SaskTel pre-wiring guide and wire standards for Single Family Units (SFU)

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General information

Purpose of Guide

This guide is intended to assist you in pre-wiring your new home for communications service. This guide applies only to single-family residences. For other dwellings or business applications, please contact SaskTel.

Disclaimer

Please note that in no circumstances will SaskTel be responsible to you or any other party for any loss of service or material or personal injury or property damage of any kind or nature resulting from either directly or indirectly work performed either by yourself or others on your behalf on inside wiring.

Description of Pre-wiring

Pre-wiring is a method of installing communications wiring so it is concealed within the walls of your home. This is done at the framing stage, when the electrical wiring is placed, before the application of insulation, drywall, and vapor barrier. Once the walls have been surfaced, wiring cannot be removed or replaced without disturbing the wall.

Customer Wiring Options

The customer has the following options to complete the pre-wiring by hiring:

- an electrician or general contractor,
- yourself,
- SaskTel.

Note: The customer is responsible for all costs associated with the installation and repair of all wiring (inside or out) and associated hardware past the SaskTel Network Interface Device (NID) sometimes referred to as the Demarcation Point.

Owner/developer responsibilities

The owner/developer is responsible to:

- Ensure all communications wiring and jacks are **CSA** (Canadian Standards Association) **approved** and placement of all wire conforms to the **Canadian Electrical Code**.
- Provide an **access hole, 1 3/8" (34mm)** from the inside of the premise to the area near the outside power meter (6" to 8" left or right of power conduit) (see Figure 1). SaskTel will be mounting their Network Interface Device (NID) at this location. This will allow SaskTel to properly conduit the inside wire from damage.
- Provide a #10 insulated ground wire (stranded, not solid core) from the main building grounding system, through the access hole, to the NID location. This ground wire should be long enough to reach the SaskTel NID with about 3' (1m) of excess wire for terminations.
    - ***Note:*** *In rural (non city or town) applications a #6 stranded insulated ground wire is required from the main building ground system, through the access hole, to the NID location with about 10' (3m) to reach the SaskTel ground rod.*
- Provide a "**common location**" and inside wire from the "**common location**" in the home, through the **1 3/8"** access hole, to the NID location outside the home. This inside wire should also be long enough to reach the SaskTel NID with about 3' (1m) of excess wire for terminations.
    - On the exterior, at the customer's option, a 12"x 48" wooden backboard may be placed immediately adjacent to the power backboard. This will be used for securing the SaskTel NID. If the customer does not have a backboard in place, or does not wish to install one, SaskTel will mount the NID directly to the side of the building (see Figure 1).

If the above owner/developer responsibilities are not met when SaskTel arrives to install service, the customer may choose to either:

- delay service until complete,
- hire SaskTel, at tariff rates, to complete the required work.

SaskTel responsibilities

For new service installations, SaskTel is responsible to:

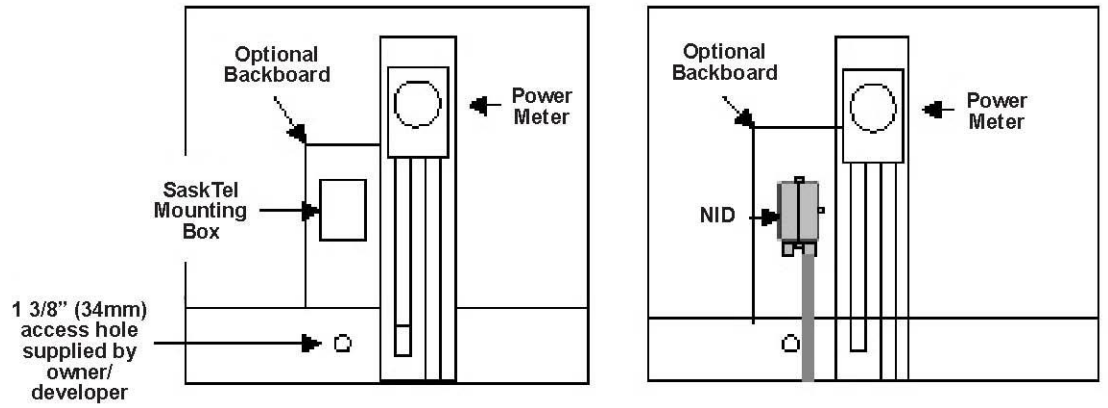
Provide and install the mounting box and/or mounting bracket (where applicable), the NID and associated PVC 3/4" (19mm) conduit on the exterior of the premise. (Refer to Figure 1). SaskTel typically installs the mounting box and/or mounting bracket 48"- 54" (120cm - 140cm) above the ground level. This height may vary according to building type and service entry location.

