APEX Installation Manual

USING ENT0684 VER0812

Manufactured in the UK

1. Copyright of Drawings.

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2. Performance Statements.

Performance figures given in our documentation are typical and must be confirmed by Entrotec before being construed subject to guarantee.

3. Training.

Our equipment must be installed and commissioned by competent persons and Entrotec will provide suitable training to those persons as required.

4. Technical Support.

Support for trained installation/maintainance personnel can be obtained between the hours of 8:30 am to 5:00 pm Monday to Thursday and 8:30 am to 4:00 pm on Friday by calling Entrotec on 08448586370 or fax 01506 886233.

5. Conditions of sale.

As published by Entrotec are provided with our quotations and copies are available on request.

Recommended Installation Procedures for Entrotec Equipment.

The recommendations give below assume the use of CW1308 type cable and are made in conjunction with reference to IEE Wiring Regulations 17th Edition 528-01 'Proximity to electrical services' and BS EN 61000-6-3:2007 & BS EN 50133-1.

Door entry & access control equipment are in 'Band 1' classification.
230v mains cables are in the 'Band 2' classification.

Other cable types can be used but the guidelines given below may or may not be relevant and other installation procedures may need to be adapted.

All unprotected cable runs should be kept away from mains cables as the radiation from these cables may cause the system to be erratic in operation.
In a building where the only way to wire is via an electrical intake, riser cupboard or lift shaft them metallic trunking or conduit should be used unless there is sufficient room within the cupboards to distance the door entry cables from the mains cables.

Mains cables should not be run in the same trunking/conduit as the door entry cables (although segregated metallic compartment trunking is acceptable).

We recommend that where the cabling is not protected in a metallic containment system that a distance of 1 Metre should be adopted unless other protective measures have been taken conforming to the relevant industry regulations.

If unprotected cables are to run across mains cables then this should be at 90 degrees.

In accordance with IEE Wiring Regulations (17th Edition) please ensure that all metalwork is bonded to the buildings earth, this includes the main control panel, all conduit (if metallic) and most importantly THE EXTERNAL CALL PANEL. A ring connector is provided in the front panel for termination of the earth cable but this bonding is often ignored, please ensure that this connection is made.

If you have any queries about a particular site or are in need of technical assistance please phone, fax or email Entrotec for technical help :-

Tel: 08448586370
Fax: 01506 886233
Email: info@entrotec.co.uk

VaughnTurner
Technical Manager

Issue 5. 23/11/2010

Contents.

System Overview and Specification using the ENT0684 PCB.

The Apex system is a combination of ideas and features gathered over the past 25 years of production of door entry equipment resulting in a highly flexible, easy to install system that allows the installer/end user to tailor the system to their own specific requirements. Many of the features are upgradable by the installer at any time so that future requirements are met. These features can be simply added with the addition of interface PCB's (e.g. Concierge Switching Unit and Concierge software package) to turn a system into a full featured concierge system or indeed many features will only require a software upgrade to the system hardware already installed.

The ENT0684 PCB and ENT0682 have the following features:-

1). Full ISP configuration. The 'personality' of the Main Controller(ENT0684) and Digital Expansion (ENT0682) can be configured/reconfigured at anytime by the use of a PC or laptop either in situ or in the workshop. (Takes advantage of any new programs that are developed and can be used to 'instantly upgrade' an existing system to the latest specifications).

2). RS485 Communications. The communications between door boards and digital expansion boards is RS485.

3). System status LED's. The main control and digital expansion PCB's have a full compliment of system status LED's that allow the installer to instantly see the operational state of the system.

4). Call Monitoring LED's. The marshalling boards have green LED's at each handset port to allow the installer to check that the correct port is calling.

5). Fuse blown indicator LED's. The marshalling boards have red LED's at each handset port to allow the installer to check for faults to individual handsets.

6). Up to 24 handsets. The Apex can be configured as a functional system with up to 24 handsets per main controller.

7). Up to 3048 handsets. The Apex system can be configured as a digital system with up to 3048 handsets (with the addition of either digital expansion or multiple main control PCB's).

8). Up to 64 Main control PCB's. The Apex system can have up to 64 main control PCB's linked to form a system.

9). Up to 16 door panels. The Apex main control PCB can have up to 16 door panels attached to it as can each additional main controller on a system. 16 x 64 = 1024 door panels max.

10). Video System. The system can be upgraded to a video system on a 'mix & match' basis using Entroview video handsets and' video ready' marshalling. Standard ED series handsets can also be attached for 'non-video' applications.

11). Adjustable 'Call Period'. Length of time a handset is 'live' for once called. 1 to 60 secs adjustable via 2 switches.

12). Adjustable 'Call Tone Period'. Length of time a handset 'rings' for once called. 1 - 60 secs adjustable via 2 switches.

13). Adjustable 'Speech Period'. Length of time a caller can speak for once the handset has been lifted. (This time period is terminated on replacement of the called handset). 10 - 120 secs adjustable via 2 switches.

14). Adjustable 'Lock Release Period'. Length of time a door is released for once opened. Adjustable via preset 1 - 60 secs.

15). Anti-Tailgating. Shortens door release time to 1 second after door is open. Requires n/c door contact when door is in closed position. Note magnetic lock door contacts not suitable as they monitor power at lock.

16). Call Tone Re-Assurance. Call tone re-assurance at front panel (level adjustable via preset).

17). Door Panel Buzzer Volume. The volume of the door open and button push annunciator buzzer is adjustable via preset at door panel (Buzzer Vol).

18). LCD Display. The door panels can have 16x2 LCD displays giving visual indication of system status. These displays can either be standard 4.5mm high or large 10.5mm high characters. Note large display requires larger door panel.

19). Speech Annunciator. A speech annunciator can be added to a door panel which gives an audio confirmation of visual information on 16x2 LCD display. Multi-lingual outputs are possible and selectable via front panel selector switches. Can also be multi-dialect.

Cabling Requirements.

1). Between Door Panel(s) and Apex Control Equipment. 1 x 6 pair CW1308 + 1 x 3 core 1.5mm^2 flex for distances up to 50 metres. For distances of 50 to 100 metres use 2.5mm^2 flex.

2). Between Apex Controller to local Marshalling. 1 x 34 way ribbon cable pre-fitted at Entrotec.

3). Between Apex Controller and remote Marshalling (specials only). 1 core CW1308 per flat (call line) + 1 x 4 pair CW1308 (commons) + 1 x 3 core 1.5mm^2 flex. **Note this wiring for Special Systems only and require special wiring diagrams.**

4). Between Apex Controller and Digital Expansion(s). 1 x 6 pair CW1308 + 1 x 3 core 1.5mm^2 flex daisy-chained for up to 10 Expansions if more use 2.5mm^2 for up to 50 metres, 50-100 metres use 2.5mm^2.

5). Between Apex Controller and Apex Deck Controllers. 1 x 6 pair CW1308 + 1 x 3 core 2.5mm^2 flex for distances up to 50 metres. For distances of 50 to 100 metres use 4mm^2 flex. **Note: See Local & Remote PSU cable requirements.**

6). Between Apex Deck Door Panels and Apex Deck Controllers. 1 x 6 pair CW1308 + 1 x 3 core 1.5mm^2 flex for distances up to 50 metres. For distances of 50 to 100 metres use 2.5mm^2 flex.

7). Between Apex Marshalling and ED Series Handset. 1 x 4 pair CW1308 (audio only). For ED3+ or 4/+/CB and Entroview 600 use 1 x 6 pair.

Video Cabling Requirements.

1). Between Door Panel(s) and Apex Control Equipment. 1 x 6 pair CW1308 + 1 x RG59 Coax + 1 x 3 core 1.5mm^2 flex for distances up to 50 metres. For distances of 50 to 100 metres use 2.5mm^2 flex.

