Bell System (Telephones) Ltd

Model 719S

2 Door Switching Unit

PD-008 Iss 6

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General Description

The Model 719S Switching Unit provides a means of operating a door entry telephone system from two entrances. Several 719S units may be combined to extend operation up to a maximum of sixteen entrances.

Operation

When a telephone is called from a given entrance, the switching unit connects the telephone to the calling entrance only. The unit remains active for a preset period (30 - 120 secs), during which time the resident may converse with the caller by lifting the telephone handset and, if required, allow the caller to gain access. By pressing the telephone 'lock button' the lock release (of the active entrance only) will operate for a preset period (3 - 20 secs) and end the call.

When a given entrance panel is in use, all other entrances are 'locked out' for the active period (30 - 120 secs), during which time it is not possible to call any of the telephones from these entrances. This engage condition maybe indicated to other callers by an optional 'engaged lamp' installed at each door.

Telephones

The 719S switching unit is compatible with the telephones listed below: -

Telephone model	Type	Diagrams
801	12V AC/DC	1 and 2 (AC) or 3 and 4 (DC)
801S	12V AC/DC with Buzzer Mute	
801P	12V AC/DC with Privacy of Speech	
801PS	12V AC/DC with both 801S and 801P features.	
801-DESK	12V AC/DC desk mounting	
BS-LX	12V DC with Mute + LED features	3 - 7

The 719S is compatible with 500 series phones, please refer to manual PD-008 Iss 4.

* Only 801 Series phones manufactured after April 2000 (Electronic ring) are DC compatible.

Power Supply

The 719S is powered from a 12V AC 2A PSU (225) for AC telephones or 12V DC 4A PSU (PS4) for DC telephones. A separate power supply is required for each 719S unit in multi-door systems (see Diagrams 2 or 4).

It is also possible to operate a fail-safe lock release on an AC system with the addition of a 12V DC 1.5A PSU (340C), see diagram 1.

A maximum of 20 BS-LX telephones can be powered directly from a 719S unit. For up to 60 telephones an additional PS4 PSU must be used. Refer to diagram 6. **For larger systems contact your distributor or the manufacturer for further guidance**.

Electric Lock Release / Maglock

Either fail-secure (AC/DC) or fail-safe (DC only) type electric lock releases can be operated directly from the 719S Switching unit. Use the 'FAIL SECR' connections for fail-secure releases. Use the 'FAIL SAFE' connections for fail-safe releases and magnetic locks. The Lock outputs are rated at a maximum current of 0.5A. A suitable transient suppressor must be fitted across or in any Maglock used.

Egress Facility

An 'egress' button may be installed, on the inside of each door, to allow residents to freely exit. Momentarily pressing this button will operate the lock release for a fixed period (3 - 20 secs). The egress button is connected to the 719S Switching unit using the terminals marked 'EXIT' and should be ‘push to make’, refer to diagrams 1 or 3.

Tradesman Facility

The entrance panels may be ordered with an optional 'Tradesman' button to allow free access during certain hours (used in conjunction with a time-clock). Momentarily pressing this button will operate the lock release for a fixed period (3 - 20 secs). As illustrated in diagrams 1 or 3, the tradesman's button should be connected in series with the isolated contacts of a Time clock and then to the 'EXIT' terminals of the switching unit.

Door Status Indication

The BS-LX model of telephone has a green LED indicator to show the status of the entrance door(s); the indicator illuminates when one or more of the doors are open. The door must be fitted with a suitable switch (rated 1.0A @ 12V for 60 phones).

If the door contacts are closed when the door is closed the contacts should be wired in series and then connected into the ‘DOOR SW’ terminals on the 719S for DOOR 1 only.

If the door contacts are open when the door is closed the contacts should be wired separately in to the ‘DOOR SW’ terminals on the 719S for the associated door.

Refer to diagram 7.

Systems With 3 or More Doors

One 719S unit is required for every two doors up to a maximum of 16 doors (e.g. 5 doors requires 3 x 719S units). Refer to diagram 2 (AC telephone models) or diagram 4 (DC telephone models).

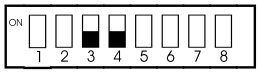
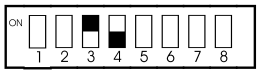
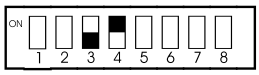
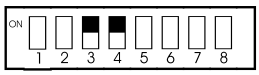
A separate power supply is required for each 719S unit. **The 719S units should be installed no more than 2 metres apart** (unless using 2 Level Gate and Block wiring,

see to document PD-082)**.**

Settings

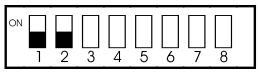
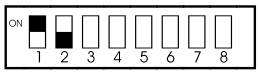
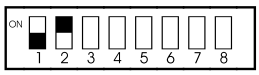
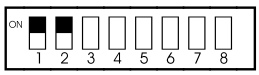
Speech Active Time

The duration for which speech remains active (from the moment a telephone is called) can be set between 30 and 120 seconds using the PCB DIP switch marked ‘SW2':

Time (s)	‘SW2’ DIP Switch settings
30	
60 (Default)	
90	
120	

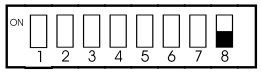
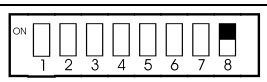
Lock Release Time