Terminate, activate, and test the SaskTel main service residing in the NID.

SaskTel will connect the inside wire to the main service in the NID, at no cost, if it is in place at the time of main service installation. Note: if the termination of the inside wire causes a trouble, indicating an issue with the customer's inside wiring, SaskTel can provide repair service at Tariff Rates. (Refer to Customer Wiring Options.) Otherwise, the customer can attempt repair themselves or contact a contractor to do so on their behalf.

Pre-wire planning and installation

Figure 1: Approximate location of access hole



Note the access hole is at the same height as the electrical entrance.

Locations

- Take into consideration present and future needs (e.g. second line, children's line, computer modem, fax machine, television, security system, internet devices, fridge, TV's, etc.) (see Figure 2). For example, where there may be multiple service (voice, data, or television), two category 5e runs should be installed. This may save extra wiring charges or surface wire runs at a later date.

- In large rooms place for functionality of the room.

- Place a communication outlet approximately every 12 feet on unbroken wall space.

- Do not place communication outlets back to back. They should be at least one stud away from each other.

- Recommended locations for communication service are master bedroom, spare bedrooms/den, living room, kitchen, dining room, family room, deck and garage (see Figure 2).

- It is recommended that a communication jack be installed with any coax outlet. This will allow for future television requirements such as satellite television or entertainment service from SaskTel.

- Take into consideration ease of accessibility, traffic and furniture placement. Jack locations should be accessible and in areas where they won't be damaged by furniture or normal activities.

- The customer can provide a lock to secure the customer side of the NID.

- The lock can be placed on the cover of the NID, above the customer access point, to secure the customer's demarcation jack and wiring.

- **Common Location** (distribution device): is the central location where all communication wiring is wired to and cross-connected to the network feed facility. The facility feed runs to this common location and is then distributed though-out the residence via a distribution device. All new residential wiring standards including the North American TIA-570-B recognize the increasing complexity of residential wiring. As such these call for higher grade wiring with larger outlet numbers and drop counts inside the home. This is consistent for coax, UTP (unshielded twisted pair) and optional fiber-optic cabling.

    - Basic grades of residential cabling are 75 ohm coax, 4 pair category 5 UTP, and single mode 900 micron tight buffered bend insensitive fiber incased within a standards approved jacket. The industry standardized "**minimum**" drop count inside each communication outlet is 1 coax and 1 cat.5 UTP per outlet.

- These higher cable counts require a separate distribution panel space, at a "**common location**": such as beside the electrical panel box. This panel can consist of a ¾" sheet of plywood to mount devices, or can be a dedicated "multimedia enclosure". In any instance the minimum working space of this panel is (24"w x 36"h) for plywood, and (14.35"w x 30"- 42"h) for a multimedia enclosure. These are the industry standardized sizes for distribution panels accommodating 9 to 16 terminated cables of any type (coax, UTP, fiber) and to account for any additional required communication equipment (see figures 4 and 5).

