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The following general procedures must be observed in relation to the location and installation of System One Home Communication components:

- Stations are not to be installed “back to back” or in “line of sight” of each other as this will cause feed-back (squealing).
- Where stations are to be fitted externally, appropriate measures to provide protection from weather are to be taken.
- Avoid running Intercom cable in parallel to electrical wiring.
- The Power supply is not to be installed in a cavity wall or any area (roof etc) where temperatures are likely exceed 100°F.
- Guidelines for maximum cable lengths as set out in this manual are to be observed to avoid the possibility of operating problems due to excessive voltage drop.
- The maximum number of stations on a system including Master, Room and Door stations is generally limited to 20. It is important that the power supply is properly matched to the size of the system. (See Power Supply on pg 8)

CAUTION: Failure to use specified cable may cause problems with the performance of the system and will void warranty on the equipment.

IMPORTANT: Responsibility will not be taken for problems that arise from the improper use of cable or interference generated externally to the system.

Interference by light dimmers, fluorescent lighting and similar electrical products, must be corrected at the source.

An aid to reducing the effects of this type of interference is to place stations and wiring no closer than 30cm (12”) from any AC device or wiring.

The circuitry of the intercom has been designed to minimize the effects of Radio Frequency Interference however total immunity to this type of interference cannot be guaranteed where the levels of interference generated are extreme.

NOTE: Shielded cable recommended for TC and VLC Lines to prevent spikes caused by rising and falling control signals being induced onto audio lines.

CABLE FUNCTIONS

POS - 15 VDC (RED)
May measure from 13.8V to 15.5 VDC with respect to 0V depending on voltage drop due to cable length.

NEG - 0 VDC (BLACK)

TC - TIMER CONTROL (SHIELDED RED)
Holds receiving stations on line for period controlled by initiating station. Normally low. Goes high when chime activated or call initiated from any station. Stays high until chime or call is reset.

VLC - VOLTAGE LEVEL CONTROL (SHIELDED WHITE)
Carries different voltage levels generated by initiating station to allow targeting of calls etc. Voltage is present for duration of button press or chime activation.

COMMUNICATION LINES - COM1 (WHITE) & COM2 (BLUE)
Carries balanced audio signal for Chimes, Private Calls & Paging Calls.

MUSIC/ MONITOR LINES - MUS1 (GREEN) & MUS2 (ORANGE)
Carries balanced audio signal for Music and Monitoring.

AUX - AUXILIARY OUTPUT CONTROL (SINGLE CORE)
Carries different voltage levels generated at initiating station, to control specific outputs on Auxiliary Output boards.

GENERAL INFORMATION

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ROOM STATIONS

Careful consideration must be given to present and/or future layout of furniture so as not to locate stations in inappropriate positions.

To avoid audio feedback, room stations should be kept at least 13-16 ft. away from other stations. Never have more than one station in any one room and avoid mounting stations in the same wall cavity, i.e. directly below and above one another in a two story house.

A suitable height is generally 4’6” from the floor to the center of the unit.

Stations located on timber frame walls should be located adjacent to a stud to allow for firm fixing.

Stations located on cavity brick walls will require the installation of wall boxes.

Stations installed on single brick walls will also require wall boxes; however, the cable will need to be chased and conduited into the brick wall.

The rear of the brick wall will need to be rendered or lined as the depth of a room station is approximately the same as a brick.

Where stations are required in bathrooms or laundries, they must be kept clear of water or steam.

Where stations are mounted on a tiled surface, a wall box should be installed prior to lining/tiling of the walls and the tiles will need to be cut to the inside dimensions of the wall box.

Where room stations are mounted outside and are exposed to the weather, the fitting of weather proof covers will be required.

Stations must not be installed in saunas.

FRONT DOOR/GATE STATION(S)

These stations are best located adjacent to the front door or at the front gate at a suggested height of 4’6” and may require a wall box depending upon the surface to which they are to be affixed.

Any Station exposed to the weather will require the fitting of a weatherproof cover.

Where stations are to be installed in solid brick or concrete columns at a front gate, it is required that the cable be run in conduit from the station to ground level and back to the house.

POWER SUPPLY

The power supply is usually located no less than 6 ft and not more than 16 ft from the point of connection at the master. (or from the point of connection at a room station if a master has not been fitted)

SIX WIRE OPERATION USING ROOM STATIONS

Although System One is designed to operate optimally using 8 wire Hook-up, it will also operate using 6 wire hook-up with the trade off that music will mute at all stations during private communication. (With 8 wire hook-up music only mutes at the 2 stations involved in communication)

To operate a system using 6 wire hook-up, the following is required.