2). Between Apex Controller and Digital Expansion(s). 1 x 6 pair CW1308 + 1 x 3 core 1.5mm^2 flex + 1 x RG59 Coax. **Note: RG59 coax now looped 'In & Out' up the building.**

3). Between Apex Controller and Apex Deck Controllers. 1 x 6 pair CW1308 + 1 x RG59 Coax + 1 x 3 core 2.5mm^2 flex for distances up to 50 metres. For distances of 50 to 100 metres use 4mm^2 flex. **Note: See Local & Remote PSU cable requirements.**

4). Between Apex Deck Door Panels and Apex Deck Controllers. 1 x 6 pair CW1308 + 1 x RG59 coax + 1 x 3 core 1.5mm^2 flex for distances up to 50 metres. For distances of 50 to 100 metres use 2.5mm^2 flex.

5). Between Apex Marshalling and Entroview Series Handset. 1 x 6 pair CW1308 (audio/video only). For Entroview 400 & 500 use 1 x 8 pair.

Auxiliary Equipment Cabling Requirements.

1). Between Readers in Door Panels and Main control unit. 1 x 3 pair CW1308 or 6 core Alarm cable run separately from Apex Door Panel Multi-core.

2). Between Remote Camera's and Apex Controllers. 1 x 1 pair CW1308 + 1 x RG59 coax.

3). Between Push to Exit/Fire Switch & Apex Door Panels. 1 x 1 pair CW1308 + Lock wires broken by switch.

4). Between Lock Release(s) and Apex Door Panels. 1 x 2 core 1.5mm^2 flex (1 core broken by PTE/Fire switches for fail safe lock releases).

5). Between Apex Door Panels and Monitoring Contacts. 1 x 1 pair CW1308. Needs C/O contacts if ATG used. Note: C/O contacts in magnetic locks monitor voltage to lock and not whether door is open or closed so therefore cannot be used for ATG circuit.

6). Between Handsets and Extension Sounders, Flashing Beacons etc. 1 x 2 pair CW1308.

7). Between Door Panels and EntryLoop (Hearing Aid) Module. 1 x 3 pair CW1308.

8). Between Access Controller and Apex Door Panel. 1 x 1 pair CW1308 (1 core required and can be included in reader cable).

9). Between Apex Main Controller and Entronet 3000 Handset. 1 x 4 pair CW1308 or 2 x RCA Phono Leads + local 15VDC PSU.

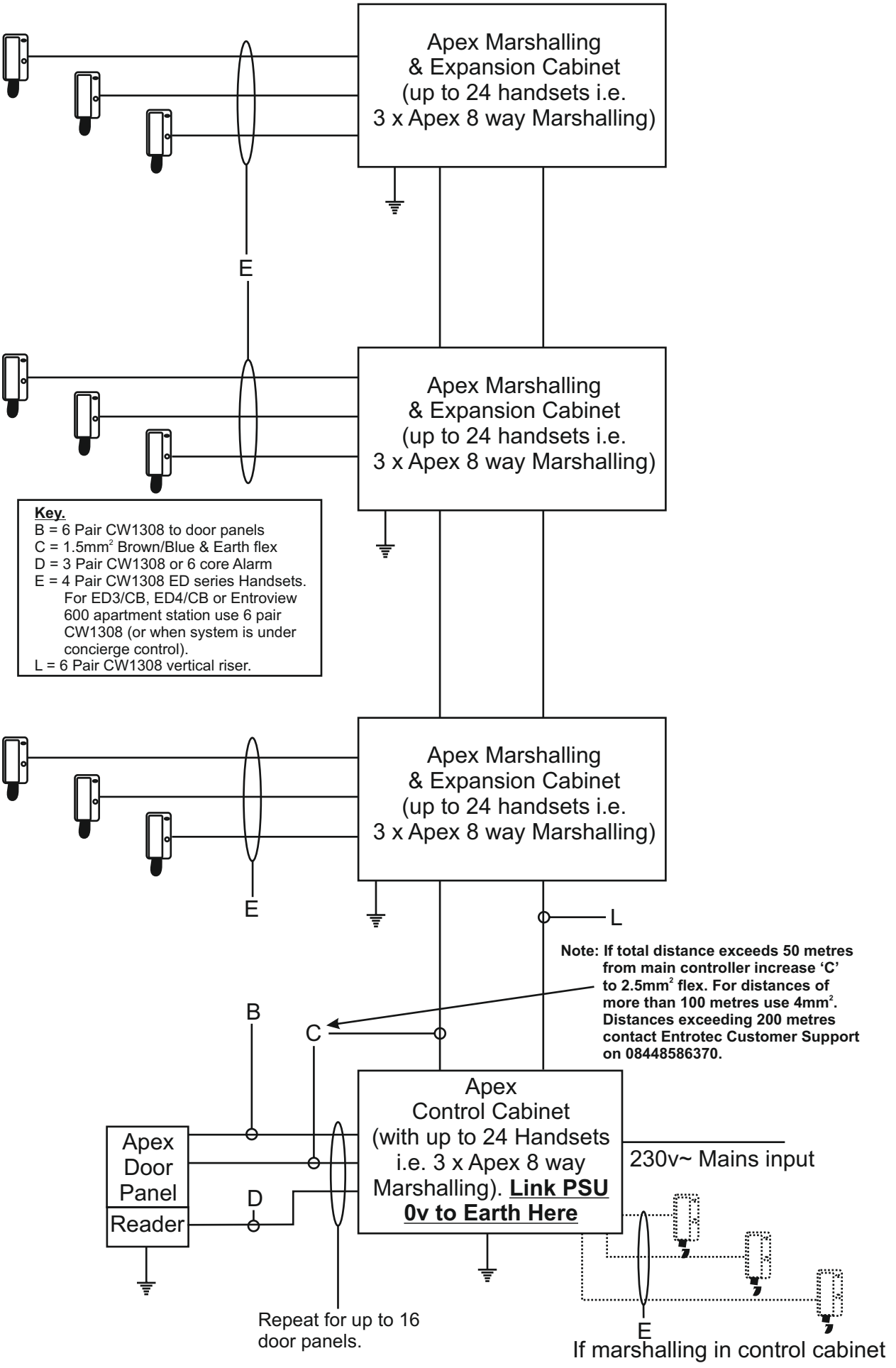
10). Between Apex Main Controller and PC. 1 x 2 pair CW1308. (Single block concierge system). For larger systems contact Entrotec Technical on 08448586370.

Notes: Cabling requirements shown above and elsewhere in the manual are minimum cores required. It is also advisable that all unused cables are linked to the system earth (not necessarily building earth). Any terminal on the system marked as 0v is a suitable system earth. Where 1.5/2.5/4mm^2 cables are stipulated use flex as solid drawn cables put strain on the terminal connections.