- In addition to the panel, a 15 A, 120 VAC nominal, non-switchable duplex electrical outlet shall be provided within 1.5 m (5 ft) of the panel. The height of the electrical outlet should be appropriate for the panel and any associated equipment being installed. Alternatively, the distribution panel can have its own outlet. This is an industry requirement for all panels that will be providing more than basic telephone, satellite, or community basic cable. To name a few, these advanced residential communication services can be VoIP telephony, high-speed internet, high definition television receivers and multi tuner HD personal video recorders, digital interactive video, Internet Protocol Television. All these are readily available today in the Saskatchewan marketplace, from all telecommunication, cable and satellite companies.

Note: It is important to remember that the numbers of cables recommended are "minimum guidelines".

The actual number cables and types needed for each individual communication outlet are determined by the "actual" number and type of devices each outlet will feed.

Telephones, computers, IPTV boxes, media server boxes, gaming systems, etc. each require a minimum of 1 run of CAT5e for each such device at that location.

Furthermore, satellite receivers, cable digital boxes, etc require a minimum of 1 run of RG6 for each such device.

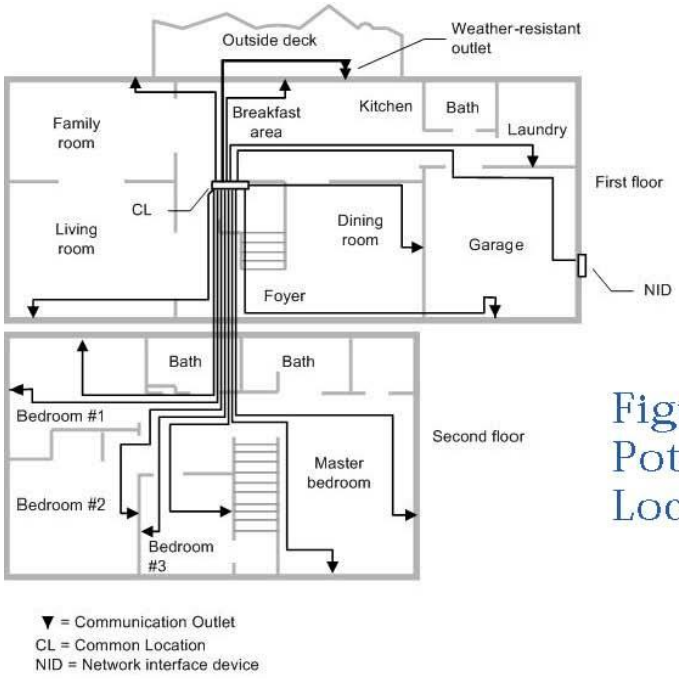


Figure 2: Potential Jack Locations

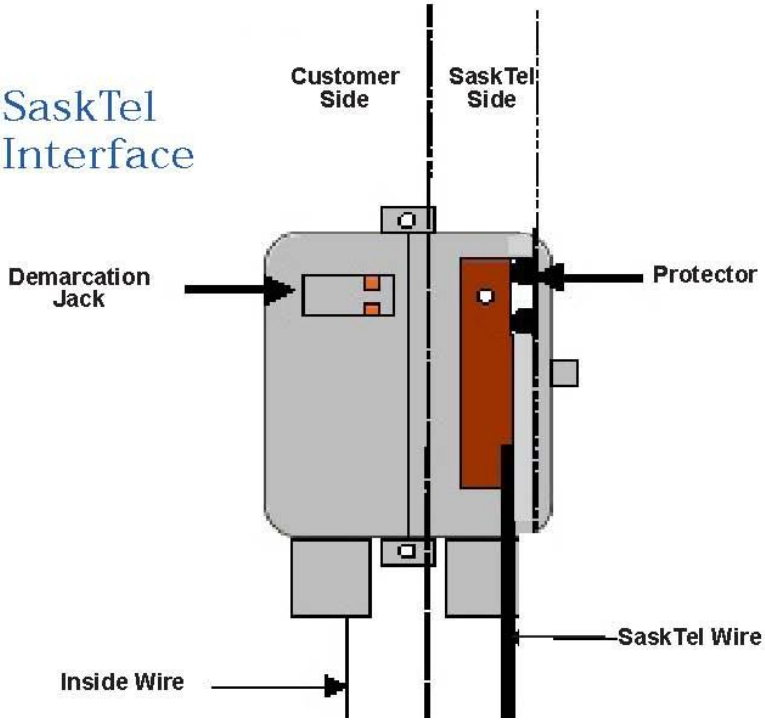


Figure 3: SaskTel Network Interface Device

Diagrams of the Distribution Panel and Multimedia Enclosure at the Common Location

Figure 4: Example of a distribution panel mounted beside the electrical panel

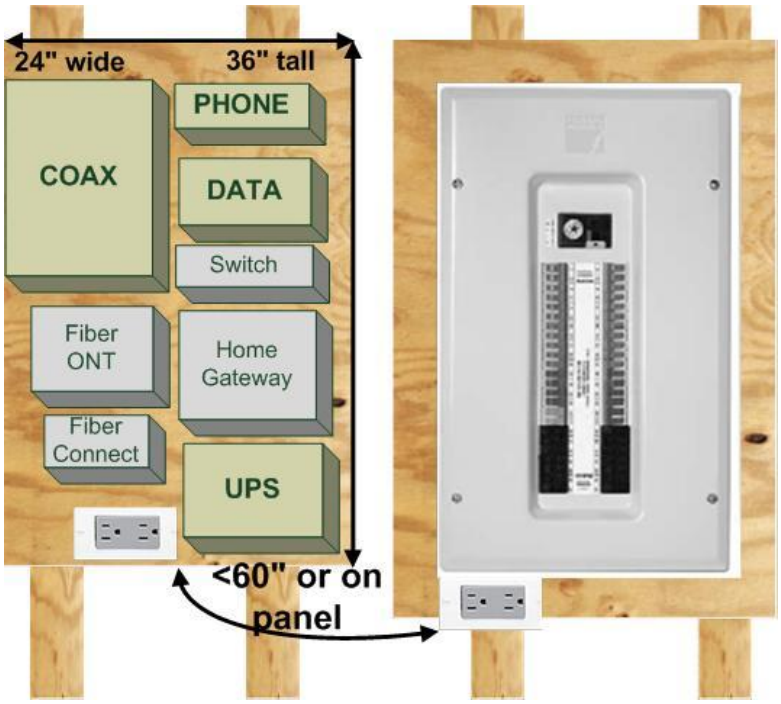
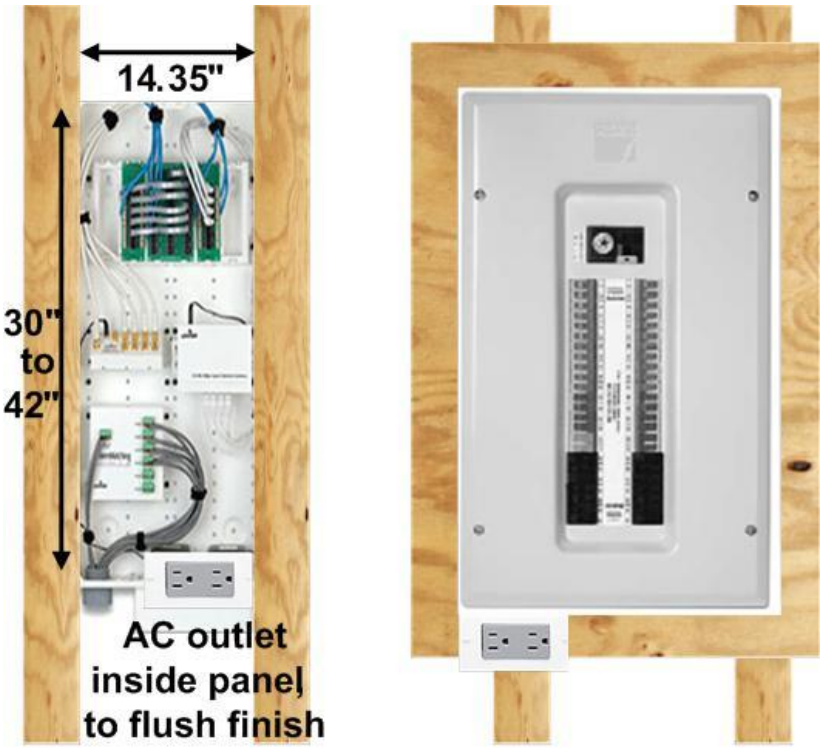