Procedure

1) Press the Program button (PROG) – The red LED illuminates and the current chime is played.

2) Press the Program button again to select voltage output option mode – The red LED flashes the current output voltage option.

3) Press the Select button (SEL) – The next output option is displayed.

4) Repeatedly press the Select button until the desired voltage output option is displayed.

5) Press the Program button again to lock in selection and exit program mode – The red LED extinguishes.

NOTE: Pressing the Select button after all 3 output options have been sampled, will result in returning to the first output option.

Room Stations

- Press “PRIVACY” and “MONITOR” buttons simultaneously to enter Program Mode.
- Press “HOUSE” button to select “6 wire” mode. (Green LED off)
- Press “CLEAR” button to exit Program Mode.
- Music lines (MUS1 and MUS2) are omitted. (No wire links required at Room Stations)
- The station will toggle between 6 wire mode (Green LED off) and 8 wire mode (Green LED on) each time the “HOUSE” button is pressed while in program mode.
Suggested locations are kitchen cupboards, pantry, bedroom wardrobes etc.

Because the power supply dissipates heat more effectively in a cool environment it is recommended that the supply not be located in the roof space of a dwelling. It is also advantageous to have easy access to the supply should it be required that the system be turned off.

ANTENNA (AM/FM AERIALS)

The antenna arrangement is a critical part of the installation if a quality radio reception is required.

The AM and FM aerials should be located in the highest point of the roof and at least 6 ft away from any electrical or intercom wiring.

Because the FM antenna is directional, experimentation with positioning is recommended to achieve the best possible result.

Where the roof is lined with foil insulation or is of metal construction, an external whip or car radio antenna may be required for AM.

Connecting a specialized FM antenna or connecting to a TV antenna can greatly improve FM reception in poor signal areas.

AUXILIARY/LOCK OUTPUT BOARD

Optional Accessory allowing Electronic door locks, Automatic gates, Courtesy lights, Alarm panic circuits, etc. to be controlled from the Master or any Room station.

There are two (2) outputs on each board which can individually be programmed to time out or toggle depending on the application.

Four (4) of these boards can be fitted to any one system allowing a total of eight (8) Auxiliary outputs in total.

Each board is fitted in conjunction with a room station and is located in the side compartment of the room station back housing.

NOTE: Additional wiring is required for this feature to be available. See section ‘What Cable To Use’.
WHERE TO RUN CABLE

Cables can be run either:

- In the roof space
- In false ceilings/bulkhead area
- Through &/or around external walls
- Under floors (subject to access being available)

Note:
Intercom cables should be run as far away from AC wiring as practicality permits.

Avoid running intercom cable in parallel to AC or any other type of wiring. (Running across at right angles is OK where necessary)

All aerial wires should be taken to the highest and most accessible point in the roof.

Allow additional cable at each station for the purpose of termination.

In the case of cavity brick walls, ensure the wires are pulled through one of the holes at the rear of the wall box.

WHAT CABLE TO USE?

General
System One is designed to operate using 8 core cable; however, operation is also possible using 6 core cable with the disadvantage that music will be muted at all room stations while private communication is in progress.

The system may be Star Wired from a central point or Loop Wired however the number of stations on a loop is governed by the length of the loop, and also whether or not a standby battery is being used in conjunction with the supply. See section “Maximum Cable Lengths”.

Important Note: Different cables have different characteristics hence it is recommended that ‘Valet Cable’ be used on all new installations. Many other cables will work acceptably however responsibility cannot be taken for problems that arise from the use of other cables.

The proper use of shielded cable on VLC & TC terminals will prevent “clicks & pops” caused by Control Voltage changes from being induced onto audio lines.

Power Supply
Heavy duty ‘Figure 8’ cable (24 x 0.20mm or better) should be run from the Power Supply to the master. (Power Supply to any room station if a master is not fitted)

AM Aerial
The coaxial cable supplied with the master is to be run from the master to the highest point in the roof where the antenna tail provided (or a car radio antenna) must be plugged into the socket at the end of the cable. The plug at the master end of the cable must be cut off. Additional AM coax leads can be plugged into one another if additional length is required.

Exit program mode by pressing the “CANCEL/CLEAR” button.

Note: Single and Double Digit format cannot be mixed in one system.

- Each station is to be individually programmed to the same format.
- Repeated pressing of the “AUX” button while in program mode will toggle between Single and Double Digit formats.