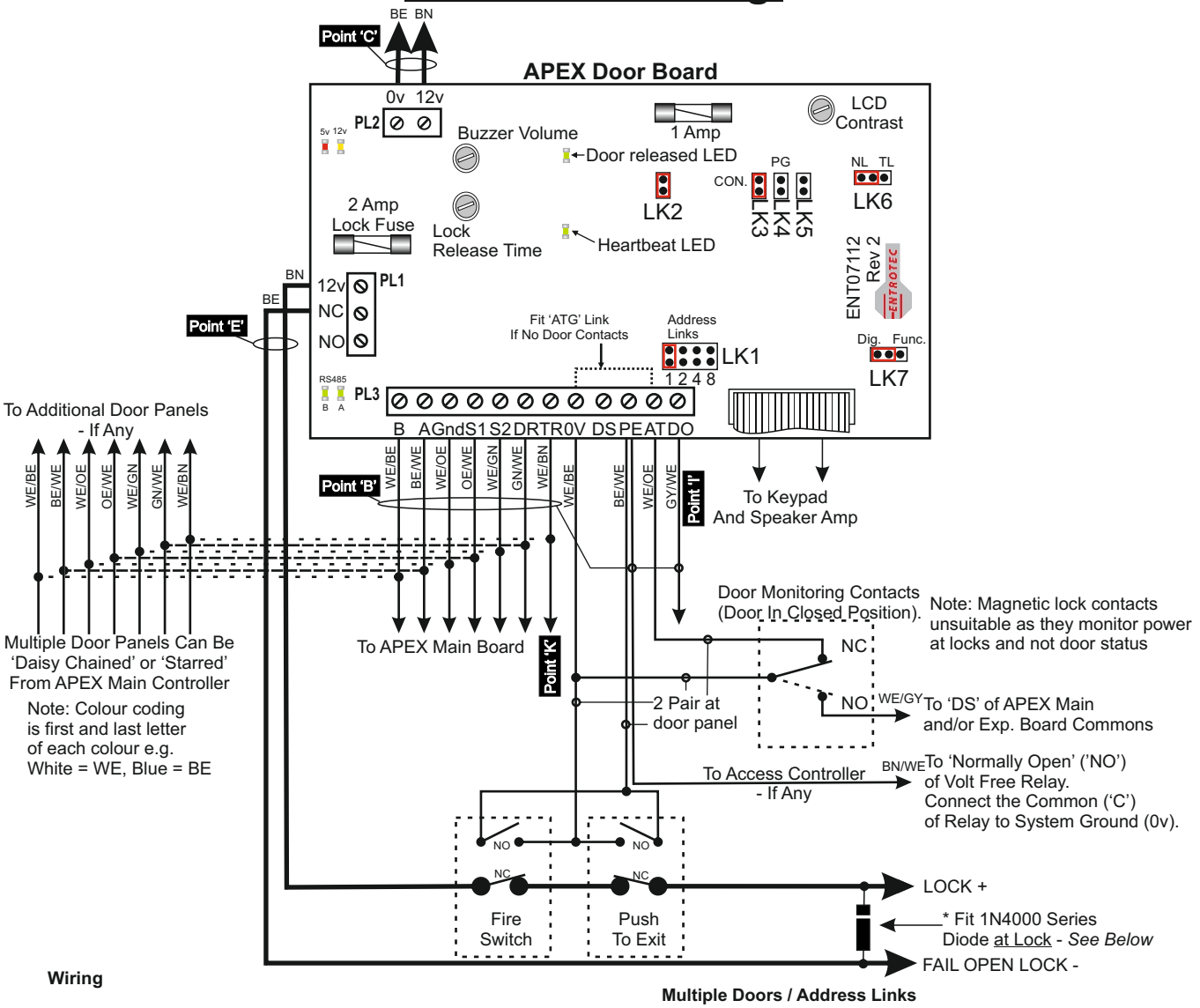
Please note that on 'Special Systems' cable requirements will probably differ, if 'Special Systems' are to be installed contact Entrotec Customer Support for confirmation on requirements. A system is considered 'Special' if non-standard functions are required which do not appear in this manual.

NB. Whilst every effort is made to ensure that the correct cable types are specified within this manual, on site conditions vary considerably. It is up to the installer to ensure that the correct cable type is used to carry the system load to any given point within the system. Things to take into consideration are lock load, the distance of cable runs, and additional equipment load etc which Entrotec may or may not have provided for a system.
As a general rule we allow 1 amp per door attached to each node plus 500mA for the controller at that part of the system. Other equipment will vary (especially the locks) and we allow for 2 magnetic locks at each door rated at 2 x 500mA max. For the power supplies we generally double the perceived total load at that point. If using existing locks and equipment not supplied by Entrotec then the total load should be calculated prior to installation. If unsure about cable types to use then call the Entrotec Customer Support on 08448586370.

Typical Apex Audio System



Door Panel Wiring.



Wiring

Point 'B' : Door Data / Speech / Door Release
6 Pair CW1308 - *Any unused cores to be tied to system ground*

Point 'C' : +12v / 0v Supply
2 Cores 1.5mm² (+ Earth) minimum. (See page 2 Cabling requirement 1).

Point 'E' : +12v / 0v Supply for Locks
2 Cores 1.5mm²

Point 'I' : 'Door On' Signal (Lo When Door Panel Calls)
1 Core of CW1308 - *Use if Required To Switch Video Switcher VS2*

Point 'K' : 'Normally Open' Trades Time Clock Signal
1 Core of CW1308 (Use Point 'B' 6 Pair) - *Can Be Wired Straight From Time Clock*

Multiple Doors / Address Links

APEX systems can have up to 16 Digital / Functional (with LCD) doors per APEX main board. *Each door board connected to a main board should be uniquely addressed -*

Address Links - 'LK1'. These are factory set where possible.

To set as:
Door 1 = Link 1 in,
Door 2 = Link 2 in,
Door 3 = Links 1 & 2 in etc.

On large systems, digital door panels can be connected to any APEX main board on the system, functional panels (with LCD) must be connected to the Apex main board it is to call.

Jumper Link Settings

Digital / Functional Select Link
LK7 Selects if door panel is 'Digital' or 'Functional'.
Dig. Func. — Digital
Dig. Func. — Functional
This is factory set depending on panel type and should not normally be changed.

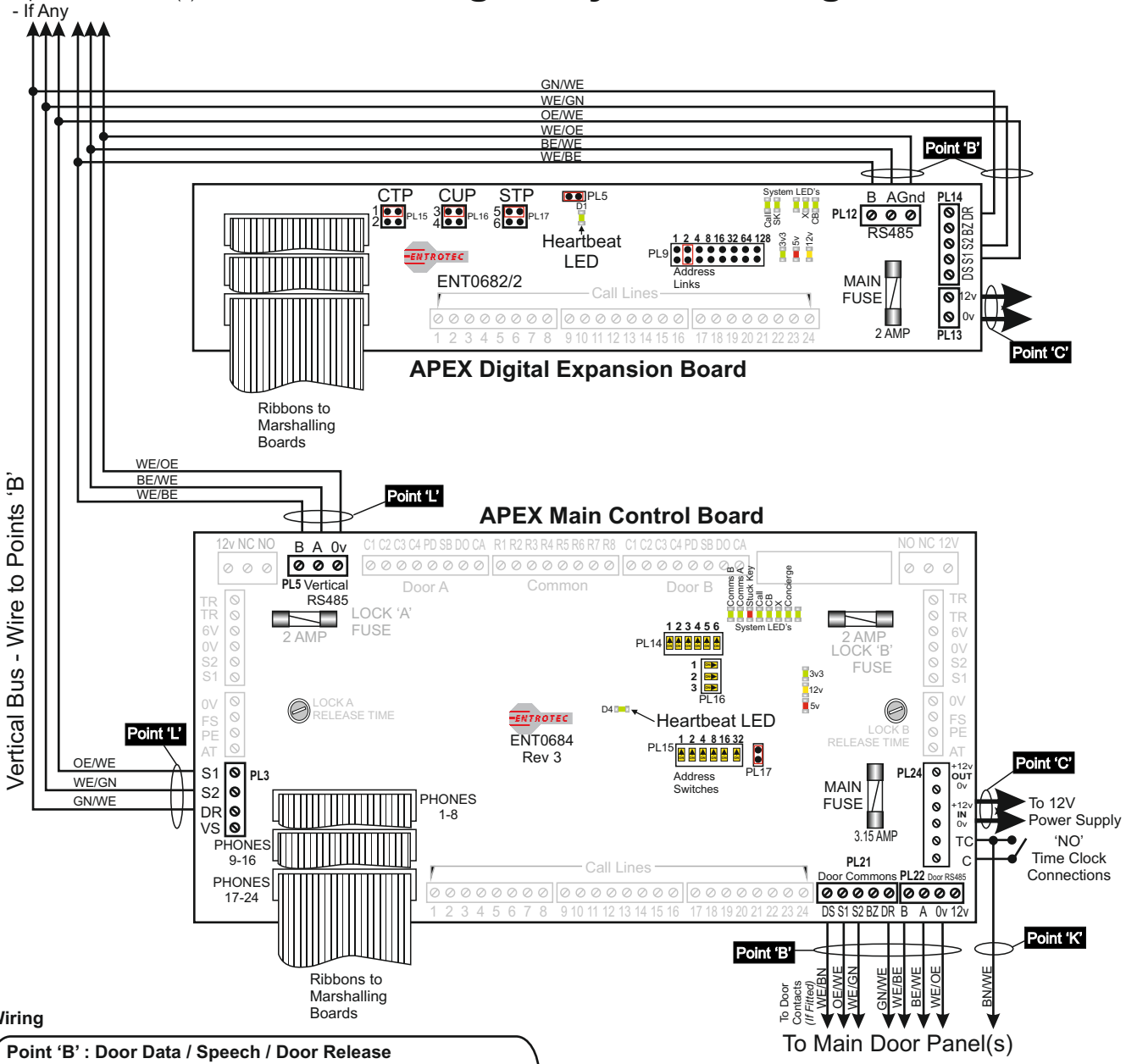
Concierge Link
LK3 enables the Concierge button.
CON — Normal
CON — Concierge
With a link in place, the Concierge button is enabled. With no link, button functions as 'K' (Digital) / '24' (Functional).