Figure 5: Example of a multimedia enclosure flush mounted in between the standard stud spacing (note some UPS's may be too deep to fit inside this enclosure)

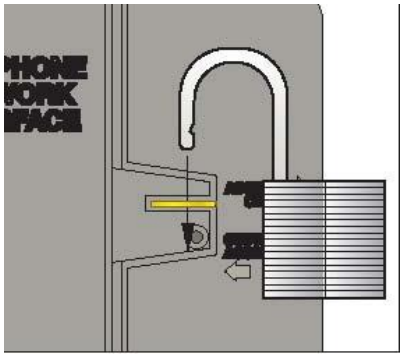


NID instructions

SaskTel has installed a plastic housing called a Telephone Network Interface. This outdoor unit is located where your telephone wire enters your premises. This location is usually near your electric meter.

Purpose of this Housing

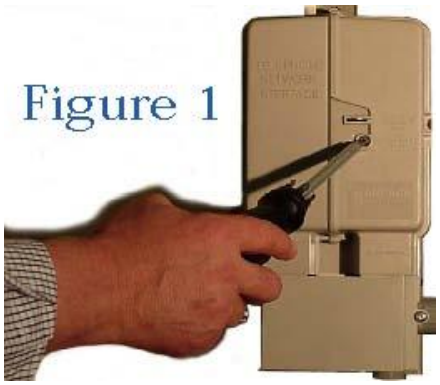
- Provides you a place to connect your premises telephone wires.
- Provides a convenient test jack, which will help you isolate telephone line troubles. This will assist you when reporting troubles to SaskTel
- Your telephone service may be further protected by the addition of a standard padlock (customer provided) as indicated below.



Testing

To test your telephone line:

1. Locate the housing marked Telephone Network Interface.
2. Using a screwdriver unscrew the fastener marked "Customer Access" (see Figure 1).
3. Swing the cover open.
4. Open the customer line module as shown in Figure 2 & 3. Squeeze the orange tabs and lift the cover open.
5. Plug the telephone into the interface jack.
6. If the telephone set works, the trouble is with your inside wiring or equipment. You have the option of calling SaskTel to repair at Tariff rates.
7. If the telephone does not work, close the Customer Line Module cover and contact SaskTel Repair Service (611).



Changing or Adding To Your Wiring

- Open the Telephone Network Interface as shown in figure 1.
- Open the Customer Line Module as shown in Figure 2 & 3. Squeeze the orange tabs and lift the cover open.

