

Bell System (Telephones) Ltd.

**bell***view*

**Video Entry System**

**Installation & Operation  
Manual**

PD-007 Issue 3



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### General Description

The **bellview** Video Door Entry Telephone System is a high quality, versatile security product for controlling access to private houses, residential homes, blocks of flats and offices. The occupants are supplied with individual video entry telephones which enable them to view the person calling at the entrance; to converse with the caller; and if desired allow them access to the building via an electric lock release.

### Video Telephones (model BV)

This is a slimline, wall-mounting unit, manufactured in high quality impact resistant ABS plastic. It has a 4" flat tube display with variable contrast and brightness, providing a high definition, high quality picture. Up to 10 telephones may be directly connected on to the system without the need for a video distributor.

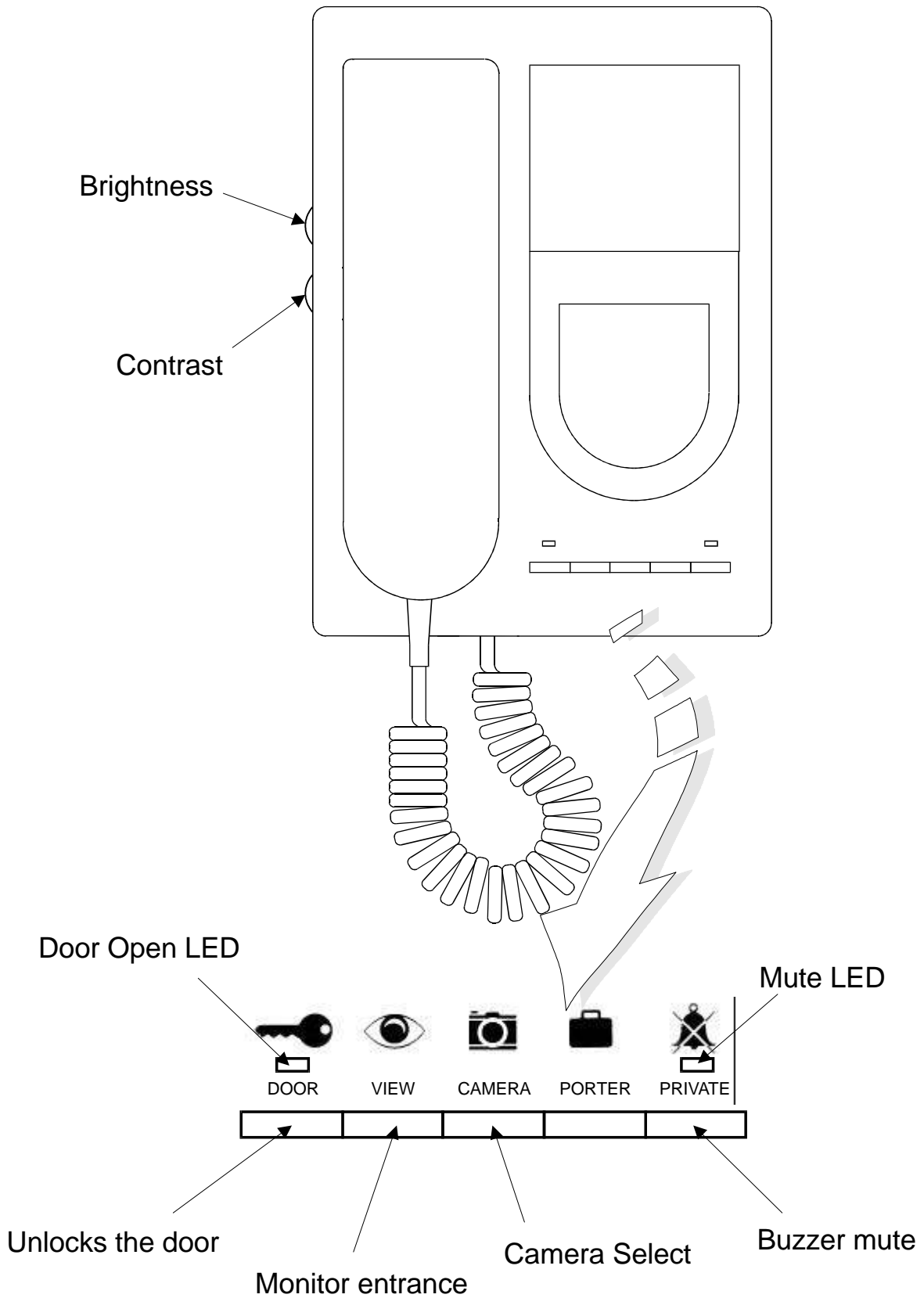
### Entrance Panel (BVP series)

The BVP series of aluminium panels are available in most sizes (depending on the number of push buttons required), and are supplied with a flush-fitting back box. Stainless steel or brass Vandal Resistant panels are also available to order, engraved with the customers particular requirements. Each panel includes a high quality two-way speech amplifier (model 61) concealed behind a grill, and a solid-state CCD camera (model BV700) which is protected by a high impact strength lexan window. The camera includes four, high intensity infrared lamps for illumination of the caller at night time.

### System Features

- ! 4" Flat screen monitor
- ! High resolution CCD camera with infrared lamps
- ! High quality, full-duplex speech amplifier
- ! Tradesman facility (optional)
- ! Facility for egress button and/or fire switch
- ! Privacy function (buzzer mute)
- ! Full privacy of speech
- ! Door Status indication
- ! Outputs for fail safe and fail secure locks
- ! Lock release timer
- ! Mains / battery status indication (battery backup models)

# Telephone Controls



## System Operation

### General

The entrance panel, which includes the camera and speech unit, should be located on a wall adjacent to the building entrance. A visitor can contact any resident by pressing the appropriate button on the entrance panel which will call the resident's video telephone (sounds a buzzer), activating the display and enabling speech. The resident can view the caller on the video screen and by picking up the handset freely converse with the visitor. The telephone will remain active for a fixed period (adjustable 30-120 seconds).

If the resident wishes the caller to gain access to the building, the **DOOR** button can be pushed while the video telephone is still active; this will operate an electric lock release on the entrance door for a short period (adjustable, typically 5 seconds).

### Privacy mode (buzzer mute)

To avoid disturbance from nuisance calls the resident may push the **PRIVATE** button on the video telephone. This will mute the buzzer for a fixed period (adjustable between 1 minute and 10 hours) and illuminate a red indicator lamp. Pushing the button again will re-enable the buzzer and extinguish the lamp.

### Multi-door operation

When a call is made from an entrance panel it will automatically switch operation to that door. The camera and speech unit of the active panel will remain live for a fixed period (adjustable 30-120 seconds) during which time the other entrances are locked out. An optional engaged lamp may be fitted at each entrance as an indication that another door is in use.

The resident may change the view between doors by pressing the **CAMERA** button.

### Monitor Mode

On a single way system a resident may view the entrance at any time by pressing the telephone **VIEW** button (This feature may be disabled if required).

### Privacy

The **bellview** system offers full privacy of speech, that is, only the resident who has been called may listen and speak with the caller. On multi-way systems the **CAMERA** and **VIEW** buttons can be made private to prevent other residents monitoring visitors.

To enhance system security and reliability a lock privacy function is provided, which ensures only the resident who has been called can unlock an entrance.

## Equipment Required

### Control Cabinet / Power Supply

For systems exceeding 10 ways or requiring battery backup, an IP55-rated, lockable steel cabinet is supplied, containing the power supply and control circuitry. This is available for smaller systems on request.

System		Control Cabinet /Power Supply model		
1-10 Way	1 Door	Model 540 Power Supply		
11-60 Way	1 Door	CABV/60/1:	PSU138B LT88 VDC6	Power Supply Lock Timer Video Distributor
1-10 Way	2 Door	Model 440 Power Supply Model 819S Door Switching Unit		
11-60 Way	2 Door	CABV/60/2:	PSU138B 819S VDC6	Power Supply Door Switching Unit Video Distributor
<b>With Battery Backup PSU (requires 12V 6AH sealed Lead-Acid battery)</b>				
1-10 Way	1 Door	CABV/10/1:	PSU138A LT88	Power Supply Lock Timer
1-10 Way	2 Door	CABV/10/2:	PSU138A 819S	Power Supply Door Switching Unit

### Cabinet Components

- 440 - 12VDC, 1.5A Power Supply.
- 540 - 12VDC, 1.5A Power Supply, with integral lock timer (3 - 27 secs). It can connect directly to a Fail safe or Fail secure lock release.
- PSU138A - 12V 1A Power Supply with Battery Backup Facility
- PSU138B - 12V 4.5A Power Supply with Battery Backup Facility
- LT88 - Lock Timer (adjustable 3 - 25 second). It can connect directly to a Fail safe or Fail secure lock release.
- VDC6 - Video Distributor with 6 outputs and distribution to up to 60 telephones (10 on each output).
- 819S - Two-Door Switching Unit, including Lock Timers (3-20 secs).



### Telephones

One model BV video door entry telephone is required per flat. The model 500PX series telephones (depending on the features required) may be used in place of one or more video telephones, if audio only is required.

### Entrance Panel

One BVP series entrance panel is required per door.

e.g.    BVP5                      5 way Panel  
      BVP10-TRBV            10 way panel with tradesman facility (11 buttons)

Each entrance panel contains a model BV700 CCD Camera and a model 61 Speech Unit.

### Time Clock Module (optional)

The Time clock module is used in conjunction with a Trades button. Systems are supplied with the model TS2000, which can be used as a 24 hour or 7 day Time clock. On systems above 10 way or with battery backup, the Time clock will be pre-fitted inside the Control Cabinet.

## System Design Considerations

### Cable requirements

Refer to one of the following sections according to your system requirements:

System	Section
1 way single door	CW1
2-10 way single door	CW2
11-60 way single door	CW3
1-10 way 2 door	CW4
11-60 way 2 door	CW5

### Multiple video telephones in one flat

When several video telephones are installed in a single flat, it is usually necessary to disable the **auto-display** feature on all telephones (see page 13), to prevent the power supply and cable voltage drops being exceeded. In this case the resident must press the **VIEW** button in order to view the caller.

### Multi-way systems

The **VIEW** function is provided primarily for single-way systems. On multi-way systems, it is highly advisable to set the video telephone to 'Video Privacy' (see page 13) to prevent other residents from monitoring visitors and to ensure that the maximum no. of active monitors is not exceeded.

Should the **VIEW** function be required please contact the distributor or manufacturer for further guidance

### **Electric Door Release**

Fail-Secure releases are the most commonly used devices, they require power to release the lock and will secure the door upon power failure. Fail-Safe lock releases and magnetic locks require continuous power to hold the lock and will release the door upon power failure. All of these types can be accommodated providing they are rated at 12V DC with a maximum current consumption of 0.5A. For lock releases that have different requirements contact your distributor for further guidance.

### **Trades Button (optional)**

The entrance panels may be ordered with an optional Trades button to allow free access during certain hours (used in conjunction with a time clock). Momentarily pressing the button will operate the lock release for a fixed period (adjustable, typically 5 seconds).

### **Exit Button (optional)**

Typically this facility is used to allow personnel to freely exit through the controlled entrance. Momentarily operating the push-button will directly operate the lock release for a fixed period (adjustable, typically 5 seconds).

### **Fire Switch (optional)**

The fire switch is usually a key or lever switch which can be operated by the fire-brigade to gain access to the building. To use this feature the Lock release(s) must be continuously rated.

### **Door Monitor Switch (optional)**

Each Telephone has a green LED indicator above the **DOOR** button to show when the door is open. This is detected by the closure of a door monitor switch. The switch should be rated at 1A ( for up to 60 phones). Lock Releases are available with an integral Door Monitoring switch.

# **Installation**

## 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 or equivalent, within the following specified limits:

	Min	Max
Conductor Diameter	1.0mm (0.8mm <sup>2</sup> )	2.25mm (4mm <sup>2</sup> )
Cable Diameter	4.0mm	8.0mm

The power supply is fitted with an internal mains fuse, and a battery fuse; always replace with the correct type and rating. The fuse must be of the 20mm glass type, approved to BS EN 60127 or equivalent:

Power Supply Model	Mains Fuse (time delay)	Battery Fuse (Quick Blow)
M440	T250mA 250V	
M540	T250mA 250V	
PSU138A	T315mA 250V	F3.15A
PSU138B	T1A 250V	F6.3A

## Environment

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

## Lead-Acid Battery (when supplied)

The Lead-Acid Battery for the Standby Power Supply is shipped in separate packaging. Care must be taken to ensure that the terminals of the battery are not shorted together by metal objects as this may constitute a Fire Hazard. The Control Cabinet is IP55 rated (to exclude dust) and is vented to avoid the build-up of gases. Do not block any vents which may be apparent.