Coded Access Program Link
LK5 Allows the 'Master Code' to be re-programmed.
PG — Normal Mode
PG — Program Mode
Refer to installation manual for full coded access instructions.

Test Link
LK6 Selects if door panel is 'Test' or 'Normal' Mode.
NL TL — Normal
NL TL — Test
In test mode, speech and door release isolation is disabled. A link should be present at the NL for normal use.

IMPORTANT. * Entrotec recommend the use of locks with built in suppression. If such a lock is not being used it is ESSENTIAL to fit a 1N4007 diode AT THE LOCK.
FAILURE TO DO SO MAY DAMAGE THE BOARD AND INVALIDATE ANY WARRANTY.

Audio Digital System Wiring.



Wiring

Point 'B' : Door Data / Speech / Door Release
6 Pair CW1308 - *Any unused cores to be tied to system ground*

Point 'C' : +12v / 0v Supply
2 Cores 1.5mm² for up to 50 metres (See Page 2).

Point 'D' : 'Normally Open' Trades Time Clock Signal
1 Core of CW1308 (Use Point 'A' 6 Pair)

Point 'K' : 'Normally Open' Trades Time Clock Signal
1 Core of CW1308 (Use Point 'B' 6 Pair) - *Can Be Wired Straight From Time Clock*

Point 'L' : Vertical Data / Speech / Door Release
6 Pair CW1308 - *Any unused cores to be tied to system ground*

Address Switch / Link Settings

Each APEX control board on a system should be uniquely addressed. These are factory set where possible.

APEX Main Board Address Switches: PL15.
APEX Digital Expansion Board Address Links: PL19.

To set as: Controller 1 = Switch 1 On, Controller 2 = Switch 2 On, Controller 3 = Switches 1&2 On etc. All Switches off = Controller 0.

Note: The Digital Expansion board has additional links for address values 64 and 128.

Jumper Switch Settings

Call Tone Time Adjust
Length of time the handset rings for:

PL14: PL15 on Expansion (CTP)

Switch 1	Switch 2	
0	0	= 20 Secs =10 rings
1	0	= 30 Secs =15 rings
0	1	= 40 Secs = 20 rings
1	1	= 60 Secs = 30 rings

Call Up Time Adjust
Length of time the handset is live for:

PL14: PL16 on Expansion (CUP)

Switch 3	Switch 4	
0	0	= 20 Secs
1	0	= 30 Secs
0	1	= 40 Secs
1	1	= 60 Secs

Speech Time Adjust
Length of time caller can speak for:

PL14: PL17 on Expansion (STP)

Switch 5	Switch 6	
0	0	= 45 Secs
1	0	= 60 Secs
0	1	= 90 Secs
1	1	= 120 Secs

IMPORTANT.

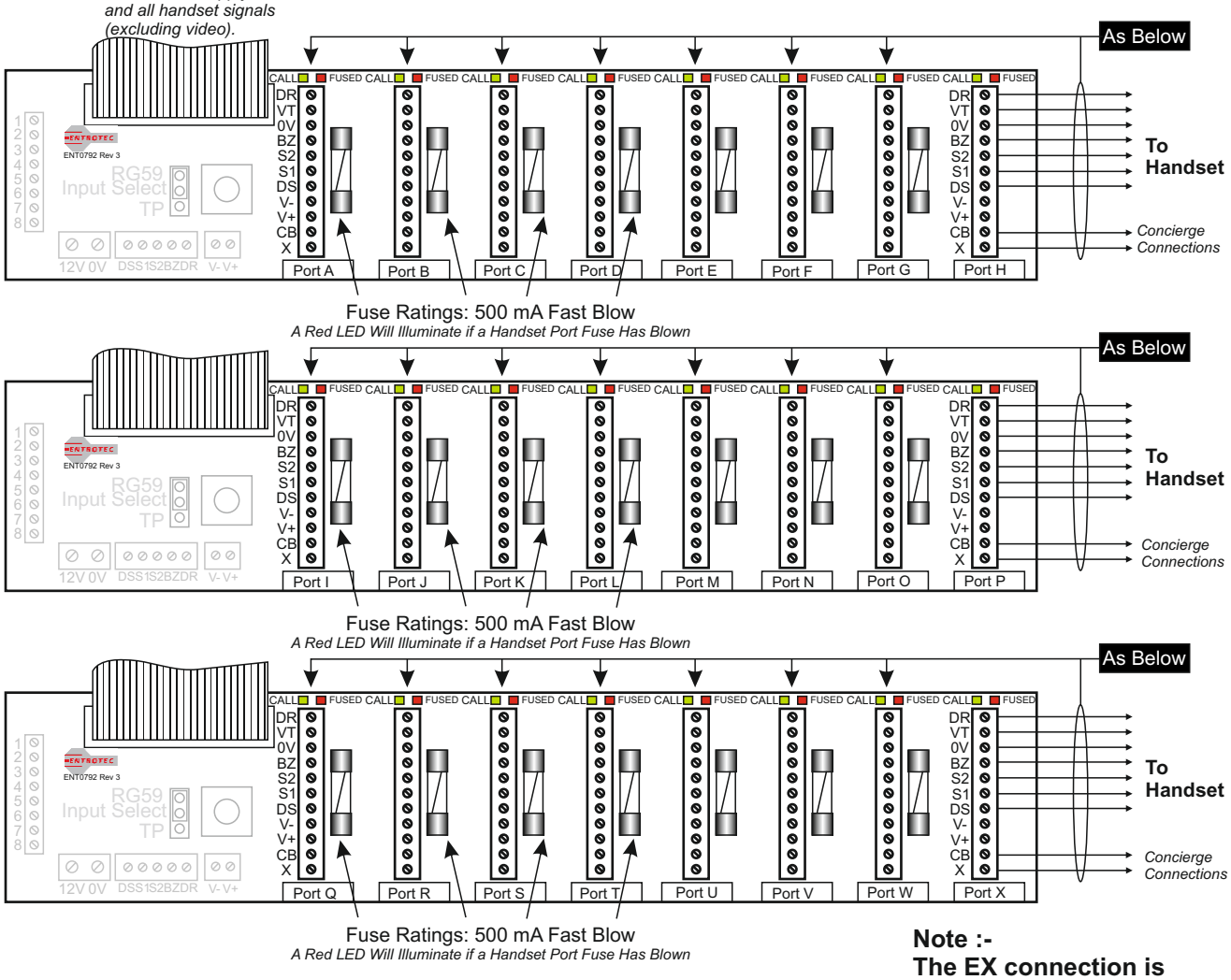
ALL CABLES TO BE KEPT WELL AWAY FROM HIGH VOLTAGE CABLES.