KEYPAD BACKLIGHTING

The Room Stations have Keypad backlighting which can be enabled and disabled by pressing the “DOOR” button while in Program mode, as outlined above.

DOOR STATION ADJUSTMENTS

There are three adjustments on the door station which may require fine tuning after installation.

NOTE: A flat bladed screw driver with a blade width of between 2mm and 2.4mm is required for these adjustments. The use of an incorrect screw driver will result in the pot being damaged.

Microphone Gain

The microphone gain pot (VR3) is generally set half way and would rarely require adjustment. The microphone level can be turned down where the door station causes feedback in a room station due to close proximity or can be turned up if the communication level at internal stations is too low.

Chime Volume

Chime volume is adjusted by means of a miniature trim pot (VR2) situated at the bottom of the circuit board as indicated below. Turning this pot will vary the chime volume throughout the system. This pot should be adjusted so the chime volume comes through at an acceptable level at an internal room station with its slide volume control set to around level 4 or 5.
**PROGRAMMING**

For the purpose of Select Calling (Calling individual or grouped stations), each station must be allocated either a Single Digit or Double Digit number.

If more than one station is allocated the same number, the stations having the same number will form a group.

Allocating a number to a station, is done by means of programming via the keypad.

**SINGLE DIGIT CODING**

Single Digit Format is the default programming setting intended for systems requiring up to 8 select call channels. This format offers the convenience of calling individual stations by pressing only one button.

Enter program mode by pressing the “PRIVACY” and “MONITOR” buttons simultaneously.

If not previously programmed the station will be in the default setting of Single Digit Format where the red LED will repeatedly flash the programmed number. (the default number being 1)

Press the “AUX” button to toggle to Double Digit Mode.

In Double Digit mode the red LED will repeatedly flash the following information.
- Two quick flashes representing Double Digit Mode
- One to three flashes representing the first digit (default = 1)
- One to eight flashes representing the second digit (default = 1)

Enter a double digit number in the ranges of 11 to 18, 21 to 28, 31 to 38. (24 possibilities in total)

The red LED will repeatedly flash the following information.
- Two quick flashes representing Double Digit Mode
- One to three flashes representing the first digit of the new number
- One to eight flashes representing the second digit of the new number

**DOUBLE DIGIT CODING**

Double Digit Format is a programming option intended for systems requiring from 9 to 24 select call channels. This format requires that two buttons be pressed in sequence for calling individual stations.

Enter program mode by pressing the “PRIVACY” and “MONITOR” buttons simultaneously.

If not previously programmed the station will be in the default setting of Single Digit Format where the red LED will repeatedly flash the programmed number. (the default number being 1)

Press the “AUX” button to toggle to Double Digit Mode.

In Double Digit mode the red LED will repeatedly flash the following information.
- Two quick flashes representing Double Digit Mode
- One to three flashes representing the first digit of the new number
- One to eight flashes representing the second digit of the new number

**FM Aerial**

Run the 300 ohm FM Ribbon antenna supplied with the master from the master to the highest point in the roof. If using coaxial cable to connect to an alternative 75 ohm antenna, be sure to fit a balun to the 300 ohm terminals at the master.

**OPTIONAL AUXILIARY INPUTS**

**Auxiliary Input Jack [Optional]**

Run 6 core cable (or same wire as used for intercom wiring) from Input Jack to the nearest room station.

**Auxiliary/Lock Outputs [Optional]**

An additional single core cable is required between all room stations (and master if fitted).

Heavy duty ‘Figure 8’ cable (24 x 0.20mm or better) is to be run from each relay output (via power source if applicable) to each auxiliary device.

**Note:** Clearly tagging all cables at the master or central wiring point is recommended, as this can be extremely helpful in the event of having to isolate a problem such as a damaged cable.

**MAXIMUM LENGTH FOR CABLE RUNS**

As stated in the previous section the system may be Star Wired from a central point or Loop Wired however the number of stations on a loop is governed by the length of the loop, and also whether or not a standby battery is being used in conjunction with the supply.

The table below shows the relationship between the length of a cable run and the number of stations permitted on the run. The length of a cable run is determined from the station to which the Power supply is connected.