## Video Telephone

The display module of the video telephone has a high voltage circuit (2KV) which represents a shock hazard. When the top cover of the telephone is removed, precautions must be taken to avoid contact with this module.

## Bell View Video Entry System

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### General

Select the appropriate wiring diagram from one of the following sections, and install in accordance with the instructions given:

System	Section
1 way single door	CW1
2-10 way single door	CW2
11-60 way single door	CW3
1-10 way 2 door	CW4
11-60 way 2 door	CW5

Initially connect all the equipment to one telephone only. With the power applied, test the system is fully operational. Only if everything is functioning correctly should you continue to connect further telephones. Connect one telephone at a time testing after each is connected.

### Model 440 and 540 Power Supplies

Read the section called 'Important Safety Information' before installing the power supply.

These power supplies must be wall-mounted onto plasterboard, wood or a similar non-conductive material, in a protected indoor environment such as an electrical cupboard.

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.

### **PSU138A, PSU138B Power Supplies**

Read the section called 'Important Safety Information' before installing the power supply.

A good mains safety earth must be connected to the cabinet housing the power supply. The cabinet must be placed in a protected indoor environment and not exposed to dripping or splashing. The Cabinet must be secured to the wall with adequate fixings so that there is no possibility of it falling down.

The Lead Acid battery should only be connected once the system has been fully tested. Connection is made by 2 leads with spade terminals from the power supply. Observe the correct polarity (red to positive, black to negative).

The PSU Control Cabinet contains a small PCB labelled 'Power Supply Distributor' . This is used to supply 12V to external components. Do not cut or modify the power supply leads as supplied.

### **Entrance Panel**

Careful consideration should be given to the location of the entrance panel to ensure the best possible lighting conditions for the camera. In general strong back-lighting of the subject (by the sun and sky) should be avoided as the contrast between foreground and background may be too great for the camera. The field of view should contain as little of the sky as possible, particularly if south facing - a wall or other buildings would be preferable. If a back-lit situation is unavoidable, additional lighting may be necessary to illuminate the caller and avoid a dark outline image.

The panel should be mounted at an optimum height of 1.6 m, measured between the ground and camera window.

### **Electric Door Release**

Use the FAIL-SECR connections for fail-secure releases; use the FAIL-SAFE connections for fail-safe releases and magnetic locks. When installing lock releases please allow a little movement on the door as operation will be impaired if fitted too tight.

### **Video Telephones** (Refer to diagram 1)

Also refer to the 'Commissioning' section for further information.

#### **IMPORTANT:**

The video telephone has a slide switch which terminates the coax cable with a  $75\Omega$  impedance. When more than one video telephone is installed, all video telephones must be set to HI (ie no termination) except the last telephone on each cable branch which should be set to 75R.



## Commissioning

### Video Telephone settings

#### Picture Adjustment

To adjust the BRIGHTNESS and CONTRAST of the picture adjust the two thumb-wheel controls at the left hand side of the telephone.

#### Buzzer mute time

This is the time for which the telephone buzzer will be switched off when the buzzer mute button is pressed. Set between 1 minute and 10 hours (see SW2 settings, overleaf).

#### Call Active time

The telephone active time is the duration for which the telephone remains active (display and speech) when called. Set between 30 and 120 seconds (see SW2 settings overleaf).

#### Auto - Display option

The 'Auto-display' option allows the display and speech to activate when the telephone is called; when deselected the telephone will buzz, but display and speech will not activate until a **CAMERA** or **VIEW** button is pressed. (See SW2 settings overleaf). It may be desirable to disable this function on multi-way systems (refer to Design Considerations)

#### Video Privacy option

Enabling this option will disable the **CAMERA** and **VIEW** buttons, except for the telephone which has been called (See SW2 settings below). It is advisable to disable this functions on multi-way systems (refer to Design Considerations)

#### Disabling the CAMERA and VIEW buttons

The CAMERA and VIEW buttons can be enabled/disabled by using the slide switch on the telephone PCB (BV/2).

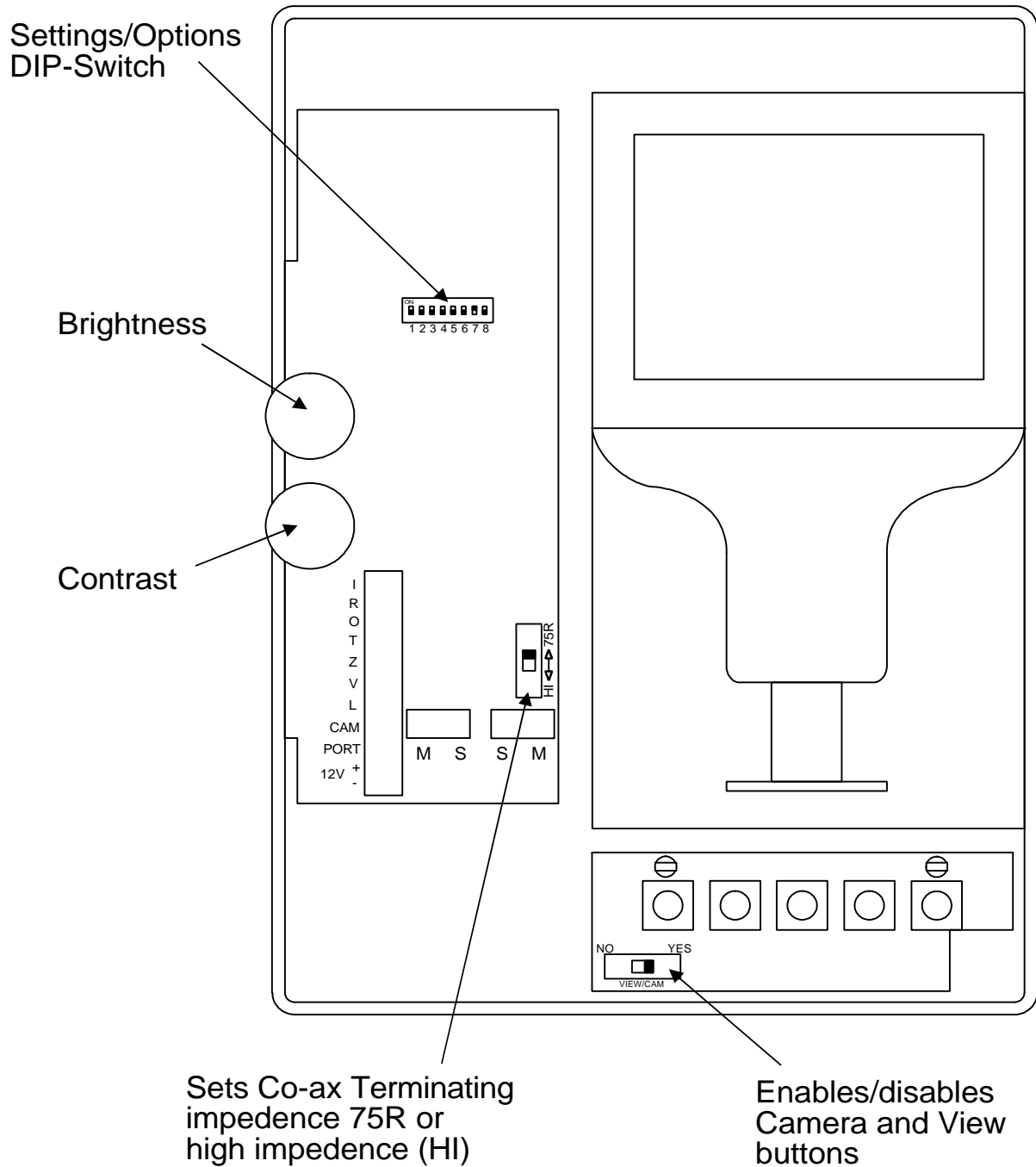
## Video Telephone DIP switch settings

The location of the 8 way DIP switch is shown in diagram 1 and labelled 'SW2'.

Setting	DIP Switch Position							
	1	2	3	4	5	6	7	8
<b>Buzzer Mute Time</b>								
1 min	off	off	off	off	off - Switch down on - Switch up  * - default setting			
2 min	off	off	off	on				
3 min	off	off	on	off				
5 min	off	off	on	on				
8 min	off	on	off	off				
10 min	off	on	off	on				
15 min	off	on	on	off				
20 min	off	on	on	on				
30 min	on	off	off	off				
45 min	on	off	off	on				
1HR	on	off	on	off				
2HR	on	off	on	on				
3HR	on	on	off	off				
5HR	on	on	off	on				
8HR	on	on	on	off				
* 10HR	on	on	on	on				
<b>Call / Active Time</b>					5	6		
30 sec					off	off		
* 60 sec					off	on		
90 sec					on	off		
120 sec					on	on		
<b>Auto-Display option</b>							7	
No							off	
* Yes							on	
<b>Video Privacy option</b>								8
* No								off
Yes								on

## Diagram 1 : Video Phone Adjustments

**WARNING : HIGH VOLTAGES PRESENT**



## Lock Release Adjustment

### 540 Power Supply

Adjust the preset VR1 to the required time, turning clockwise to increase the time. Shorting 'Z' to '12V -' will operate the internal lock relay, for the preset time (and an audible click heard).

### LT88 Lock Timer PCB (supplied in a cabinet)

Adjust the preset VR1 to the required time, turning clockwise to increase the time. Shorting the TRIG terminals together will operate the LT88 lock relay, for the preset time (and an audible click heard).

## Adjustments on 2 door systems ( 819S Switching Unit)

Refer to DIP switch settings in the table overleaf.

### Lock Release Time

The time the lock release operates for when a telephone lock button, exit button, fire switch or trades facility is used. The time can be set between 3 and 20 seconds according to the DIP switch setting.

### Call / Active Time

The time the entrance remains active (display and speech) when a call is made. The time must be set to the same as the telephones'. Set between 30 and 120 seconds according to the DIP switch setting.

## Speech Adjustments

Make sure the Speech Unit is fitted tight against the front grill to avoid possible feedback effects. The speech volume may be adjusted by carefully applying a small screwdriver to the back of the Speech Unit; 'A' (speaker symbol) adjusts the speech level at the panel and 'B' (microphone symbol) adjusts the speech level at the telephone.

## Adjustments on 2 door systems (819S DIP Switch Settings)

The DIP switch is located on the lower PCB and marked 'SW2'.

- off - DIP Switch down
- on - DIP Switch up
- \* - Default setting

Setting	DIP Switch Position							
	1	2	3	4	5	6	7	8
<b>Lock Release Time</b>								
3 sec	off	off	off - Switch down on - Switch up					
* 5 sec	on	off						
10 sec	off	on						
20 sec	on	on						
<b>Call / Active Time</b>			3	4				
30			off	off				
* 60			on	off				
90			off	on				
120			on	on				
<b>Mode Setting</b>								8
Normal								off

For the system to operate correctly the Mode Setting MUST be set as above.

# **Troubleshooting**

## Diagnostic Aids

### Power Supply Status

The PSU138B Power Supply has two LEDs to indicate the 12V output state and the condition of the standby battery (when fitted).

LED	Condition
Steady GREEN	System running from the mains.
Flashing GREEN	System running from the battery.
Steady RED	Output off; Battery charging.
Flashing RED	Output short circuit or battery low.

### 819S Switching unit (Multi-door systems)

To assist in testing and fault diagnosis there are 6 LED indicators on the 819S Switching unit. 4 LEDs on the bottom PCB and 2 on the top:

LED	Condition (when illuminated)
<b>Bottom PCB (719S)</b>	LED 1 (Green)      Speech Active      Door 1
	LED 2 (Red)        Lock Active        Door 1
	LED 3 (Green)     Speech Active     Door 2
	LED 4 (Red)        Lock Active        Door 2
<b>Top PCB (819S)</b>	LD 1 (Red)        Camera Active     Door 1
	LD 2 (Red)        Camera Active     Door 2

Two test buttons are provided to assist in fault diagnosis during installation and commissioning.

Button	Action (when momentarily pressed)
TEST 1	Speech and Camera enabled on Door 1
TEST 2	Speech and Camera enabled on Door 2

Note : The telephone still needs to be called to enable the speech and camera.