The Lock Release time can be set between 3 and 20 seconds using the PCB DIP switch ‘SW2':

Time (s)	‘SW2’ DIP Switch settings
3	
5 (Default)	
10	
20	

Mode Setting

For the system to operate correctly the operating mode MUST be set as below:

Operating Mode	‘SW2’ DIP Switch settings
Standard 2 Door Switching Unit (Default)	
2 Level Gate and Block Switching Unit (Refer to supplement PD-082)	

Important Safety Information

Connections to the 240V AC mains supply must be carried out by a qualified electrician or similar competent person, and made in accordance with accepted safety practices. A two-pole switch (as provided by a Consumer Unit or Switch-Fuse) must be included to isolate both Live and Neutral during Installation or Maintenance. The circuit must be protected by a fuse or other current-limiting device, rated according to the capacity of the cable used, up to a maximum of 10A. Use only mains cable to BS6004, BS6500, or equivalent, within the following specified limits:

	Min	Max
Conductor Diameter	1.0 mm (0.8 mm^2)	2.25 mm (4 mm^2)
Cable Diameter	4.0 mm	8.0 mm

The Model 225, 340C or PS4 Power Supply (where used) must be wall-mounted onto plasterboard, wood or a similar non-conductive material, in a protected indoor environment such as an electrical cupboard. A fuse protects the internal transformer on the 225; always replace with the correct type and rating.

Power Supply Model	Fuse
225	T125mA 250V

The fuse must be of the 20mm glass, 250V, and time delay type approved to BS EN 60127 or equivalent).

The 340C and PS4 do not have replaceable fuses.

When fitting the power supply cable (both mains and low voltage) ensure the cable entry cut-outs in the enclosure lid are no larger than necessary for the cable diameter used and under no circumstances must they be taken beyond the outer cut-out zones.

All equipment except the entrance panel must be placed in a protected indoor environment.

Installation

Initially connect all the equipment to one telephone ONLY. With the power applied, test the system is fully operational. Connect one telephone at a time and test before proceeding.

Cable Requirements

Use standard 0.5mm solid core twisted-pair CAT5/CAT5e unshielded or CW1308 telephone cable for all connections unless otherwise specified. **Do not use stranded alarm cable**. For optimum speech clarity a twisted-pair must be used for the 'R' and 'O' connections to telephone and speech unit. Avoid running any cables alongside mains or other transmission wiring.

The Total number of cores depends on the requirement for each telephone model as shown in the table below. In all cases there is an individual call line for each phone, while the remainder of the cores are common to all phones in the system. All telephone models, except the BS-LX, may be wired either with an individual cable or by looping from phone to phone.

Care must be taken with the BS-LX model to avoid voltage drop problems (due to LED currents from mute and door status features). Refer to the tables on diagram 5 and below before planning the cable layout for these models. **If in doubt please contact your distributor or the manufacturer for further guidance.**

Connection	**No. of cores**	**Max Length**	**Conductor Size**
801,801S, 801P or 801PS Phone	5	100m	0.5mm dia.
BS-LX Phone	7	See diagram 5	
BS-LX (no door contact, no 'L')	6		
Power Supply	2	2m	1.0mm^2
Speech Unit	5	50m	0.5mm dia.
Lock Release (up to 0.5A)	2	25m 50m	0.5mm dia. 1.0mm^2
EXIT/Trades Button (inc. Time Clock	2	100m	0.5mm dia.
Door Monitor Contact	2	See diagram 5 and 7	

Troubleshooting

Test Button

There are two Test buttons on the PCB marked 'TEST 1' and 'TEST 2'. Pressing the appropriate button will force entrance 1 or 2 into an active state (green LED on, 12V at the B terminal) for a fixed period (speech active time). Telephone models with ‘privacy of speech’ (801P, 801PS and BS-LX) must also be buzzed to enable speech. This feature is provided to assist in fault diagnosis during installation and commissioning.

LED Status Indicators

To assist in testing and fault diagnosis there are 4 LED Indicators on the 719S PCB which can be interpreted as follows: -

LED 1 (GREEN) - Speech Active / Call in progress on Door 1

LED 2 (RED) - Lock Release Active Door 1

LED 3 (GREEN) - Speech Active / Call in progress on Door 2

LED 4 (RED) - Lock Release Active Door 2

Problem and Cause

The Voltages below are AC or DC depending on the power supply used.

PROBLEM	COMMON CAUSE AND ACTION
Low speech volume.	• 'Vol A' or 'Vol B' adjustment required on the Speech Unit. • Speech Unit is not tight against the panel grill. • Panel grill is blocked. • Speech Unit supply voltage low. Check 11.5V-15V across 'C' and 'H' on unit. • More than one telephone is off the hook (801 or 801S only).
Constant tone/feedback when in use.	• 'Vol A' or 'Vol B' adjustment required on the Speech Unit. • Missing 'O' connection on the telephone. • Speech Unit is not tight against the panel grill. • Entrance panel and telephone to close together. • Reflecting walls surround the entrance panel. • Panel grill is blocked. • Alarm cable has been used.

