wire down again.

. If still loose the wire will have to be re-terminated using an undamaged part of the wire.

11 - Securing the cable end

• Check any re-teminated wires for tightness.

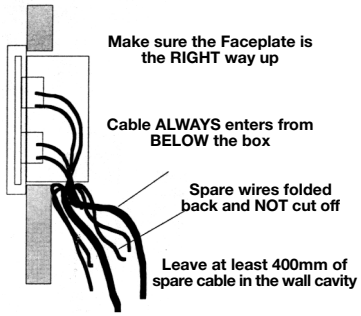
• Push the excess sheathed cable and any spare pairs back into the wall.

• The end of each cable sheath should be pushed down to just enter a surface box, but should remain completely outside a flush box or shroud.

• It is important that the ends of each cable sheath and any spare pairs remain below the circuit board(s) and cannot touch them when the socket is mounted on to the box.

• For surface wired and mounted boxes, it maybe possible to drill an additional hole in the wallboard, under the faceplate, into which any spare cable can be inserted.

• The cable should be clipped close to where it enters the box and any cable slack should be pulled into the nearest concealed location. All exposed cable should be neatly secured by clips or wiring staples.



Installation using an enclosed-type flush box

12 - Date Marking

• The label on the inside of the faceplate of every new socket installed should now be marked with the present date.

• Mark the month and the year as its last two digits, for example:

'7/98'

• Make sure the faceplate is the right way up such that the shutters lift to open and the '2' is the right way up when the faceplate is screwed in place.

• Make sure that the wires are clear of being pinched when screwing the faceplate onto its mounting.

• The sockets may now be screwed to their mounting boxes.

• Alternatively, you may prefer to test the installation before finally screwing the sockets into place.

13 - Testing & fault finding

• Plug a phone into each socket in turn and test for dial tone. If all sockets appear to work you may confirm this by asking a friend to call you. Any phone should ring on every socket

• If you don't hear dial tone at a socket and your line is working, first try inserting and withdrawing the plug several times. If this does not help, use the insertion tool to make sure each wire is firmly in place in the connector at the socket concerned and at the one from which it has been wired.

• Check the colours to make sure the same pair of wires is used at both ends of the cable.

• If you cannot hear dial tone at ANY socket, call your number from another line. If you hear 'busy tone' when calling your number, you have connected the two wires of the pair together at some point. Disconnect your new wiring and check for dial tone at the first socket you connected to. If this now gives dial tone, the wiring you disconnected is at fault. Make sure one wire of the pair goes to each of the two connectors on the sockets concerned.

• If you hear 'ringing tone', a wire maybe broken or the cable may be damaged between the sockets. Check it out and replace or reconnect the cable, as necessary.

14 - Clipping & tidying

• The required slack in the cable should be pulled into concealed locations close to the ends of each run.

• Finally, all exposed cable should be secured with clips or wiring staples.

• Cable not enclosed in a wall cavity should be secured each side of every change of direction.

• Surface wiring should be clipped at intervals not exceeding 150mm. Cables run under the floor or in the ceiling may be clipped at greater distances.

• Make sure the cable cannot come into contact with anything which may become wet and that it is not likely to be snagged by anyone or be damaged by any objects being moved or stored in the area.

• Clip the cable to the sides of timber framing where there is any risk of persons or weights being placed on it.

• If you cannot get your sockets to work correctly, Telecom's Fault service can correct the problem for you.

Remember:

You may be charged for repairs if the problem is caused by your new wiring.

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