## Fault Finding

<b>Speech Problems</b>	
Low speech volume	<ul style="list-style-type: none"> <li>! Volume adjustment required on the Speech Unit, see page 16 under SPEECH ADJUSTMENTS.</li> <li>! Speech Unit is not tight against the panel grill.</li> <li>! Panel grill is blocked.</li> <li>! More than one active telephone is off the hook.</li> <li>! Speech Unit supply voltage low. Check 10V-15V across 'C' and 'H' on unit, after activating first.</li> </ul>
Constant tone/feedback when in use.	<ul style="list-style-type: none"> <li>! Volume adjustment required on the Speech Unit, see page 16 under SPEECH ADJUSTMENTS.</li> <li>! 'O' connection between Speech unit and telephone open circuit.</li> <li>! Speech Unit is not tight against the panel grill.</li> <li>! Entrance panel and telephone too close together.</li> <li>! The entrance panel is surrounded by reflecting walls.</li> <li>! Panel grill is blocked.</li> </ul>
Speech not audible when phone is live.	<ul style="list-style-type: none"> <li>! Low speech volume. To increase refer to page 16 under SPEECH ADJUSTMENTS.</li> <li>! No / low supply to Speech Unit. Check 10V-15V across 'C' (positive) and 'H' on the unit, after activating first.</li> <li>! Faulty 'R', 'O', or 'T' line.</li> </ul>
No speech when the phone is buzzed	<ul style="list-style-type: none"> <li>! Check 'Auto - Display' DIP switch setting is ON. Refer to page 14.</li> <li>! No / low supply to '+' and '-' video supply at the phone. Check 10V - 15V across connections.</li> <li>! Wiring fault on the speech signal connections 'R' or 'T'. 'R' carries the phone microphone signal to the speech unit. 'T' the Speech unit microphone to the phone.</li> </ul> <p><b>! 2 Door Systems</b> Common call button wire connected to '+' or 'C' instead of 'B' on the Switching Unit.</p>



## Bell View Video Entry System

<b>Video Problems</b>	
Video picture impaired or unsynchronised.	<ul style="list-style-type: none"> <li>! Some phone terminating slide switches have not been set correctly. Refer to page 12.</li> <li>! Poor coaxial cable connection or screen not connected.</li> <li>! Phone too close to a magnetic field, e.g. transformer.</li> <li>! Coaxial cable running too close to mains cable.</li> <li>! Coaxial cable is not of 75Ω type.</li> </ul>
Entrance cannot be seen at night.	<ul style="list-style-type: none"> <li>! Power not connected to Camera IR night illumination. Connect '1' to '+' on Camera.</li> </ul>
Picture does not appear when the phone is buzzed.	<p><b>If the screen lights up:-</b></p> <ul style="list-style-type: none"> <li>! The necessary phone termination slide switch(s) has not been set to 'HI'. Refer to page 12.</li> <li>! Fault on Video coaxial cable. Check 'M' and 'S' connections.</li> <li>! No / low supply to Camera. Check 10V-15V across Camera '+' and '-'.</li> <li>! Coaxial cable is not of 75Ω type.</li> </ul> <p><b>If the screen does not light up:-</b></p> <ul style="list-style-type: none"> <li>! Check 'Auto - Display' DIP switch setting is ON. Refer to page 14.</li> <li>! No / low supply to '+' and '-' video supply on phone. Check 10V-15V present.</li> </ul>

## Bell View Video Entry System

<b>Miscellaneous Problems</b>	
Telephone will not buzz.	<ul style="list-style-type: none"> <li>! Buzzer disabled by PRIVATE button. Check red telephone LED is off.</li> <li>! Faulty 'V','O' or 'I' line between power supply and phone. Check 10.5V - 15V across 'V' and 'O', and 10.5V - 15V across 'I' and 'O' when called.</li> <li>! Faulty panel button.</li> </ul>
Telephone 'DOOR' button does not operate release.	<ul style="list-style-type: none"> <li>! Telephone has not been called.</li> <li>! Fault on 'Z' or 'O' line. Check shorting 'Z' or 'TRIG +' to 0V at the Switching Unit (2 door) or Lock Timer (Single door M540/LT88) when live operates the release.</li> <li>! Lock release supply low. Check 10V-15V across the release with the lock button is pressed and the phone has been called.</li> <li>! Faulty 'DOOR' button on telephone.</li> </ul>
Trades, Exit button or Fire Switch inoperative.	<ul style="list-style-type: none"> <li>! Time-Clock is not running or incorrectly set (Trades button only).</li> <li>! <b>Single Door systems</b> Faulty 'Z' or 'O' wires between Lock Timer (LT88 or M540) and button / switch. Check lock operates from phone.</li> <li>! <b>2 Door Systems</b> Faulty wires between EXIT input and button / switch. Check lock operates from phone.</li> <li>! Faulty button.</li> </ul>
Lock release operates all the time.	<ul style="list-style-type: none"> <li>! If the lock is a 'fail safe' type it has been connected to 'FAIL SECR'/'fail secure' output. If the lock is a 'fail secure' type it has been connected to 'FAIL SAFE'/'fail safe' output. Check to see if the release is inactive when the lock button is pressed or try swapping the connections over.</li> <li>! 'DOOR' button stuck down (lock operates only when called).</li> <li>! 'Z' and 'O' lines permanently shorted together.</li> <li>! 'EXIT' input permanently shorted together (2 Door systems).</li> </ul>
Supply voltage low (less than 10V, any system component).	<ul style="list-style-type: none"> <li>! Short circuit. Disconnect power supply loads and check the output is 12V-15V. Systematically disconnect components one at a time or isolate floors, etc. until the voltage is correct. Start with connections close to the Power Supply.</li> <li>! Cable voltage drop too high. Try doubling wires up with spare cores. Refer to the Cable and Wiring Details sections.</li> </ul>

# **Specifications**

## Bell View Video Entry System

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<b>Model BV Video Telephone</b>	
Size	180 mm x 245 mm x 75 mm
Fixing	Wall mounted
Supply Voltage	10 V DC min. 15 V DC max.
Current consumption	405 mA maximum active 27 mA maximum idle
Call / Active time	30, 60, 90 or 120 seconds
Buzzer mute time	1 minute min 10 hours max

<b>Model 61 Speech Unit</b>	
Size	98 mm x 60 mm x 24 mm
Supply voltage	6 V AC/DC min. 15 V AC/DC max.
Current consumption	100 mA DC max. 140 mA AC max.

<b>Model BV700 Camera</b>	
Size	60 mm x 57 mm x 31 mm
Image Device	1/3" CCD
Sensitivity	0.1 lux.
Current consumption	175 mA max. without IR 215 mA max. with IR
Minimum focus	100 mm
Viewing angle	92° (typical)
Supply Voltage	9 V DC minimum 15 V DC maximum

## Bell View Video Entry System

### Model 440 Power Supply

Size	236 mm x 105 mm x 81 mm
Output Voltage (regulated)	12.0 V DC min. 13.8 V DC nom. 15.0 V DC max.
Output Current	1.5 A continuous 2.0 A peak (5 minutes max.)
Short Circuit Duration	Infinite
Mains Supply Internal fuse	T250mA Anti-surge
Supply Voltage	240 V 50 Hz nominal
Temperature Range	0°C to 50°C

### Model 540 Power Supply

Size	236mm x 105mm x 81mm
Output Voltage (regulated)	12.0 V DC min. 13.8 V DC nom. 15.0 V DC max.
Output Current	1.5 A continuous 2.0 A peak (5 minutes max.)
Lock outputs	12 V DC @ 0.5 A max. resistive or inductive
Lock Time	3 seconds min. 27 seconds max.
Mains Supply Internal fuse	T250mA Anti-surge
Supply Voltage	240 V 50 Hz nominal
Temperature Range	0°C to 50°C

## Bell View Video Entry System

<b>Model VDC6 Video Distributor PCB</b>	
Size	112 mm x 164 mm x 25 mm
Supply Voltage	10 V DC min. 15 V DC max.
Current Consumption	100 mA max. (excluding Telephones)
No. of Buffered Outputs	6
Telephone Supply (any '+ -' OUT terminal block)	0.75 A max. (short circuit protected)
Input ('IN') signal	1 V pk-pk Composite Video
Input ('IN') impedance	5 K $\Omega$ (LK1 removed) 75 $\Omega$ (LK1 fitted)
Output ('OUT') Impedance	75 $\Omega$ Line Matched
Signal Loss 'IN' to 'OUT'	1.4 dB Typical
Temperature Range	0°C to 50°C

<b>Model 819S 2 Door Video Switching Unit</b>	
Size	Boxed - 240 mm x 190 mm x 50 mm PCB only - 177 mm x 137 mm x 40 mm
Supply Voltage (regulated)	10 V DC min. 15 V DC max.
Current consumption	305 mA max.
Lock outputs	12 V DC @ 0.5 A max. resistive or inductive
Lock Time	3, 5, 10, 20 Seconds
Call / Active Time	30, 60, 90 or 120 seconds
Engage lamp outputs	12 V DC @ 0.1 A max.
No. of Doors	1 or 2 expandable to 8 (extra units)
Temperature Range	0°C to 50°C

## Cable and Wiring Details

System	Section
1 way single door	CW1
2-10 way single door	CW2
11-60 way single door	CW3
1-10 way 2 door	CW4
11-60 way 2 door	CW5

# **Cable and Wiring Details**

**1 Way  
Single Door System**

**CW1**



# 1 Way Single Door Systems

## Cable Requirement (Refer to diagrams 2a and 2b.)

### Cable types (solid core)

0.5 mm	Twisted pair, e.g. BT spec CW1308
1.0 mm	1.0 mm <sup>2</sup> 'Twin & Earth'
Co-ax	75 Ohm, RG59 or equivalent

### Video phones

Total Cable Length	Power (+,-)	Other connections	Video Signal
50 m	8 @ 0.5 mm [double +, -]		75 Ohm Co-ax
100 m	2 @ 1.0 mm	4 @ 0.5 mm	75 Ohm Co-ax

e.g. A Video phone with a 50 m length requires ; 8 conductors @ 0.5 mm.

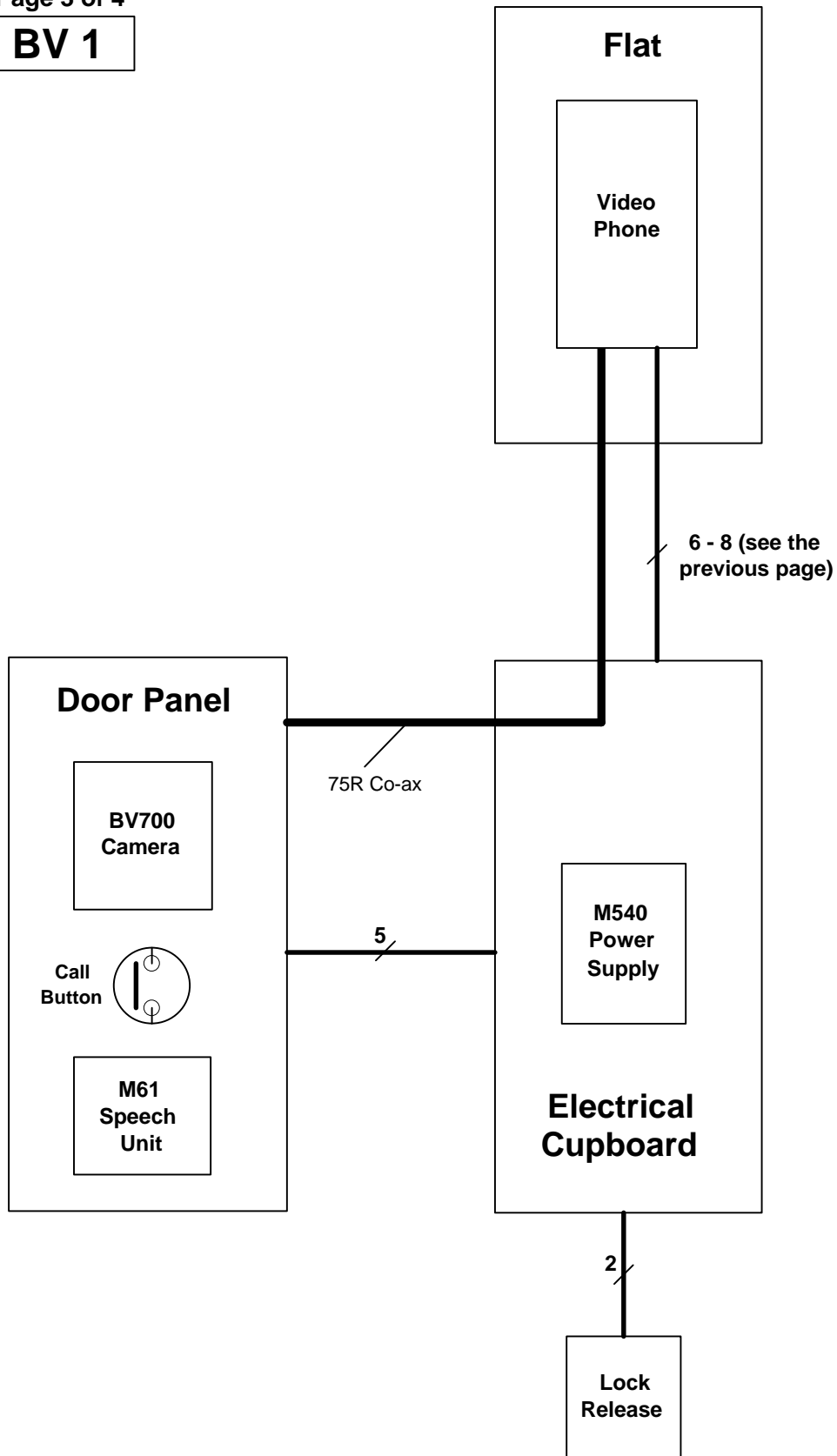
### Entrance

Connections	No. of Cores	Max Length	Solid Core Diameter
Camera + Speech unit + Call Button	5 + 75 Ohm Co-ax	50 m	0.5 mm
Lock Release (up to 0.5 A)	2	25 m 100 m	0.5 mm 1.0 mm