<table>
<thead>
<tr>
<th>MAXIMUM LENGTH FOR CABLE RUNS</th>
<th>WITHOUT STANDBY BATTERY</th>
<th>WITH STANDBY BATTERY</th>
</tr>
</thead>
<tbody>
<tr>
<td>400 feet</td>
<td>one station on loop</td>
<td>one station on loop</td>
</tr>
<tr>
<td>200 feet</td>
<td>two stations on loop</td>
<td>two stations on loop</td>
</tr>
<tr>
<td>130 feet</td>
<td>three stations on loop</td>
<td>three stations on loop</td>
</tr>
<tr>
<td>100 feet</td>
<td>four stations on loop</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** These maximum distances can be doubled where required by running a ‘fig 8’ cable (14 x 0.2 mm) in parallel with the red & black wires.
INSTALLATION OF DOOR STATIONS

Depending on the type of wall to which the station is to be affixed i.e. timber or brick, door station housing DSH may be needed.

Where stations are exposed to extreme weather, a weather proof cover should be fitted.

Green and orange wires are not used at door station. Tape green and orange wires back to white outer sheath of valet cable.

Do not connect green and orange wires of door station cable at room station end. Tape back in same manner as above.

Where a door station is part of a wiring loop, the door station should always be the last station on the loop.

NOTE: For 6 Wire Systems
input jack to Com1 (White) and Com2 (Blue) of room station.
- Connect green & orange of
- Fit jumper to L1
### INSTALLATION OF MINI ROOM STATIONS

#### ROUGH IN

A composite 3-gang box can be used to house the System One MINI.

1) Attach the 3-gang electrical box to a wall stud at desired location.

2) Run Valet intercom cable (8VM500) or Cat5 cable to all installed room station locations.

#### WIRING

Valet System One intercoms can be wired in a loop or star style configuration. Star configuration is also referred to as “home run”. If the “home run” style of wiring is desired, we recommend utilizing a structured wiring enclosure with RJ45 style connectors for a hassle-free installation.

#### POWER SUPPLY

1) Attach VPS3DC Power Supply.

#### Requirements

A Regulated 13.8V DC power supply is required to power the system.

The required current rating of the supply will vary depending on the size of the system and is equal to the sum of the current draw of each unit used.

#### CURRENT DRAW

- MASTER - 350 mA peak
- STATIONS - 150 mA peak
- AUX O-P BOARD - 60 mA per board

An 800 mA plug pack will operate a system comprising of 5 Room/Door Stations.

A 2 Amp plug pack will operate a system comprising of 13 Room/Door Stations.

#### Multiple Supplies

Multiple power supplies may be used to provide additional current however their output voltages need to be identical to minimize power losses.

#### Standby Battery (Optional)

Many 15 VDC power supplies accommodate the use of a standby battery which may be used to allow the entire system to run in the event of a mains power fail.

The duration of battery backup is dependent upon:

- a) the size of battery(s) used
- b) the number of stations connected

A system using a 12V 6.5AH battery with ten stations connected to a master will run for approximately 3 hrs with music playing at a moderately high volume. (6 hrs w/ music off)
**INSTALLATION - FINISH OUT**

1. **Install the terminal block.**
   See Fig. 1 for how to wire the terminal block.
   Wiring configurations for Valet Cable and Cat5 Cable have both been provided. (Fig. 1b)
   Also shown in the figure 1 is the proper location to install the 220K resistor. Only one resistor will need to be installed for the system and it is recommended that the resistor is installed at the station that has the power supply connected to it.

2. **Mount the metal bracket to the 3-gang box.**
   The metal bracket can only be installed one way.
   There is a red “UP” arrow in the upper right hand corner of the bracket that indicates which way the bracket is to be installed.
   The metal mounting bracket is to be secured to the 3-gang box by the four #6 x 7/8” screws each with a #6 washer behind the screw. This allows for 1/16” adjustment for proper leveling.
   Fig. 2

3. **Bend the Tabs**
   The metal mounting bracket has 8 tabs along the interior perimeter of the bracket.
   Once the bracket has been securely fastened to the 3-gang box, these 8 tabs will need to be bent 90° into the 3-gang box opening. (Fig. 3)
   These tabs are for use in a retro-fit application.

**WIRING CONFIGURATIONS**

- **CONTROL VOLTAGE LOAD RESISTOR**
  The fitting of a Load Resistor to the system is required to balance the Voltage Control Line so that communication is received by the appropriate station(s).
  Although a Load resistor is provided with each Room Station, only **One** Load Resistor is required for an entire system.
  The Load Resistor should be fitted at the Room power supply has been connected, across the VLC (YEL) terminal and the Neg (BLK) terminal.

**TERMINATION OF LOAD RESISTOR**

- AUX
- MUS2
- MUS1
- COM2
- COM1
- SHLD
- VLC
- TC
- NEG
- POS

**NOTE:** ONE RESISTOR TO BE FITTED AT ONE STATION ONLY