Speech not audible when phone is buzzed.	• No/low supply to Speech Unit. Check 11.5V-15V across 'C' and 'H' on the unit. • Faulty 'R', 'O', or 'T' line between Switching Unit and phone or Switching Unit and panel.
Telephone will not buzz (no green LED illuminated on the 719S)	• Faulty 'O' or 'I' line between Switching Unit and phone. • 'B' terminal on the 719S not wired to the call button commons in the entrance panel (only if no ringing on several phones). Check for 12V on the 'B' wire when the TEST button has been pressed (green LED on). • 'B' terminal connected to 12V instead of only to call buttons on the other entrance (green LED stuck on for other Door). Check by taking out the B terminal for the other Door and waiting for the green LED to go off after the speech time. • AC telephone systems only: Faulty 'H' or 'O' line between switching unit and panel. As a check, short 'H' to 'O' at the switching unit and try again. • Faulty 'V' connection to phone. Check 10-15V between 'O' and 'V' at the phone (BS-LX phone ONLY). • Faulty panel button. • No/low supply to Switching Unit - Check 11.5V-15V on Switching Unit supply input. • Power supply has been wired to wrong Switching Unit input. Check an AC supply has been wired to a 12V AC input or a DC supply wired to a 12V DC input, where installed.
Lock button does not operate release.	• AC telephone systems only: Fault on 'H' or 'O' between switching unit and panel. As a check, short 'H' to 'O' at the switching unit and try the lock button again, when active. • Fault on 'Z' or 'O' line. Check shorting 'Z' to 'O' at the Switching Unit, when active (green LED on), operates the release. • Lock release supply low. Check 11.5V-15V across the release with the lock button pressed and the phone active. • Using a fail-safe output but no DC power supply present.
Tradesman/Exit button inoperative.	• Time Clock is not running or incorrectly set (Tradesman button only). • Check connections to 'EXIT' input.
Lock release operates all	• If the lock is a 'fail safe' type it has been

the time.	connected to 'FAIL SECR' output. If the lock is a 'fail secure' type it has been connected to 'FAIL SAFE' output. Check to see if the release is inactive when the lock button is pressed or try swapping the connections over. • 'EXIT' inputs permanently shorted together. Check any exit button used is wired for ‘Push to make’.
Lock operates as soon as called, short talk time.	• Lock button stuck down. Disconnect the ‘Z’ wire (lock button) from the 719S and check. • 'Z' and 'O' lines permanently shorted together. Disconnect the ‘Z’ wire from the 719S and check.
Supply voltage low (less than 10V, any system component).	• Short circuit. Disconnect power supply loads and check the output is 11.5V-15V. Systematically disconnect components one at a time or isolate floors, etc. until the voltage is 11.5V-15V. Start with connections around the Switching Unit. • Cable voltage drop too high. Try doubling up with spare cores. Refer to the CABLE REQUIREMENTS section.

Technical Specification

Size Boxed	238mm x 189mm x 50mm
Size PCB Only	177mm x 137mm x 18mm
Supply Voltage	11.5V - 15Vrms 50Hz AC or 11.5V - 15V DC
Current Consumption	590mA maximum AC or 290mA maximum DC
Fail-secure Lock output	Same voltage as AC/DC supply, AC if both present. 500mA maximum.
Fail-safe Lock output	Same voltage as the DC supply 500mA maximum
Lock release duration	3, 5, 10 or 20 seconds (typical)
Active time	30, 60, 90 or 120 seconds (typical)
Engage lamp output	Same voltage as AC/DC supply, AC if both present. 100mA maximum.
Exit input	Normally open contact (must be voltage free)
Door Switch Input	Connect passed through to the phones. For DC phones only. Switch/Contact rating must be 1.0A @12V minimum for 60 phones. See diagram 7
No. of Doors	2 per unit, maximum of 16 doors per system
Operating Temperature	0°C to 50°C