# Diagram 2a : Cabling for a 1 way Single door system

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**BV 1**



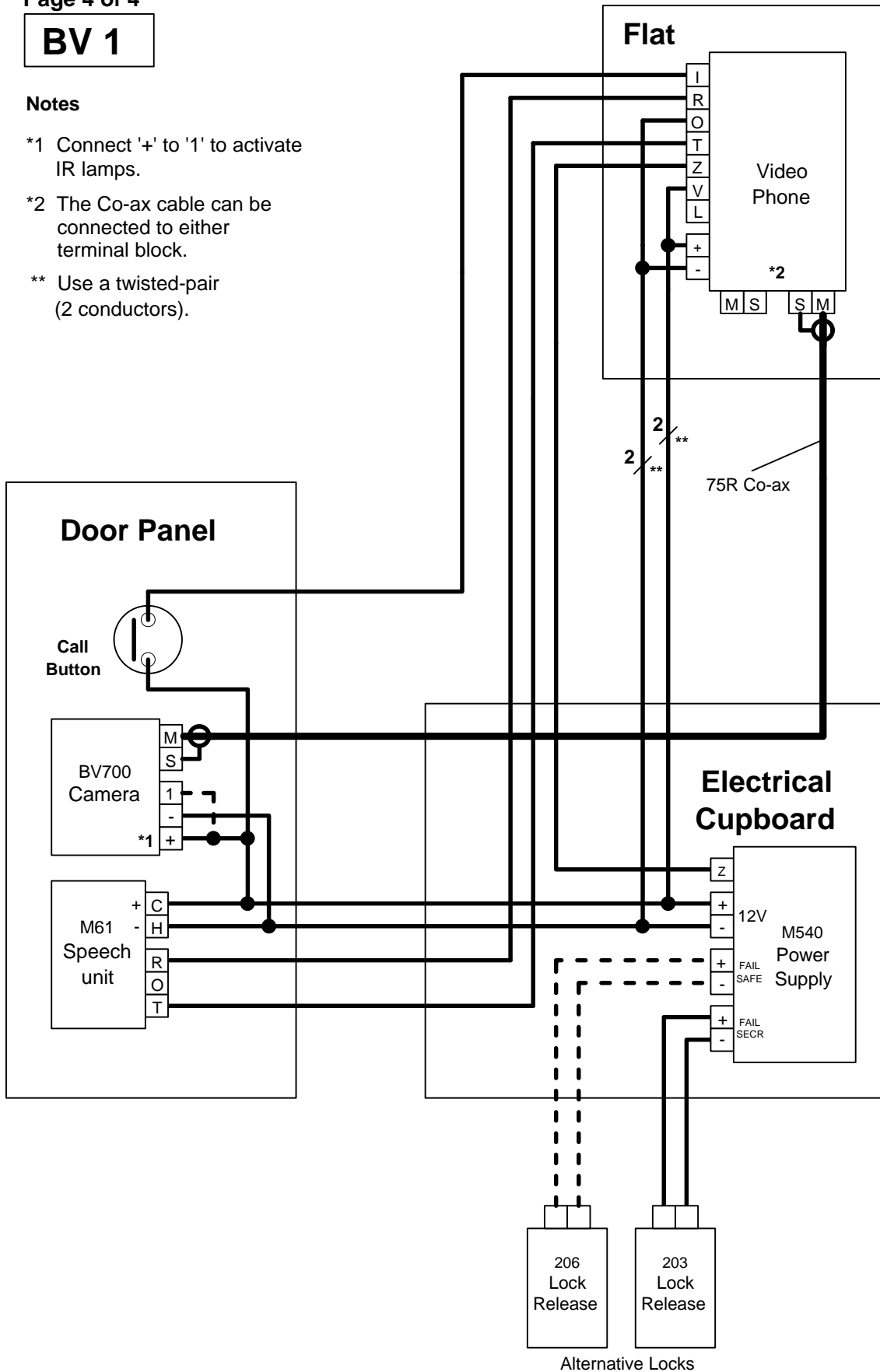
# Diagram 2b : Wiring for a 1 way Single door system

Page 4 of 4

## BV 1

**Notes**

- \*1 Connect '+' to '1' to activate IR lamps.
- \*2 The Co-ax cable can be connected to either terminal block.
- \*\* Use a twisted-pair (2 conductors).



# **Cable and Wiring Details**

**2 - 10 Way  
Single Door Systems**

**CW2**

## 2 - 10 Way Single Door Systems

### Cable Requirement (Refer to diagrams 3a and 3b.)

#### Cable types (solid core)

0.5 mm	Twisted pair, e.g. BT spec CW1308
1.0 mm	1.0 mm <sup>2</sup> 'Twin & Earth'
1.4 mm	1.5 mm <sup>2</sup> 'Twin & Earth'
Co-ax	75 Ohm, RG59 or equivalent

#### Video phones

Total Cable Length	Video Power (+,-)	Other connections (N = no. of video phones)	Video Signal
<b>Basic Functions</b>			
25 m	9+N @ 0.5 mm [double +, -]		75 Ohm Co-ax
50 m	2 @ 1.0 mm	5+N @ 0.5 mm	75 Ohm Co-ax
100 m	2 @ 1.4 mm	7+N @ 0.5 mm [double V, O]	75 Ohm Co-ax
<b>Basic Functions + Door Monitor Facility</b>			
25 m	10+N @ 0.5 mm [double +, -]		75 Ohm Co-ax
50 m	2 @ 1.0 mm	6+N @ 0.5 mm	75 Ohm Co-ax
100 m	2 @ 1.4 mm	8+N @ 0.5 mm [double V, O]	75 Ohm Co-ax

E.g. 10 Video phones with basic functions over a 50 m length requires; 2 common conductors @ 1.0 mm, 5 common conductors @ 0.5 mm and 10 individual call lines @ 0.5mm.

#### Notes

Assumes only 1 video phone is active at a time and the phones are distributed evenly along the cable run.

Loop the coaxial cable from phone to phone (daisy-chain wiring). **Do not** run a separate cable from each video phone back to a common junction (star wiring).

Where possible (for optimum speech clarity), a twisted-pair should be used for 'R' and 'O' connections.

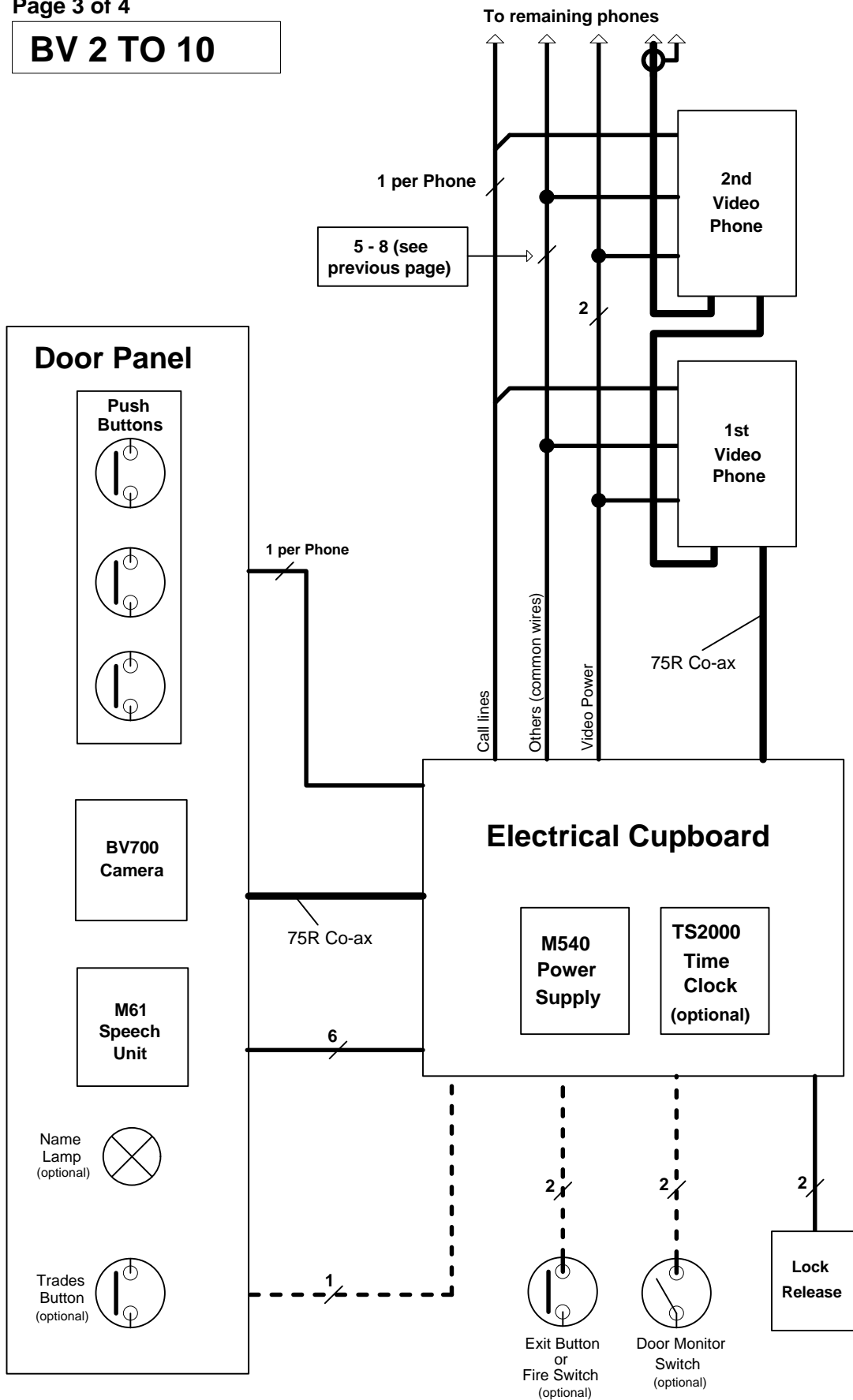
#### Entrance

Connections	No. of Cores	Max Length	Solid Core Diameter
Camera + Speech unit	6 + 75 Ohm Co-ax	50 m	0.5 mm
Push Buttons	1 per phone	50 m	0.5 mm
Lock Release (up to 0.5 A)	2	25 m 100 m	0.5 mm 1.0 mm
Trades button (optional)	1	50 m	0.5 mm
Exit button or Fire switch (optional)	2	100 m	0.5 mm
Door monitor switch (optional)	2	100 m	0.5 mm