PLEASE CONSULT OUR FULL INSTALLATION MANUAL OR CONTACT Entrotec Customer Support on 08448586370

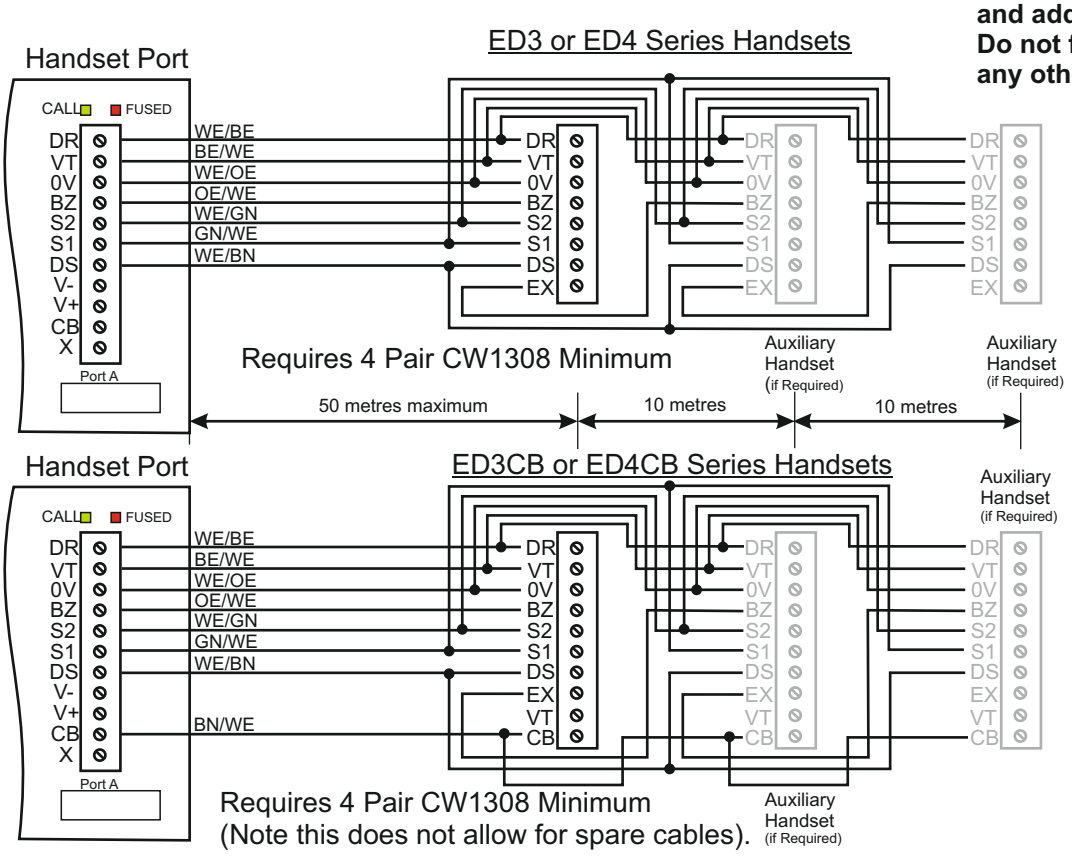
Download the most up to date manuals from the technical page on our website. Http://www.entrotec.com/technical/downloads/

Audio Marshalling to Handset Wiring

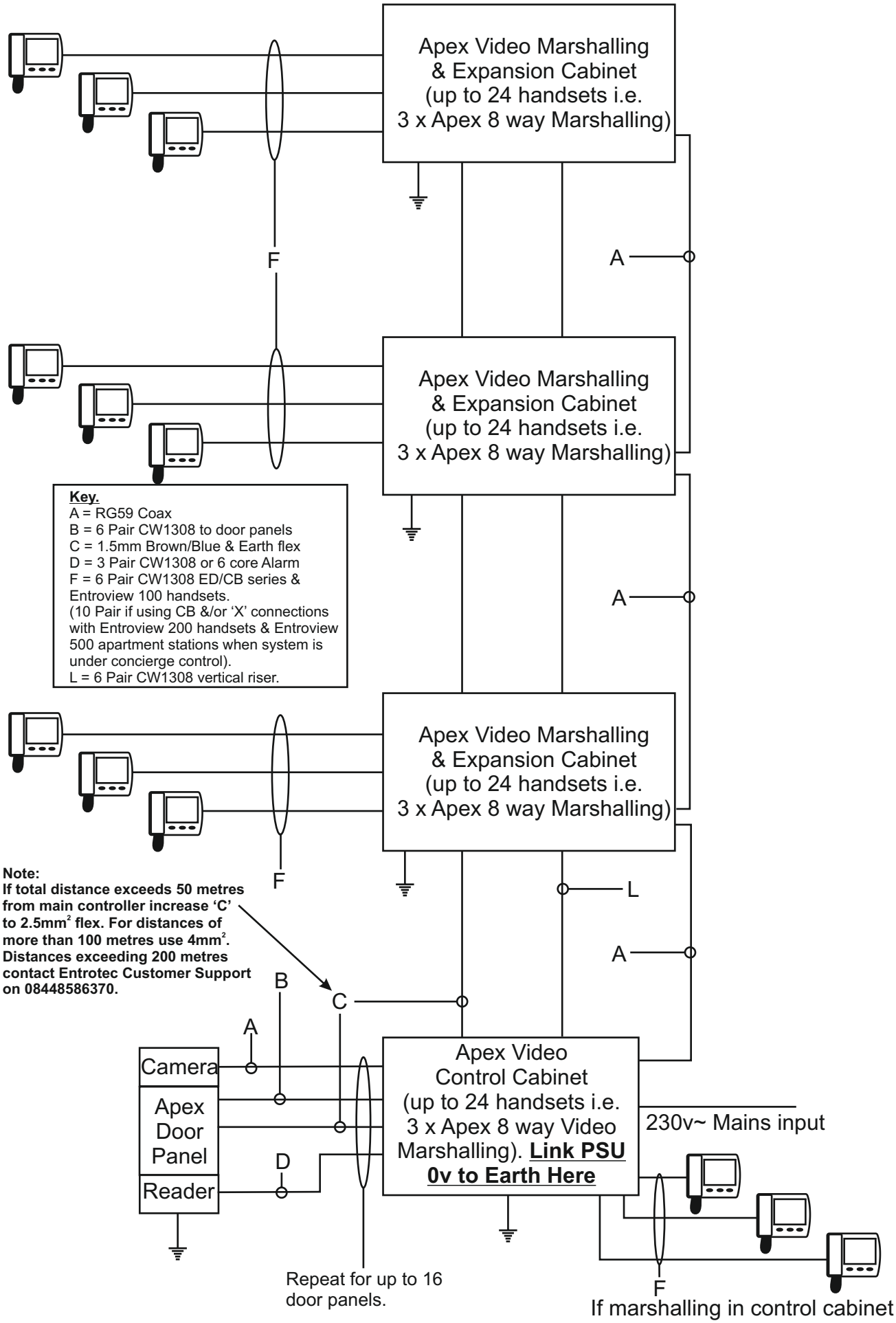
Ribbons From Control Board or Exp.
Ribbon cable carries: +12v and 0v supply and all handset signals (excluding video).