Diagram 1: Wiring for 2 Door AC Systems

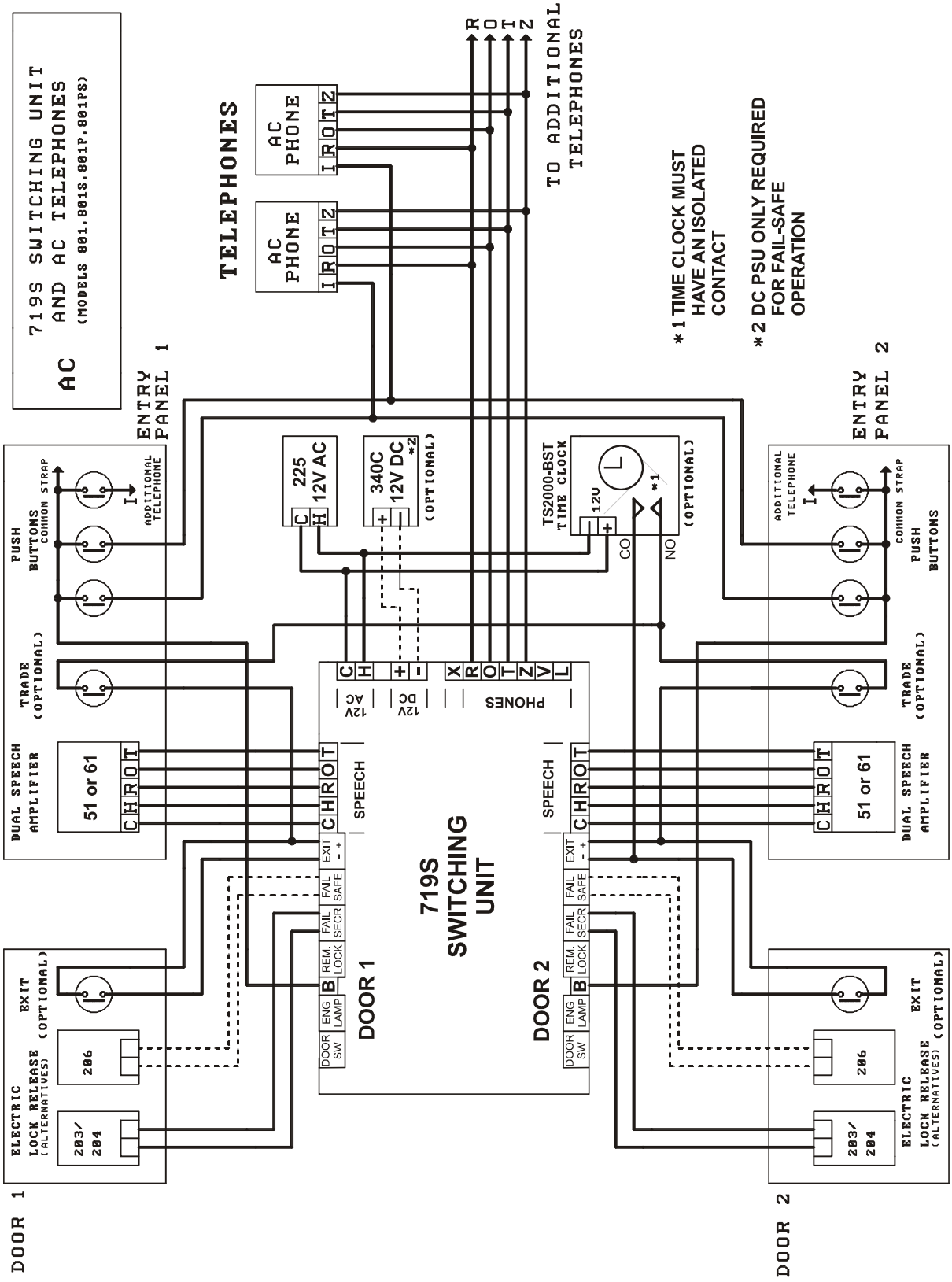


Diagram 2: 719S AC Interconnections For Systems Of 3 – 16 Doors

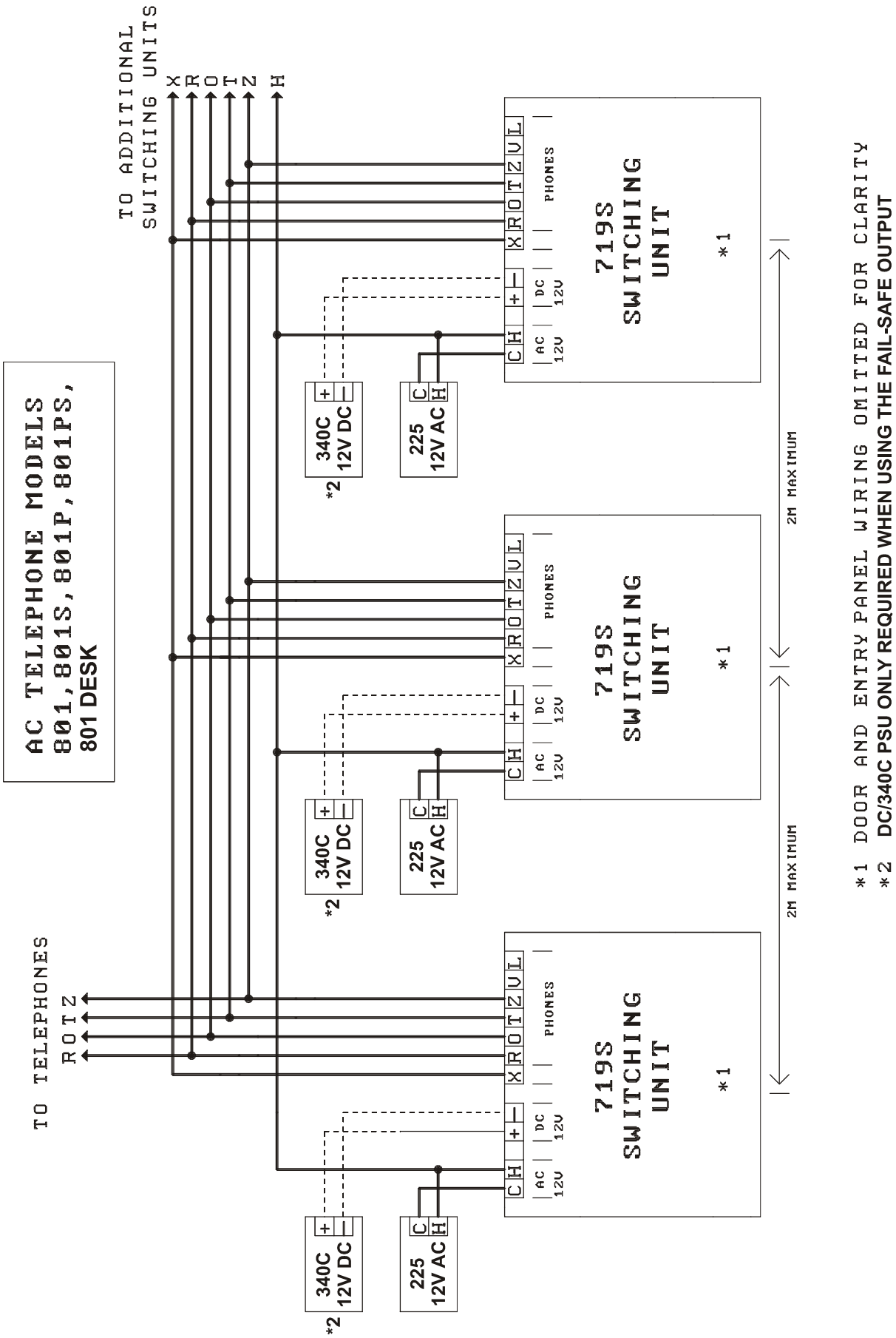