Diagram 3a : Cabling for a 2 - 10 Way Single Door System

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**BV 2 TO 10**



# Diagram 3b : Wiring for a 2 - 10 Way Single Door System

Page 4 of 4

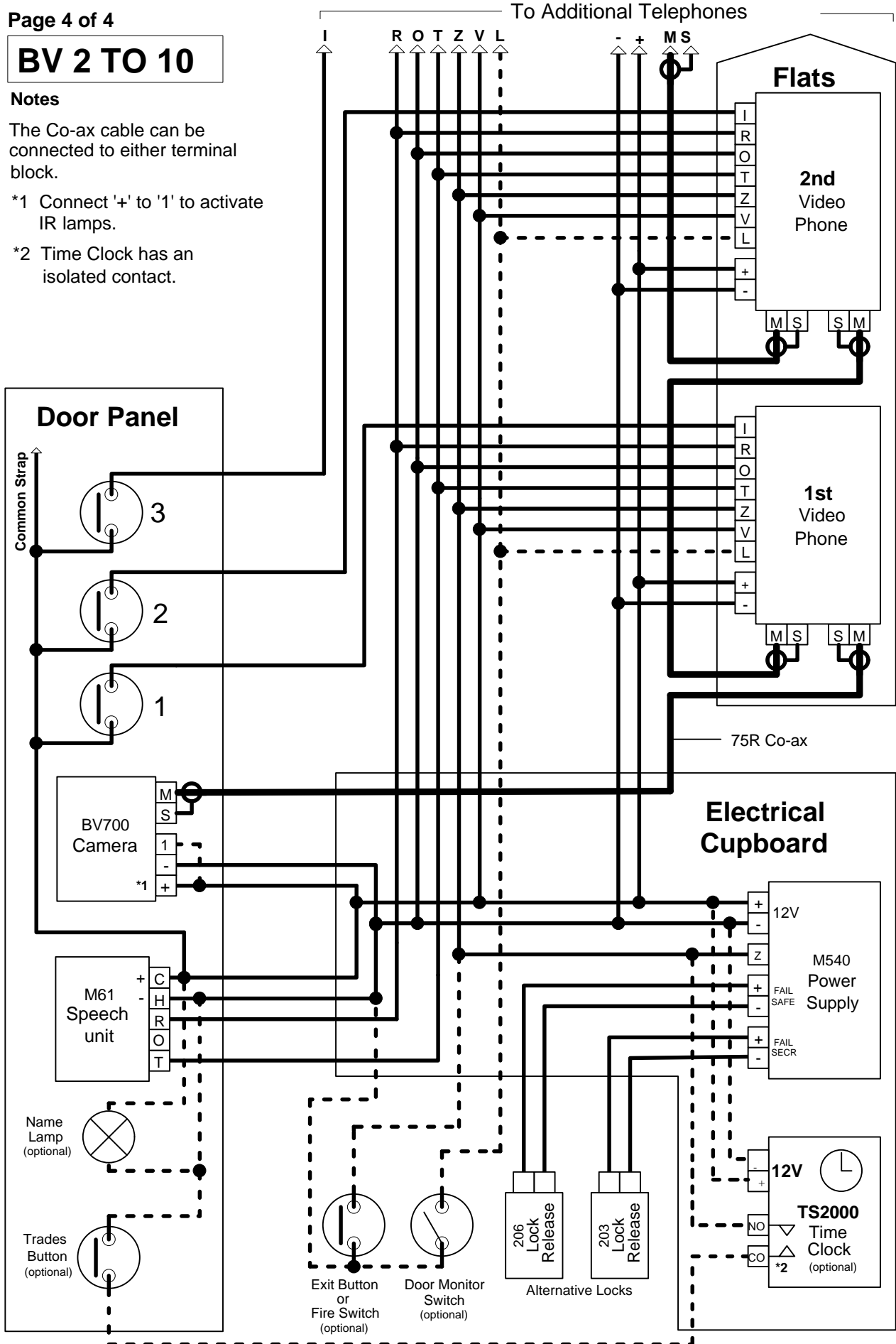
## BV 2 TO 10

### Notes

The Co-ax cable can be connected to either terminal block.

\*1 Connect '+' to '1' to activate IR lamps.

\*2 Time Clock has an isolated contact.



# **Cable and Wiring Details**

**11 - 60 Way  
Single Door System**

**CW3**



# 11 - 60 Way Single Door Systems

## Cable Requirement (Refer to diagrams 4a, 4b and 4c.)

### Cable types (solid core)

0.5 mm	Twisted pair, e.g. BT spec CW1308
1.0 mm	1.0 mm <sup>2</sup> 'Twin & Earth'
1.4 mm	1.5 mm <sup>2</sup> 'Twin & Earth'
Co-ax	75 Ohm, RG59 or equivalent

## Video phones (each group of 10)

Total Cable Length	Video Power (+,-)	Other connections (N = no. of video phones)	Video Signal
<b>Basic Functions</b>			
25 m	9+N @ 0.5 mm [double +, -]		75 Ohm Co-ax
50 m	2 @ 1.0 mm	5+N @ 0.5 mm	75 Ohm Co-ax
100 m	2 @ 1.4 mm	7+N @ 0.5 mm [double V, O]	75 Ohm Co-ax
<b>Basic Functions + Door Monitor Facility</b>			
25 m	10+N @ 0.5 mm [double +, -]		75 Ohm Co-ax
50 m	2 @ 1.0 mm	6+N @ 0.5 mm	75 Ohm Co-ax
100 m	2 @ 1.4 mm	8+N @ 0.5 mm [double V, O]	75 Ohm Co-ax

e.g. 30 Video phones, with basic functions, and a maximum cable distance of 50 m required for each group of 10 phones;  
2 common cables @ 1.0 mm, 5 common cables @ 0.5 mm and 10 individual call lines @ 0.5 mm.

### Notes

A junction box **MUST** be placed within 2 metres of the power supply to split the common telephone wiring up into groups of 10 (video cables are already grouped by the VDC6 Video distributor) .

Assumes only 1 video phone is active at a time and the phones are distributed evenly along the cable run.

Loop the coaxial cable from phone to phone (daisy-chain wiring). **Do not** run a separate cable from each video phone back to a common junction (star wiring). Where possible (for optimum speech clarity), a twisted-pair should be used for 'R' and 'O' connections to the video phone.

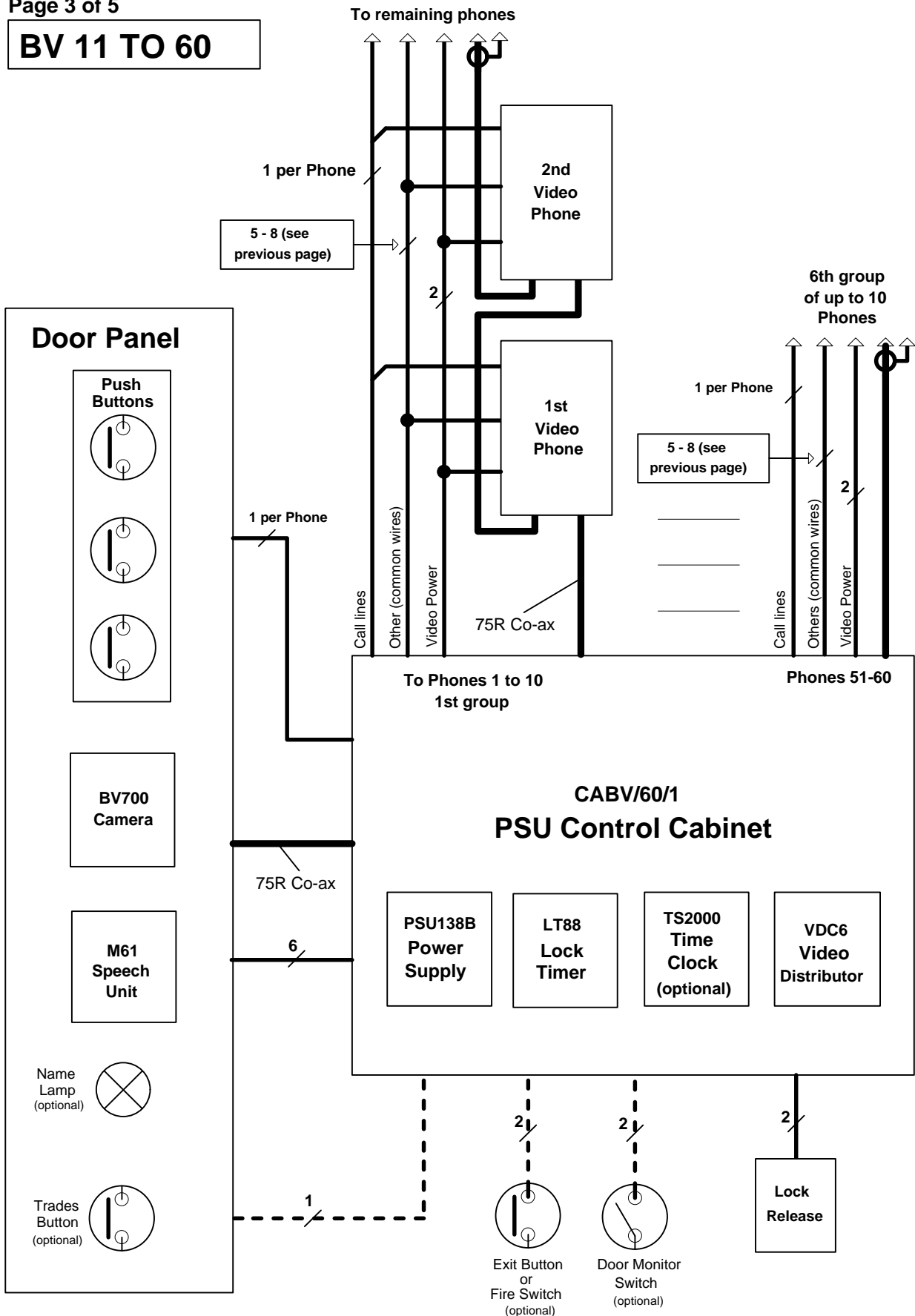
## Entrance

Connections	No. of Cores	Max Length	Solid Core Diameter
Camera + Speech unit	6 + 75 Ohm Co-ax	50 m	0.5 mm
Push Buttons	1 per phone	50 m	0.5 mm
Lock Release (up to 0.5 A)	2	25 m 100 m	0.5 mm 1.0 mm
Trades button (optional)	1	50 m	0.5 mm
Exit button or Fire switch (optional)	2	100 m	0.5 mm
<b>Door monitor switch (optional)</b>			
No. of Phones	20	2	50
	60	2	20 50
			0.5 mm 1.0 mm

# Diagram 4a : Cabling for a 11 - 60 way Single Door System

Page 3 of 5

**BV 11 TO 60**



# Diagram 4b : Wiring for an 11 - 60 way Single Door System

Page 4 of 5

## BV 11 TO 60

### Notes

- \*1 Connect '+' to '1' to activate IR lamps.
- \*2 Time Clock has an isolated contact.