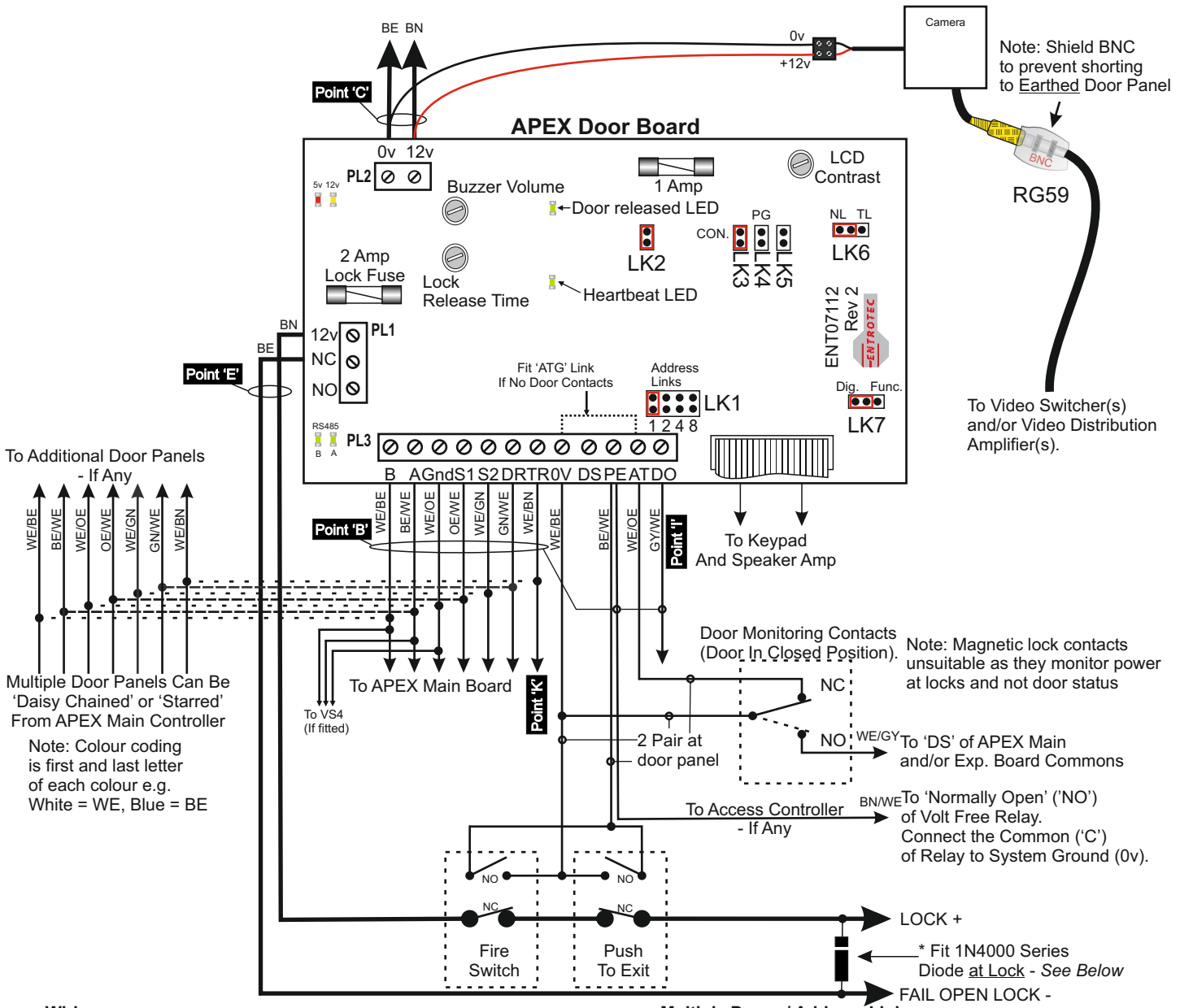
Note :-
The EX connection is only used on accessories and additional handsets. Do not fit a wire into EX for any other purpose.



Typical Apex Audio/Video System



Video Door Panel Wiring.



Wiring

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6 Pair CW1308 - *Any unused cores to be tied to system ground*

Point 'C' : +12v / 0v Supply
2 Cores 1.5mm^2 (+ Earth) minimum. (See page 2 Cabling requirement 1).

Point 'E' : +12v / 0v Supply for Locks
2 Cores 1.5mm^2

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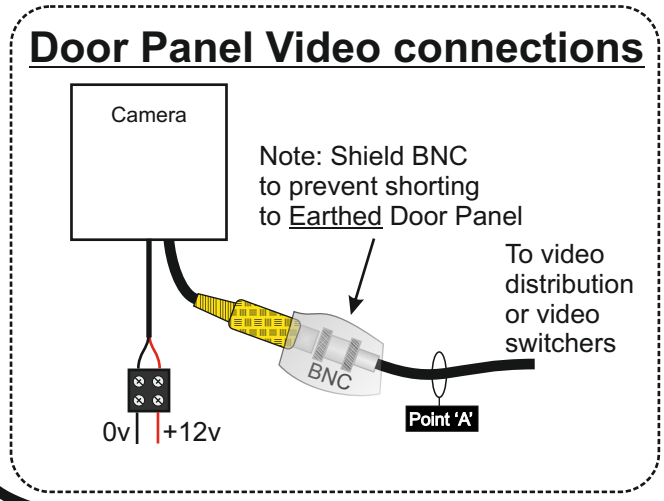
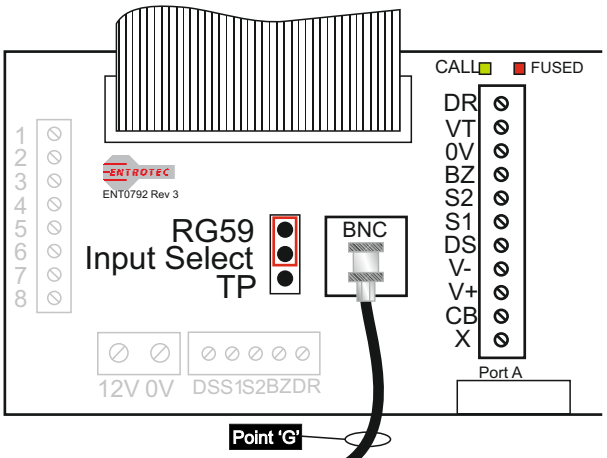
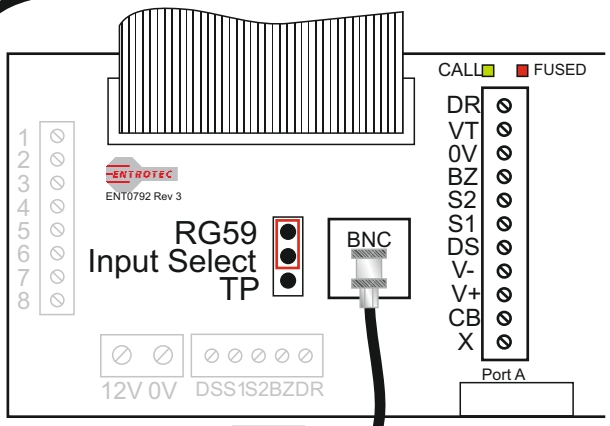
Video Switching and Distribution Boards.