Diagram 3: Wiring Diagram for 2 Door DC Systems

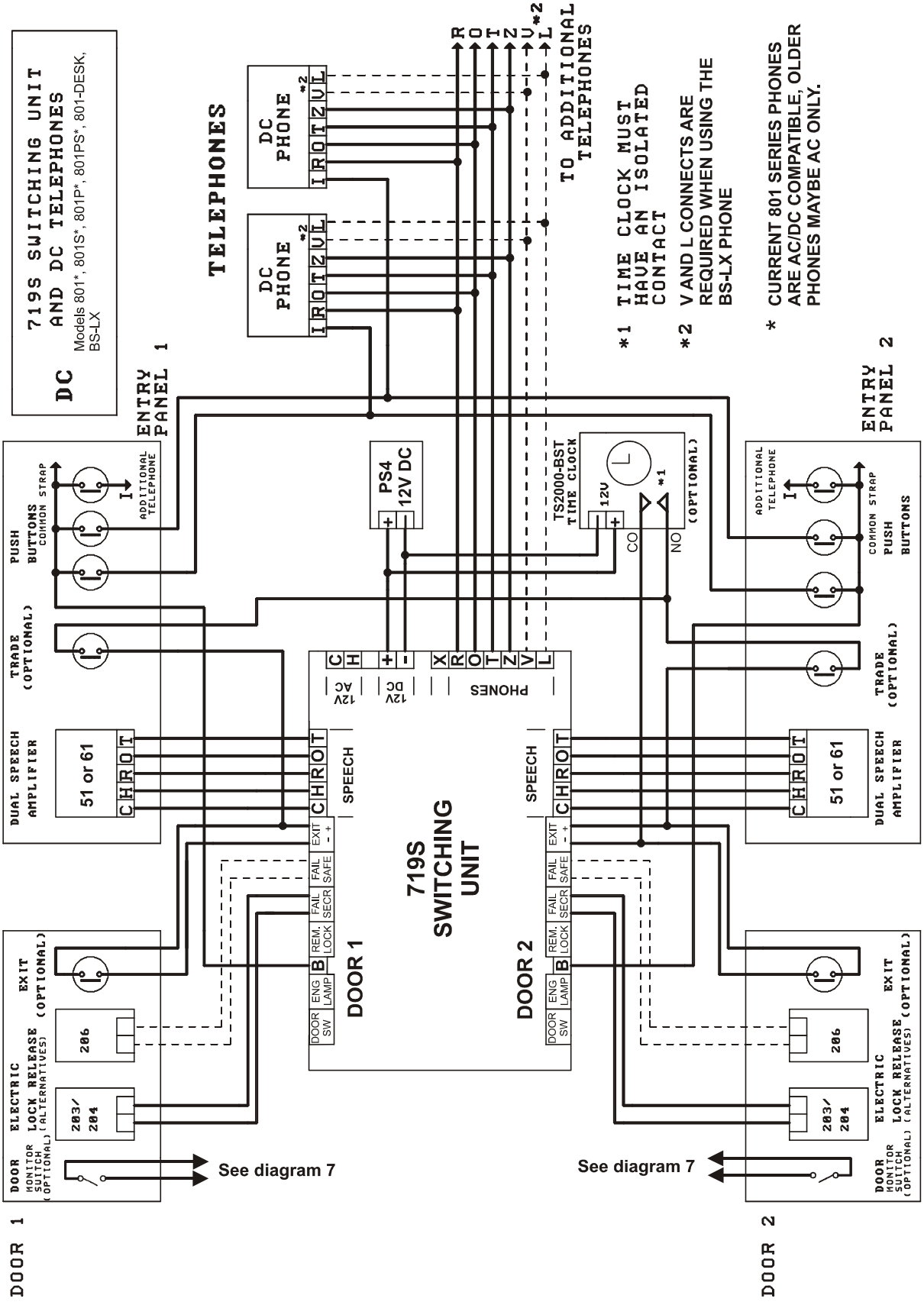


Diagram 4: 719S DC Interconnections For Systems Of 3 – 16 Doors

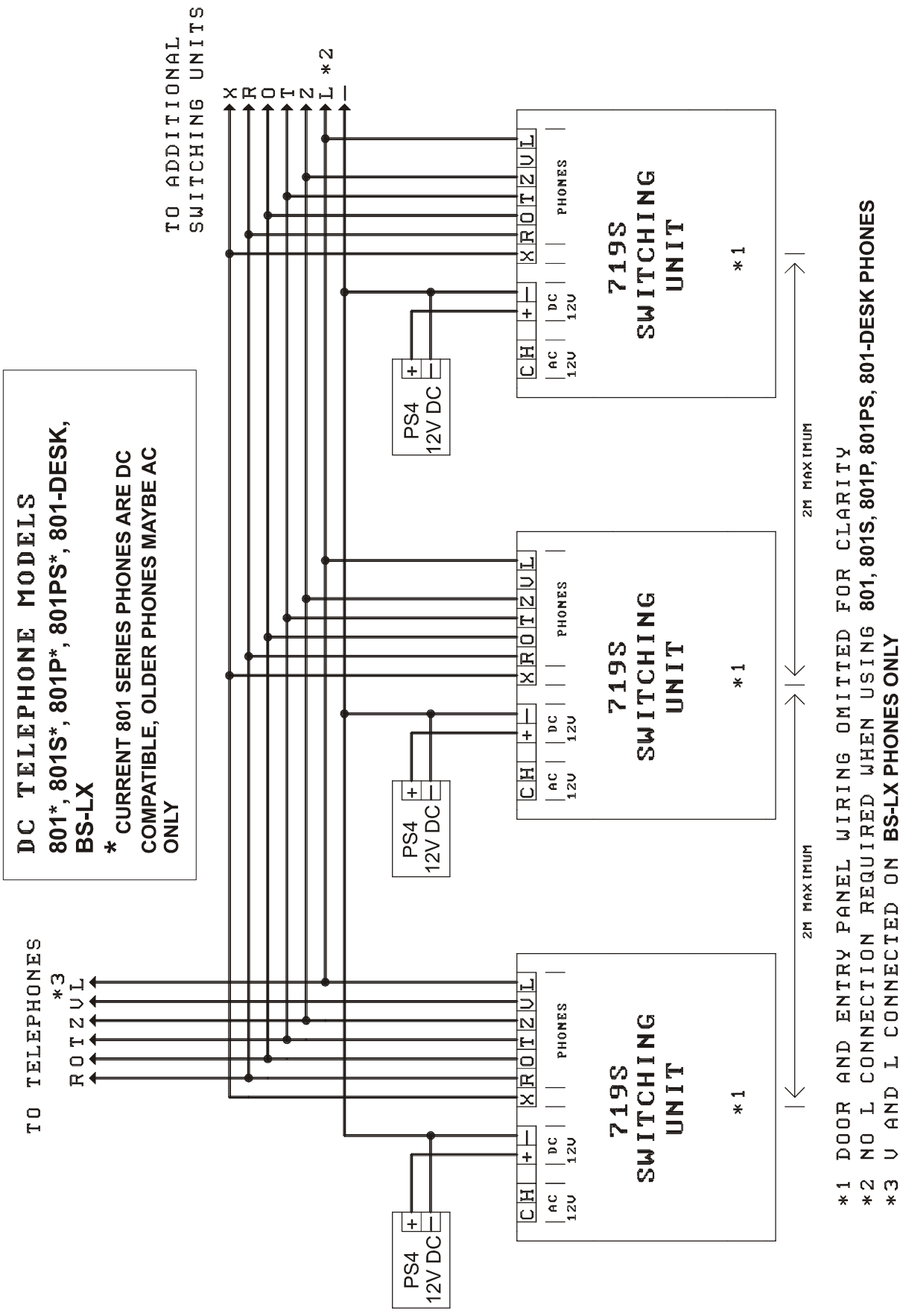