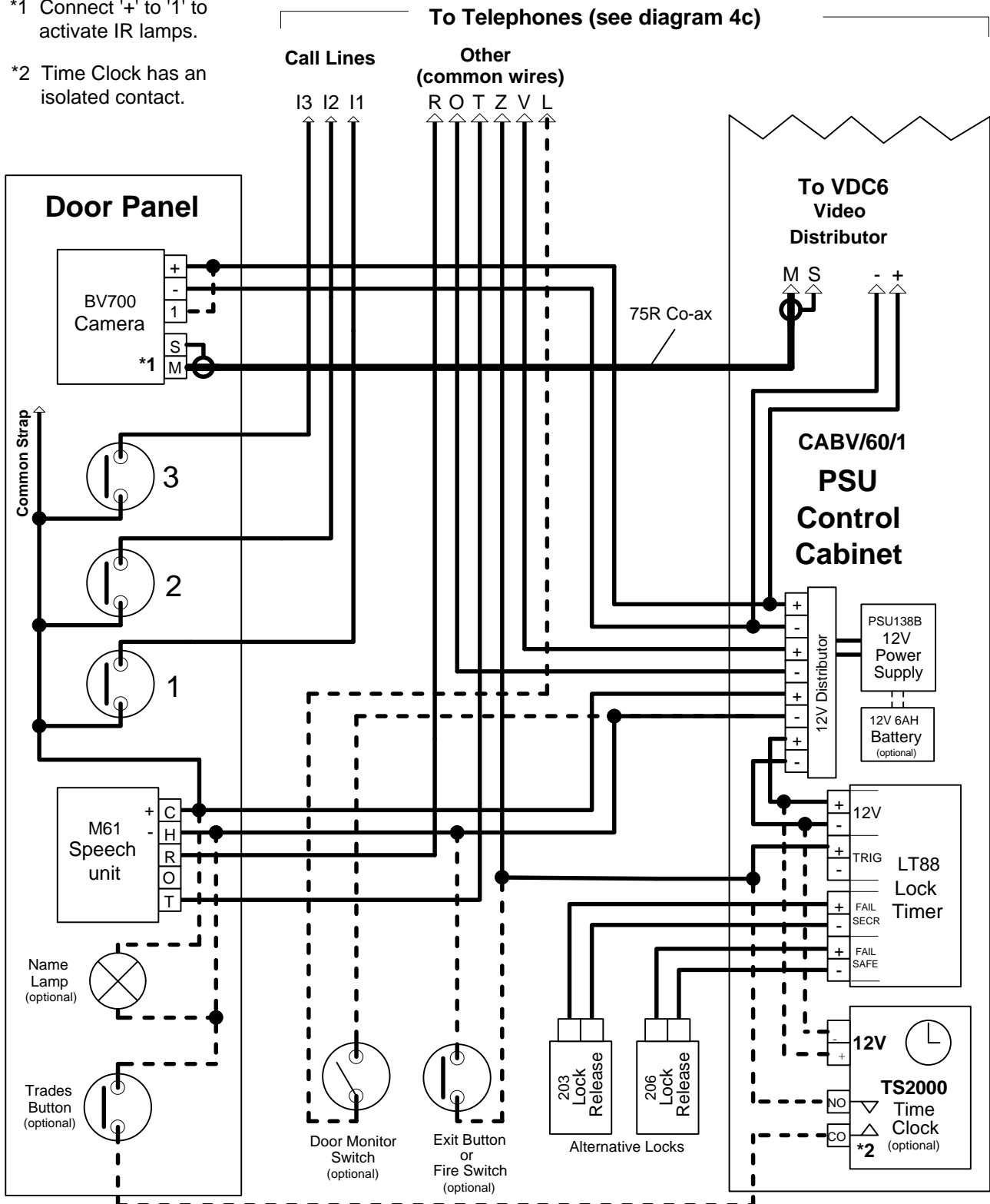


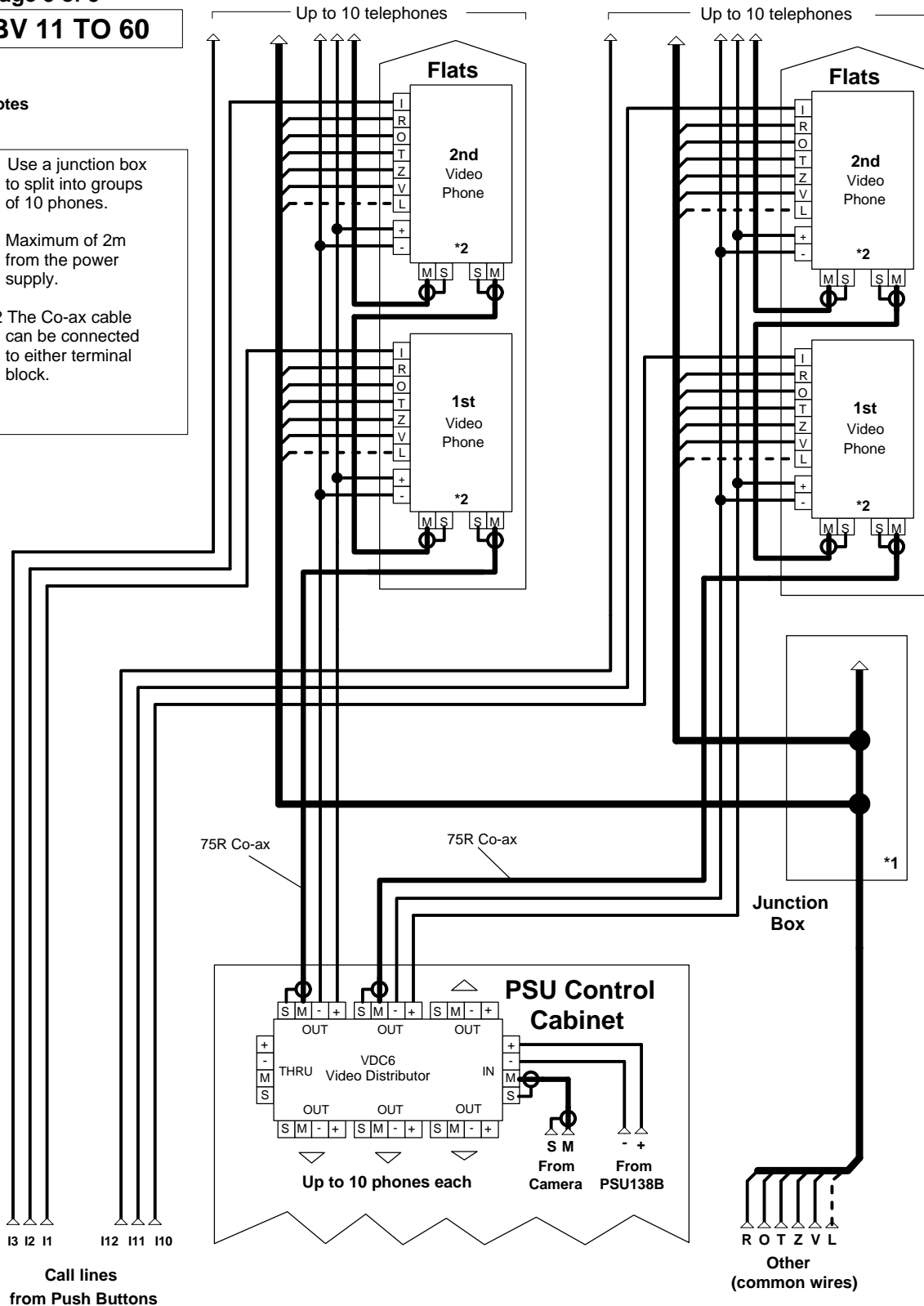
Diagram 4c : Telephone Wiring for an 11 - 60 Way Single Door System

Page 5 of 5

**BV 11 TO 60**

**Notes**

- \*1 Use a junction box to split into groups of 10 phones.
- Maximum of 2m from the power supply.
- \*2 The Co-ax cable can be connected to either terminal block.



## **Cable and Wiring Details**

**1 - 10 Way  
2 Door System**

**CW4**

# 1 - 10 Way 2 Door Systems

## Cable Requirement (Refer to diagrams 5a, 5b and 5c.)

### Cable types (solid core)

0.5 mm	Twisted pair, e.g. BT spec CW1308
1.0 mm	1.0 mm <sup>2</sup> 'Twin & Earth'
1.4 mm	1.5 mm <sup>2</sup> 'Twin & Earth'
Co-ax	75 Ohm, RG59 or equivalent

## Video phones

Total Cable Length	Video Power (+,-)	Other connections (N = no. of video phones)	Video Signal
<b>Basic Functions</b>			
25 m	9+N @ 0.5 mm [double +, -]		75 Ohm Co-ax
50 m	2 @ 1.0 mm	5+N @ 0.5 mm	75 Ohm Co-ax
100 m	2 @ 1.4 mm	7+N @ 0.5 mm [double V, O]	75 Ohm Co-ax
<b>Basic Functions + Door Monitor Facility (L)</b>			
25 m	10+N @ 0.5 mm [double +, -]		75 Ohm Co-ax
50 m	2 @ 1.0 mm	6+N @ 0.5 mm	75 Ohm Co-ax
100 m	2 @ 1.4 mm	8+N @ 0.5 mm [double V, O]	75 Ohm Co-ax
<b>Basic Functions + Camera Select Facility (CAM)</b>			
25 m	10+N @ 0.5 mm [double +, -]		75 Ohm Co-ax
50 m	2 @ 1.0 mm	6+N @ 0.5 mm	75 Ohm Co-ax
100 m	2 @ 1.4 mm	8+N @ 0.5 mm [double V, O]	75 Ohm Co-ax
<b>Basic Functions + Door Monitor Facility (L) + Camera Select Facility (CAM)</b>			
25 m	11+N @ 0.5 mm [double +, -]		75 Ohm Co-ax
50 m	2 @ 1.0 mm	6+N @ 0.5 mm	75 Ohm Co-ax
100 m	2 @ 1.4 mm	9+N @ 0.5 mm [double V, O]	75 Ohm Co-ax

E.g. 10 Video phones with basic functions over a 50 m length requires; 2 common conductors @ 1.0 mm, 5 common conductors @ 0.5 mm and 10 individual call lines @ 0.5 mm.

### Notes

Assumes only 1 video phone is active at a time and the phones are distributed evenly along the cable run.

Loop the coaxial cable from phone to phone (daisy-chain wiring). **Do not** run a separate cable from each video phone back to a common junction (star wiring).

Where possible (for optimum speech clarity), a twisted-pair should be used for 'R' and 'O' connections.

## 1 - 10 Way 2 Door Systems

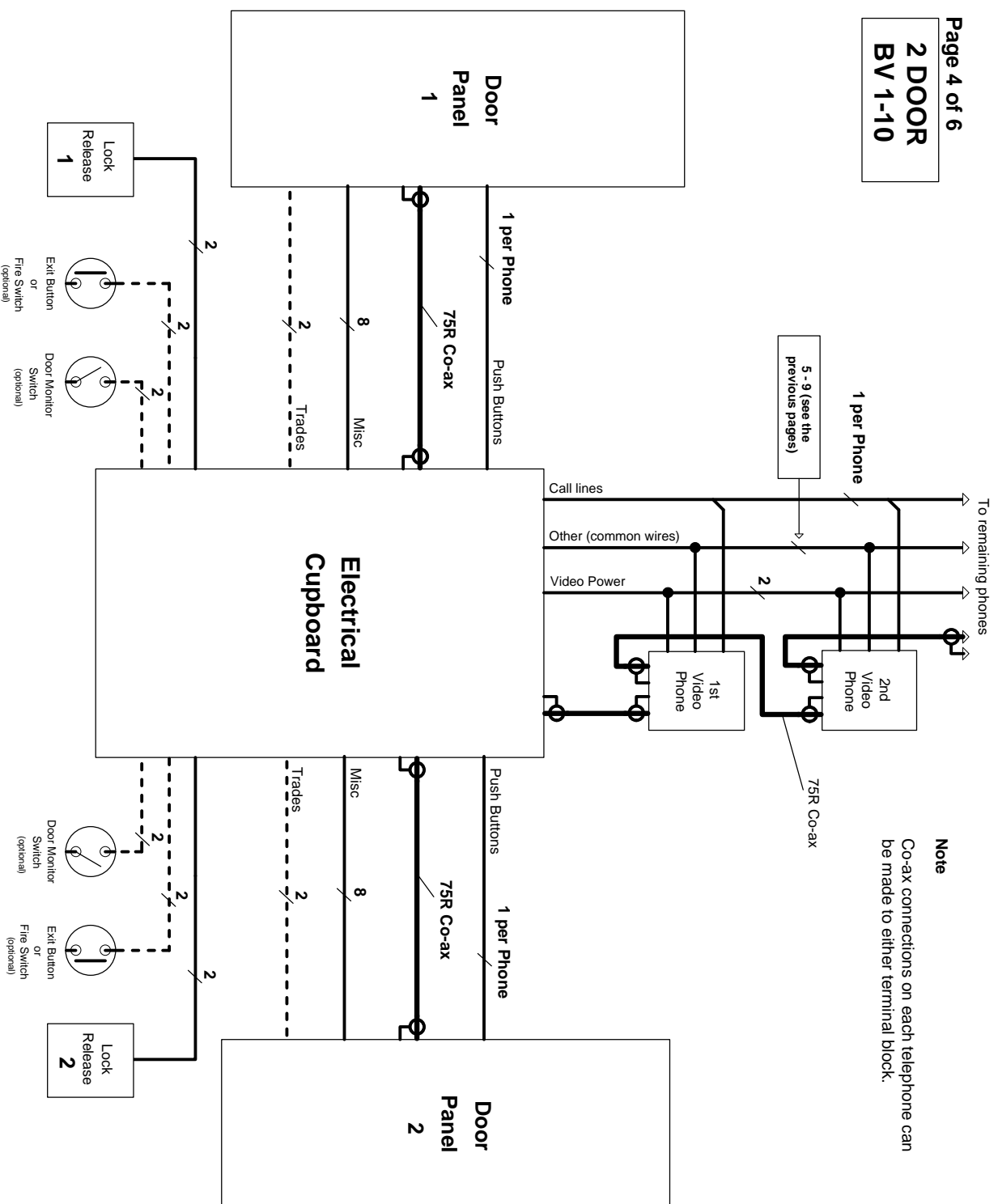
### Entrances

Connections	No. of Cores	Max Length	Solid Core Diameter
Camera, Speech unit and Push button common	8 + 75 Ohm Co-ax	50 m	0.5 mm
Push Buttons	1 per phone	50 m	0.5 mm
Lock Release (up to 0.5 A)	2	25 m 100 m	0.5 mm 1.0 mm
Trades button (optional)	2	50 m	0.5 mm
Exit button or Fire switch (optional)	2	100 m	0.5 mm
Door monitor switch (optional)	2	100 m	0.5 mm

# Diagram 5a : Cabling for a 2 Door 1 - 10 Way Bell View Video System

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**2 DOOR  
BV 1-10**





**2 DOOR  
1-10**

**Diagram 5b : Wiring for a 2 Door 1 - 10 Way Bell View Video System**

**Notes**

- \*1 Connect '+' to '1' to activate IR lamps.
- \*2 The Time Clock has an isolated contact.