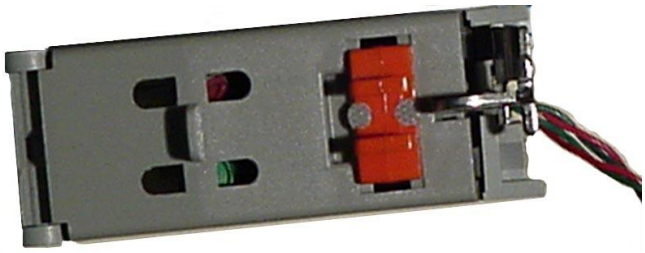


Figure 2

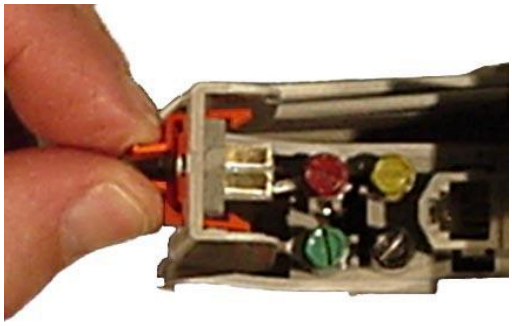


Figure 3

- Squeeze the orange tabs and lift the cover open.
- Route your new telephone wire, following the existing path through the telephone network interface.
- In some cases an additional lower housing cover may need to be removed with two screws.
- Connect the new telephone wire to the red and green colored screw terminals
- Close the module covers, and tighten the cover screw.

NOTE: If the customer line module is different than shown above or if in doubt, you can have a skilled SaskTel Technician change or add to your wiring needs.

IMPORTANT: If you have an alarm circuit or a special line, you may want to contact your vendor for assistance prior to equipment connections.

Wire standards

- As mentioned under “**common location**”, the standard wire used and recommended by SaskTel is category 5e, four twisted pairs of 24 AWG solid copper wires. All wire used must be CSA (Canadian Standards Association) **approved** and placement of all wire must conform to the **Canadian Electrical Code**.

- SaskTel recommends that **two category 5e** cables be installed at every location.

- Do not use flat telephone set line cord, lamp wire or bell wire for communications wiring.

- SaskTel does not sell to the customer, contractor or electricians, standalone items such as bonding packages, buried service wire, inside wire or any associated material (e.g. pedestals, jacks, etc.) required to extend the customer’s service from the SaskTel NID or the customer connecting point to external buildings. SaskTel will provide these items with an end-to-end service (i.e. sale and install) at the applicable rates. For more information, contact your local SaskTel office.

Wire installation

- A standard electrical box should be placed at each location a communications jack may be required. The boxes should be mounted approximately 12" (30cm) (normal electrical outlet height) above the floor. Wall mounted phone locations will be approximately the same height as electrical switches.
- SaskTel recommends running the wiring from each jack location to a "**common location**", (i.e. at the electrical panel) and then take a single wire run, through the **1 3/8" (34mm) access hole**, to the SaskTel NID. If this method is used it is recommended that all wires be terminated at the "common location" to allow continuity of all wire pairs for future installs and repairs.
- Leave about 3' (1m) of wire at the SaskTel NID location. This allows enough wire for connection at the customer connection point.
- Do not splice pieces of wire together for wire runs. This could cause future troubles that may not be accessible for repair.
- Secure the wire as needed by placing **appropriate** fasteners designed for said wire at approximately every 24" (60cm). Avoid kinks and sharp bends in the wire. Care is needed not to place fasteners through the wire. If this should happen, replace that wire in its entirety.
- When pre-wiring through rafters do not run communication wire in the same drilled holes as electrical wire.
- Do not run wire within 6" of any electrical wiring, in heating ducts or vents, or near hot water pipes or chimneys. Damp or wet areas (basement floors, bathrooms and some outside walls) should be avoided. **Note:** The CSA has specific regulations regarding bathroom locations.
- Maximum run length is 90 m.
- Do not exert > 25lbs of pulling force on the Cat 5e wire.
- Do not pull the communications cable through holes occupied by electrical cables.
- Cables that cross electrical runs should do so at 90 degrees.
- Avoid sharp edges and do not kink cable. The minimum bend radius is 10x the diameter of the Cat 5e cable.
- Any cable damaged in the course of the installation must be entirely replaced.
- Note, that Cat.5 wire used for data purposes cannot be opened, bridged or spliced. It will fail the characteristics required to maintain transmission.

Let SaskTel provide a skilled technician for your wiring needs.

For information on current rates or to book an appointment, contact:

1-800-SASKTEL
(1-800-727-5835)