Door Panel Video connections





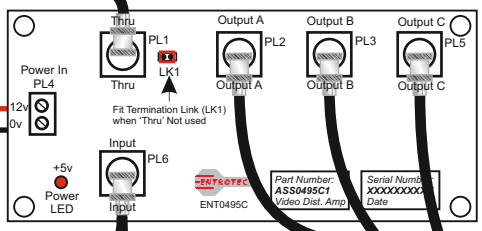
Point 'G'



Point 'G'

Point 'G' To next marshalling or deck

To 12v PSU



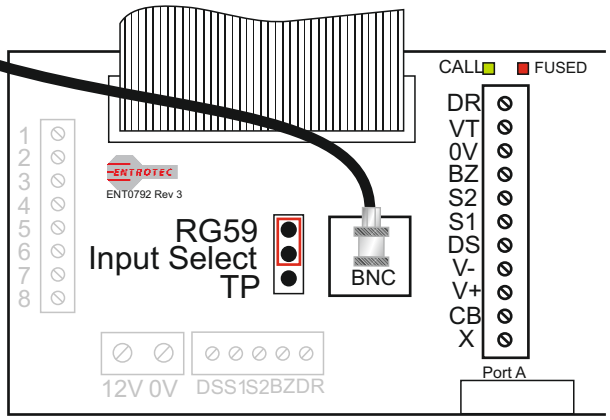
Point 'G'

Point 'G'

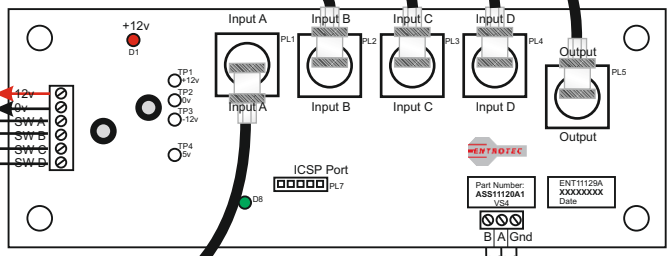
To Main Riser
if no Deck Access

Point 'A'

Local Deck
Doors Coax's
From Camera's



To Local
Deck Doors
DO Terminal



GY/WE

From
Main
DP

Point 'I'

Point 'A'

Main Riser
Coax In

WE/BE
BE/WE
WE/OE

Note:
Local deck doors RS485 bus may be connected here.(If connected to local bus
then do not connect SW B, C & D at Point 'I' (Main DP still needs to connect to SW A)

Wiring

Point 'A' : Coaxial Video Input from Video Source
RG59 Coax

Point 'G' : Coaxial Video Output to Input
RG59 Coax

Point 'I' : Switched output from main or local Deck Door Panel
1 core CW1308

IMPORTANT.

Whilst every effort has been made to ensure the accuracy of the information supplied herein, Entrotec cannot be held responsible for any errors or omissions.

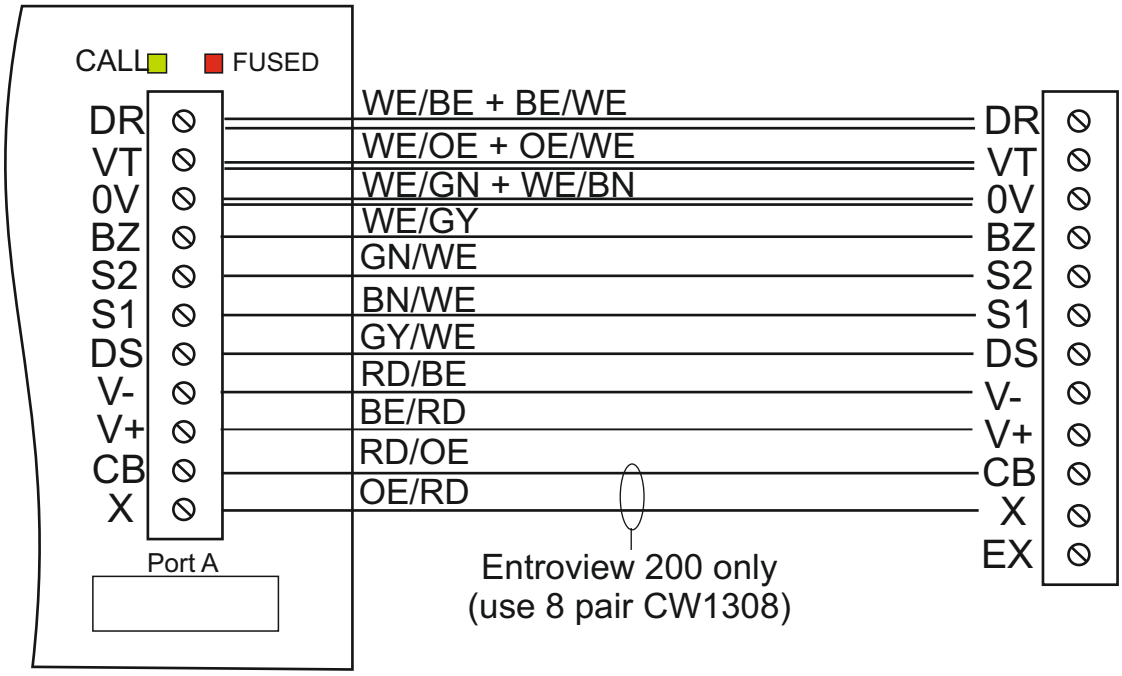
It is the responsibility of the customer / installer to follow any relevant wiring regulations.

Any damage to equipment caused by mis-wiring may invalidate any warranty. If you are in any doubt, please contact our Customer Support department for advice on 08448586370.