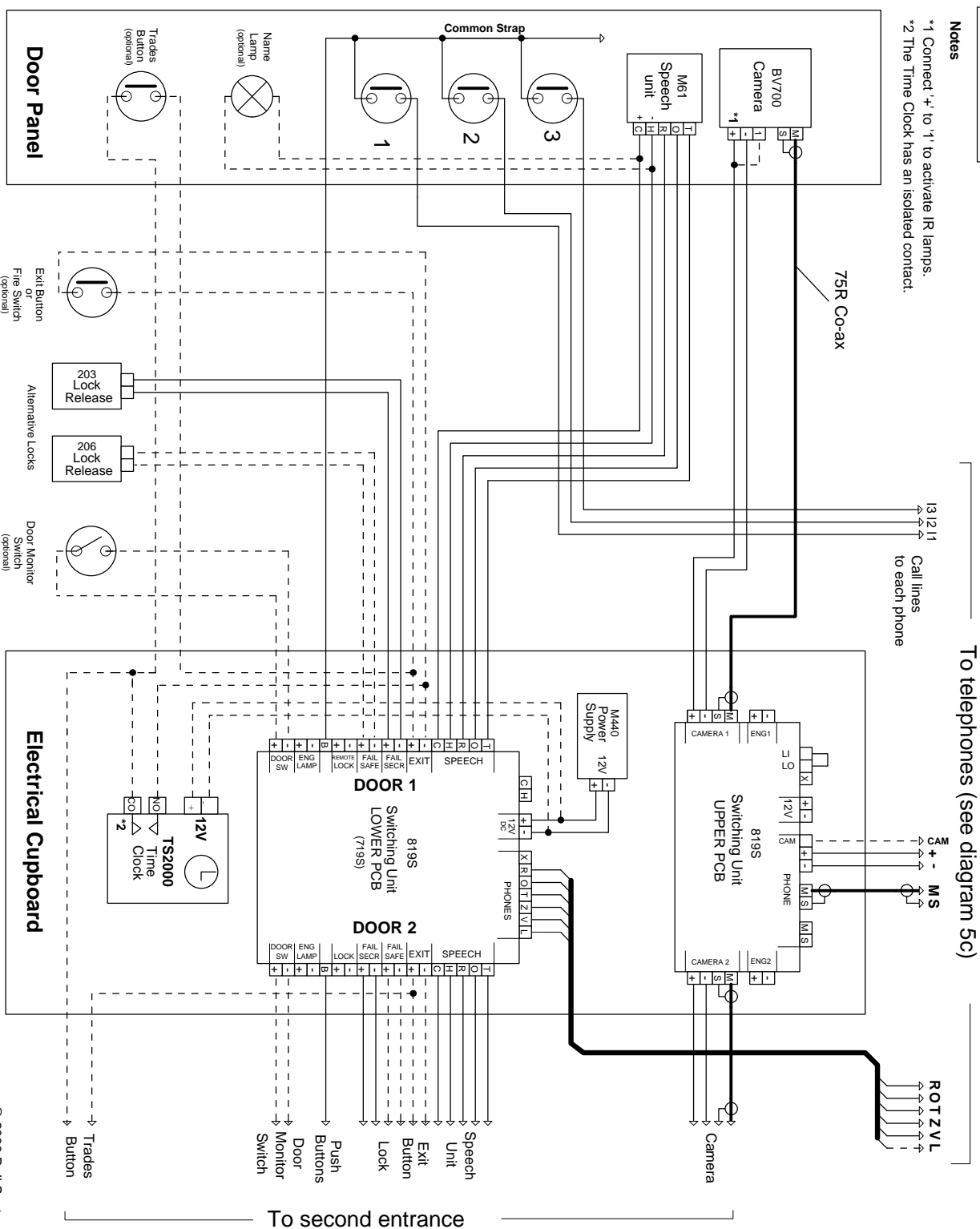


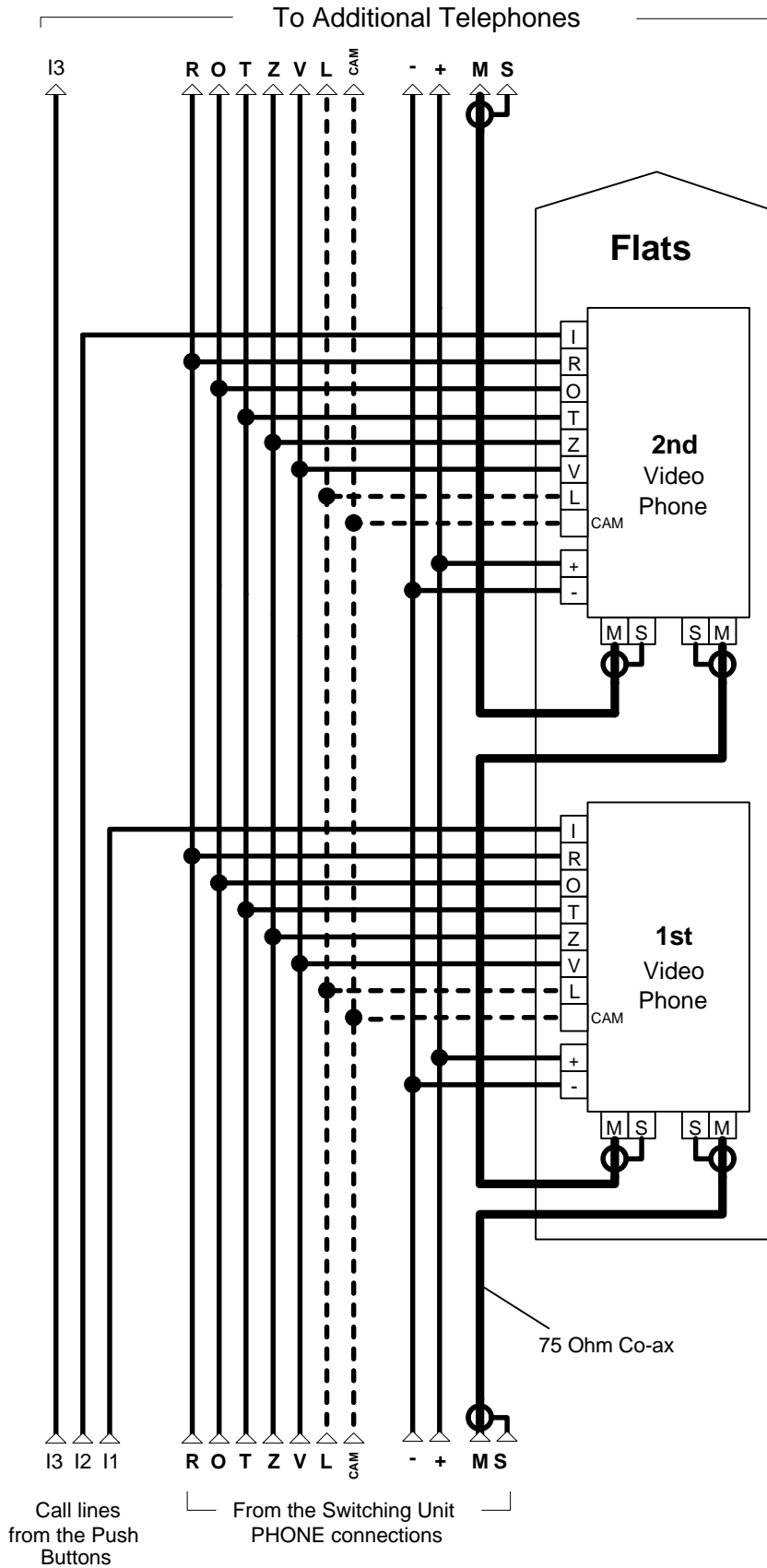
Diagram 5c : Telephone Wiring for a 2 Door 1 - 10 Way System

Page 6 of 6

**2 DOOR  
BV 1-10**

**Note**

The Co-ax cable can be connected to either terminal block.



## **Cable and Wiring Details**

**11 - 60 Way  
2 Door System**

**CW5**

# 11 - 60 Way 2 Door Systems

## Cable Requirement (Refer to diagrams 6a, 6b and 6c.)

### Cable types (solid core)

0.5 mm	Twisted pair, e.g. BT spec CW1308
1.0 mm	1.0 mm <sup>2</sup> 'Twin & Earth'
1.4 mm	1.5 mm <sup>2</sup> 'Twin & Earth'
Co-ax	75 Ohm, RG59 or equivalent

## Video phones (each group of 10)

Total Cable Length	Video Power (+,-)	Other connections (N = no. of video phones)	Video Signal
<b>Basic Functions</b>			
25 m	9+N @ 0.5 mm [double +, -]		75 Ohm Co-ax
50 m	2 @ 1.0 mm	5+N @ 0.5 mm	75 Ohm Co-ax
100 m	2 @ 1.4 mm	7+N @ 0.5 mm [double V, O]	75 Ohm Co-ax
<b>Basic Functions + Door Monitor Facility (L)</b>			
25 m	10+N @ 0.5 mm [double +, -]		75 Ohm Co-ax
50 m	2 @ 1.0 mm	6+N @ 0.5 mm	75 Ohm Co-ax
100 m	2 @ 1.4 mm	8+N @ 0.5 mm [double V, O]	75 Ohm Co-ax
<b>Basic Functions + Camera Select Facility (CAM)</b>			
25 m	10+N @ 0.5 mm [double +, -]		75 Ohm Co-ax
50 m	2 @ 1.0 mm	7+N @ 0.5 mm	75 Ohm Co-ax
100 m	2 @ 1.4 mm	9+N @ 0.5 mm [double V, O]	75 Ohm Co-ax
<b>Basic Functions + Door Monitor Facility (L) + Camera Select Facility (CAM)</b>			
25 m	11+N @ 0.5 mm [double +, -]		75 Ohm Co-ax
50 m	2 @ 1.0 mm	7+N @ 0.5 mm	75 Ohm Co-ax
100 m	2 @ 1.4 mm	9+N @ 0.5 mm [double V, O]	75 Ohm Co-ax

E.g. 30 Video phones, with basic functions, and a maximum cable distance of 50 m required for each group of 10 phones;  
 2 common cables @ 1.0 mm, 5 common cables @ 0.5 mm and 10 individual call lines @ 0.5 mm.

### Notes

A junction box **MUST** be placed within 2 metres of the power supply to split the common telephone wiring up into groups of 10 (video cables are already grouped by the VDC6 Video distributor).

Assumes only 1 video phone is active at a time and the phones are distributed evenly along the cable run.

Loop the coaxial cable from phone to phone (daisy-chain wiring). **Do not** run a separate cable from each video phone back to a common junction (star wiring). Where possible (for optimum speech clarity), a twisted-pair should be used for 'R' and 'O' connections to the video phone.