Diagram 5: Distribution of Common Cables of BS-LX Phones

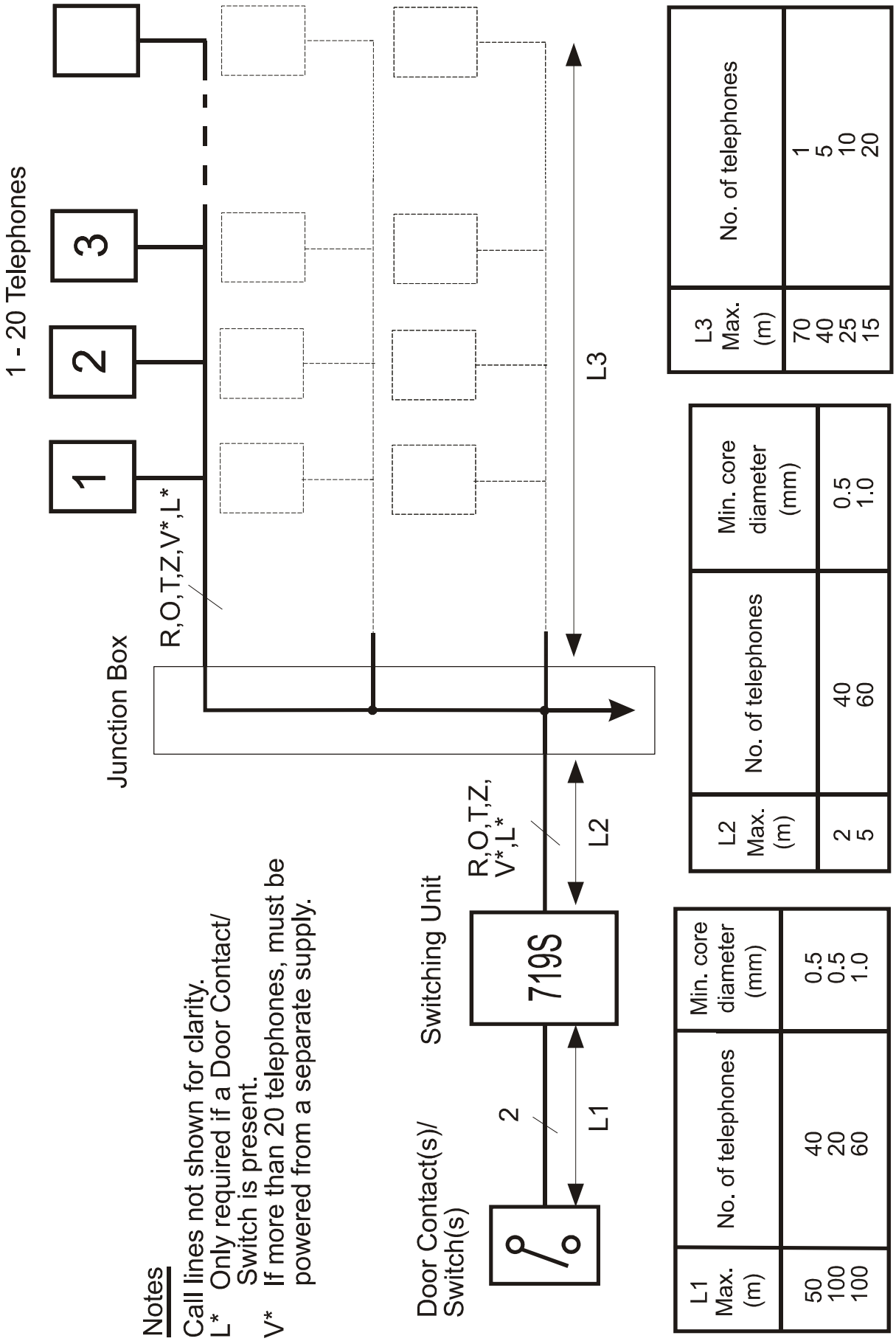


Diagram 6: Connection Of Additional PSU for 21-60 BS-LX Phones

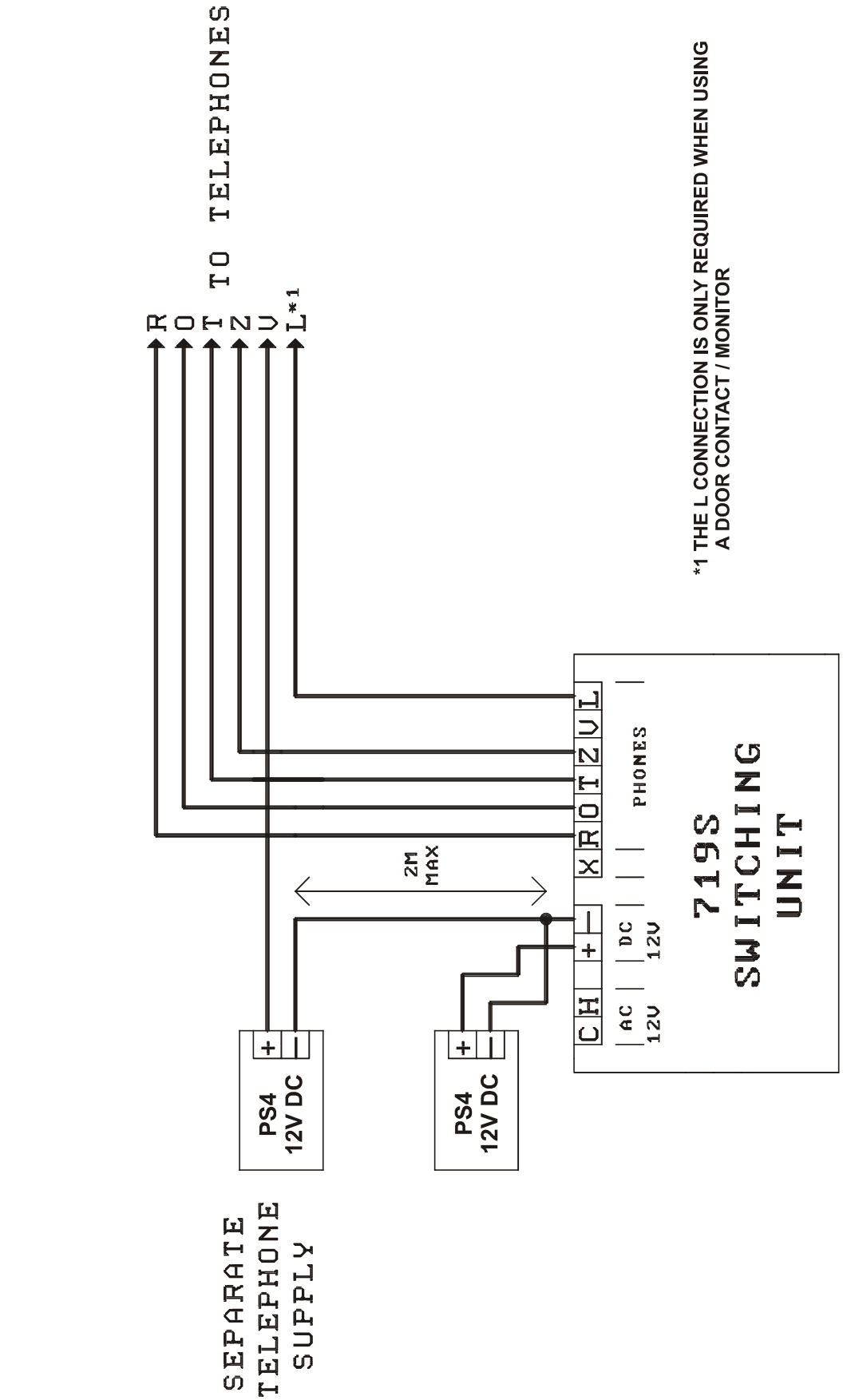