**Entrances**

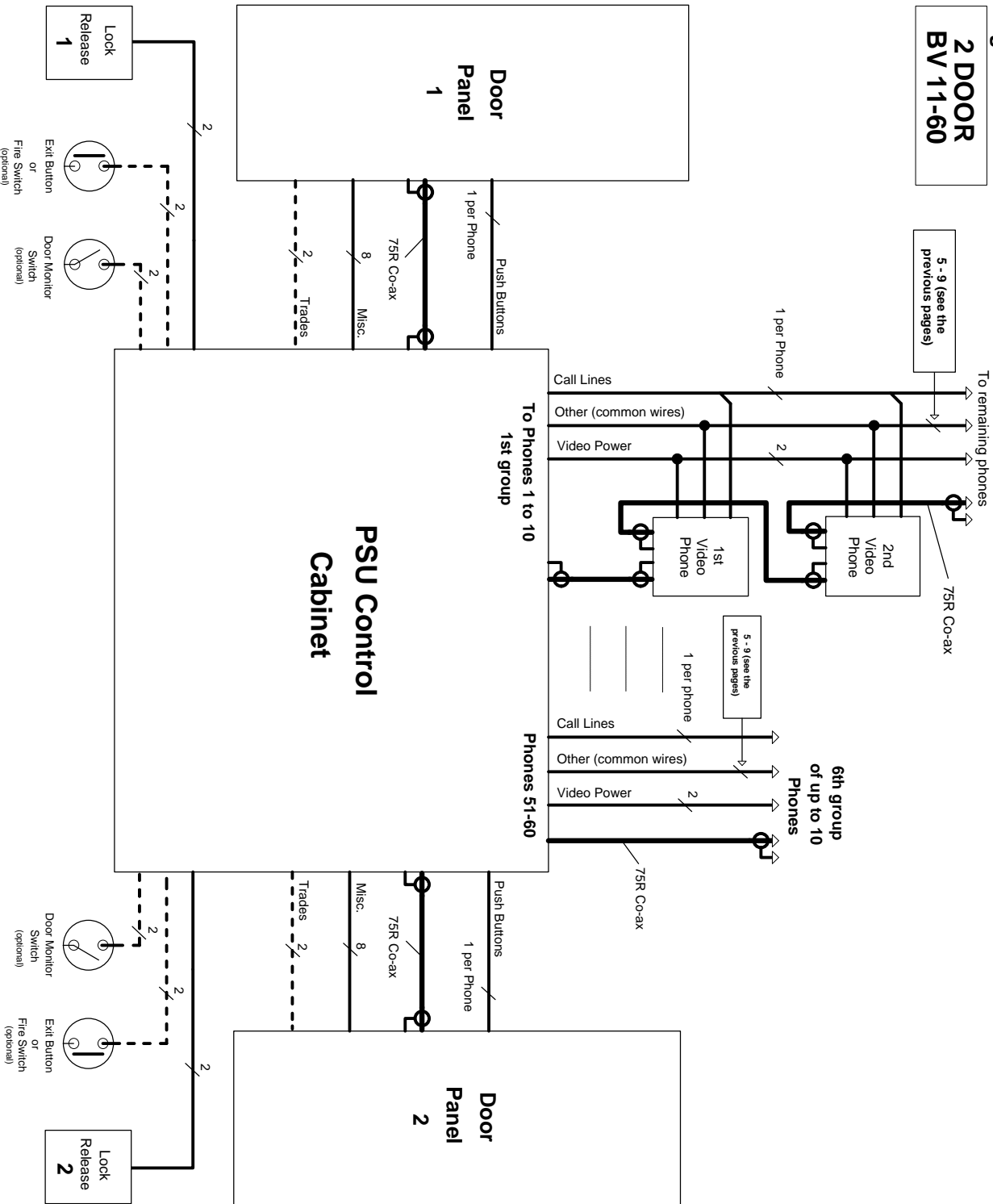
<b>Connections</b>	<b>No. of Cores</b>	<b>Max Length</b>	<b>Solid Core Diameter</b>
Camera, Speech unit and Push button common	8 + 75 Ohm Co-ax	50 m	0.5 mm
Push Buttons	1 per phone	50 m	0.5 mm
Lock Release (up to 0.5 A)	2	25 m 100 m	0.5 mm 1.0 mm
Trades button (optional)	2	50 m	0.5 mm
Exit button or Fire switch (optional)	2	100 m	0.5 mm
<b>Door monitor switch (optional)</b>			
No. of Phones	20	2	50
	60	2	20 50
			0.5 mm 1.0 mm

# Diagram 6a : Cabling for a 2 Door 11-60 Way Bell View Video System

Page 4 of 6

**2 DOOR  
BV 11-60**

5 - 9 (see the previous pages)

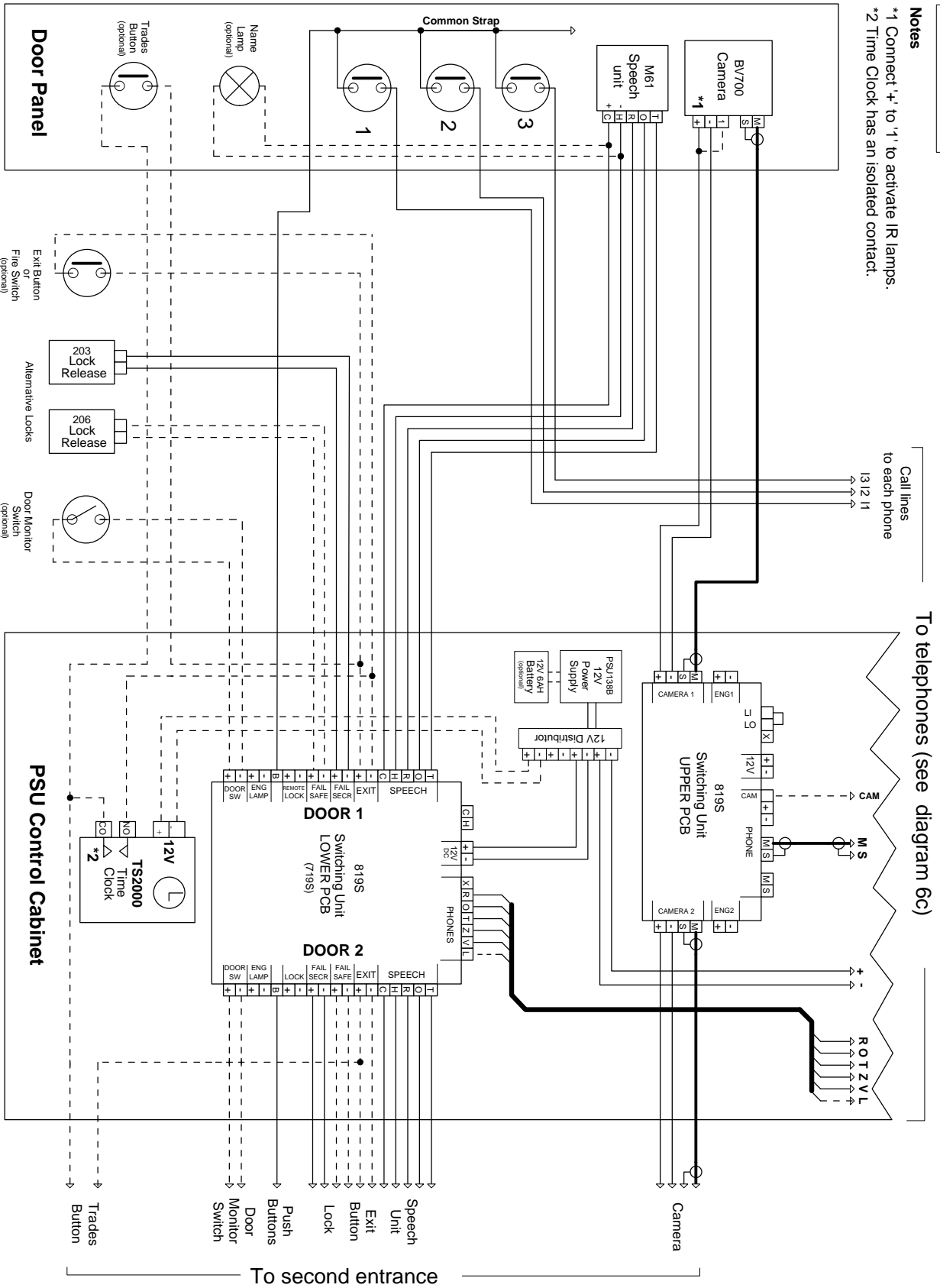


**2 DOOR  
11-60**

**Diagram 6b : Wiring for a 2 Door 11 - 60 way Bell View Video System**

**Notes**

- \*1 Connect '+' to '1' to activate IR lamps.
- \*2 Time Clock has an isolated contact.



# Diagram 6c : Telephone Wiring for a 2 Door 11 - 60 Way System

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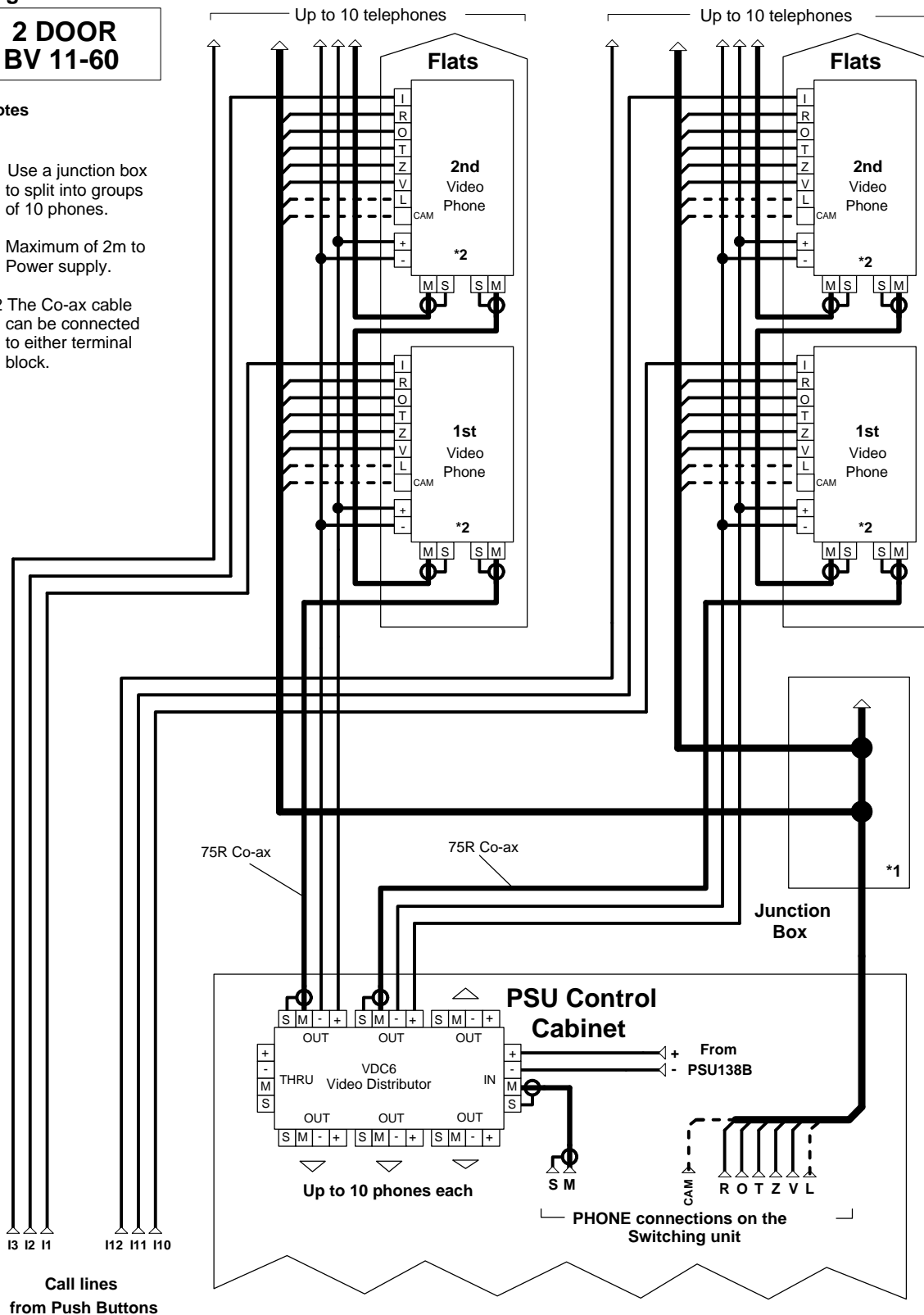
**2 DOOR  
BV 11-60**

**Notes**

\*1 Use a junction box to split into groups of 10 phones.


Maximum of 2m to Power supply.

\*2 The Co-ax cable can be connected to either terminal block.







 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

**Bell System (Telephones) Ltd.**  
**Milton Keynes**  
**Made in the United Kingdom**