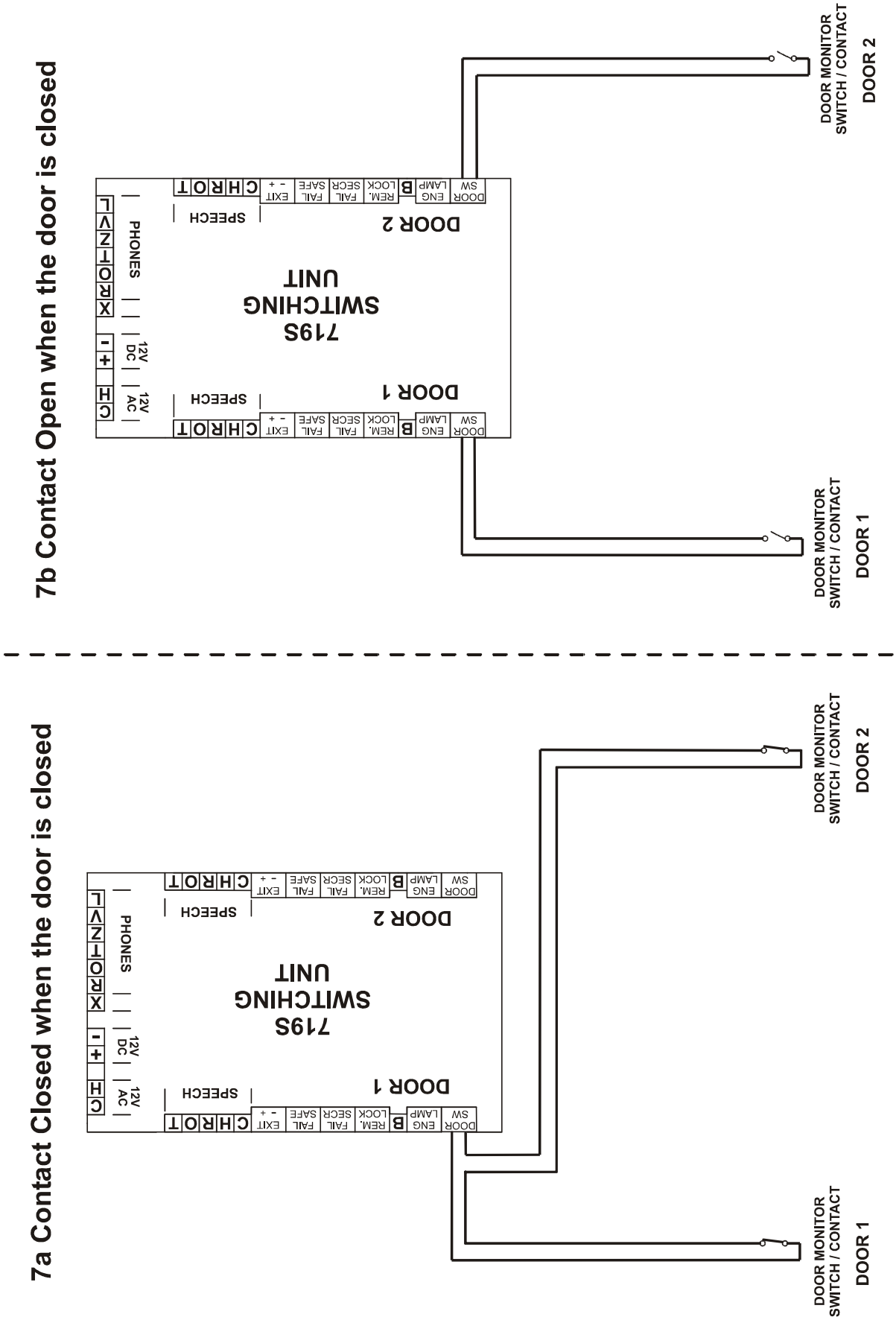


Diagram 7: Door Contact / Switch Wiring



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Standards

This product complies with European directive 89/336/EEC on Electromagnetic Compatibility and Low Voltage Directive 72/23/EEC.

Emissions: Generic BSEN 50081-1

Immunity: Generic BSEN 50082-1

Low Voltage: Generic BSEN 60950

BS EN ISO 9001:2000 Certificate number GB2000389