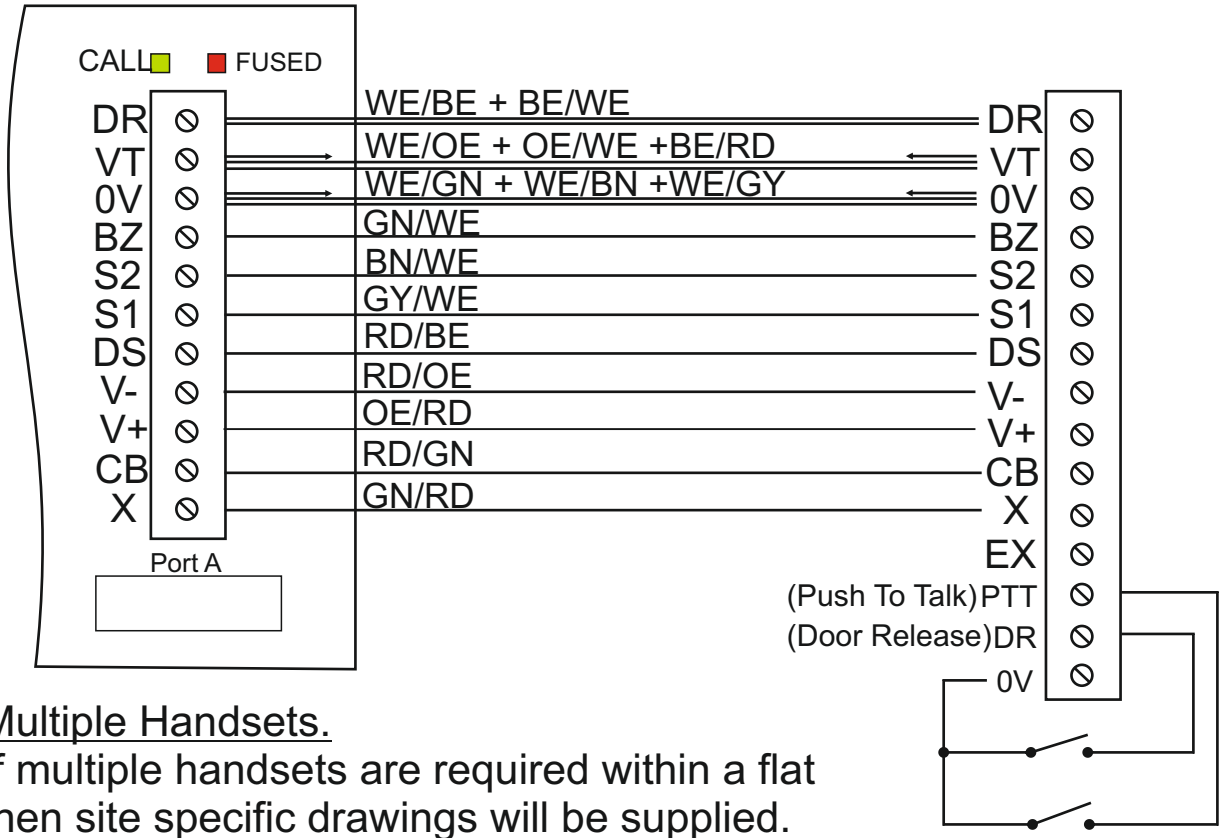
Video Handset Wiring

Wiring to single Entroview 100 or 200 Handset

Handset Port



Entroview 500 or 600 Wiring



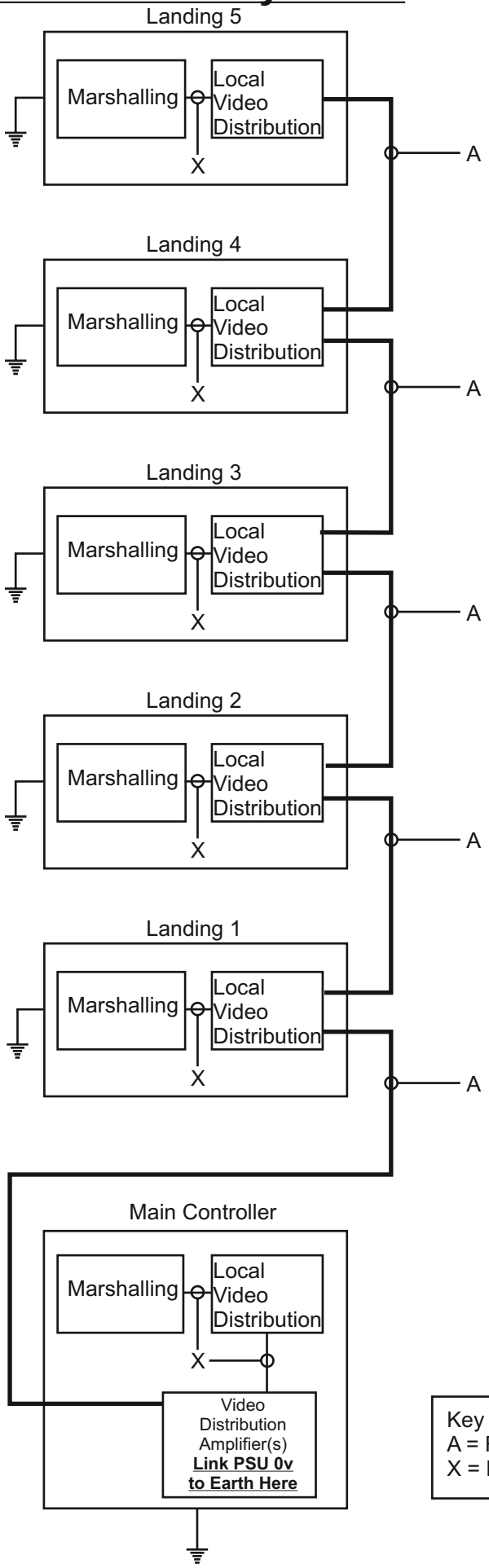
Remote Switch Connections e.g. When push buttons cannot be operated by user. Use NO momentary Foot Operated switches.

Multiple Handsets.

If multiple handsets are required within a flat then site specific drawings will be supplied.

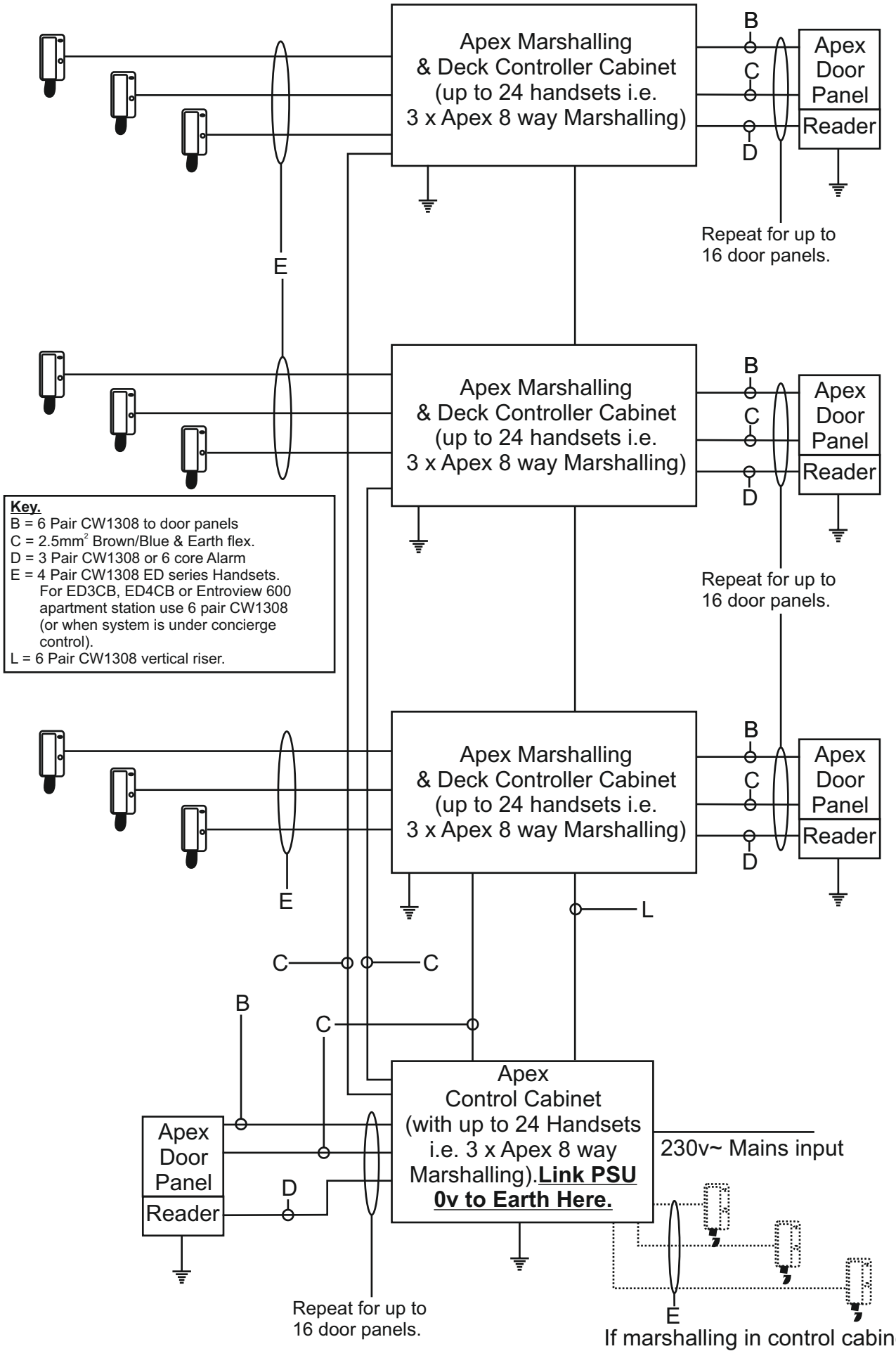
Note: Only 1 Apartment Station (Entroview 500/600) can be fitted to a flat with no additional handsets or Apartment Stations allowed. (Use 8 Pair minimum CW1308 for Entroview 500). Note this leaves no spare cables.

Video Distribution within blocks for Digital & Deck Access Systems.

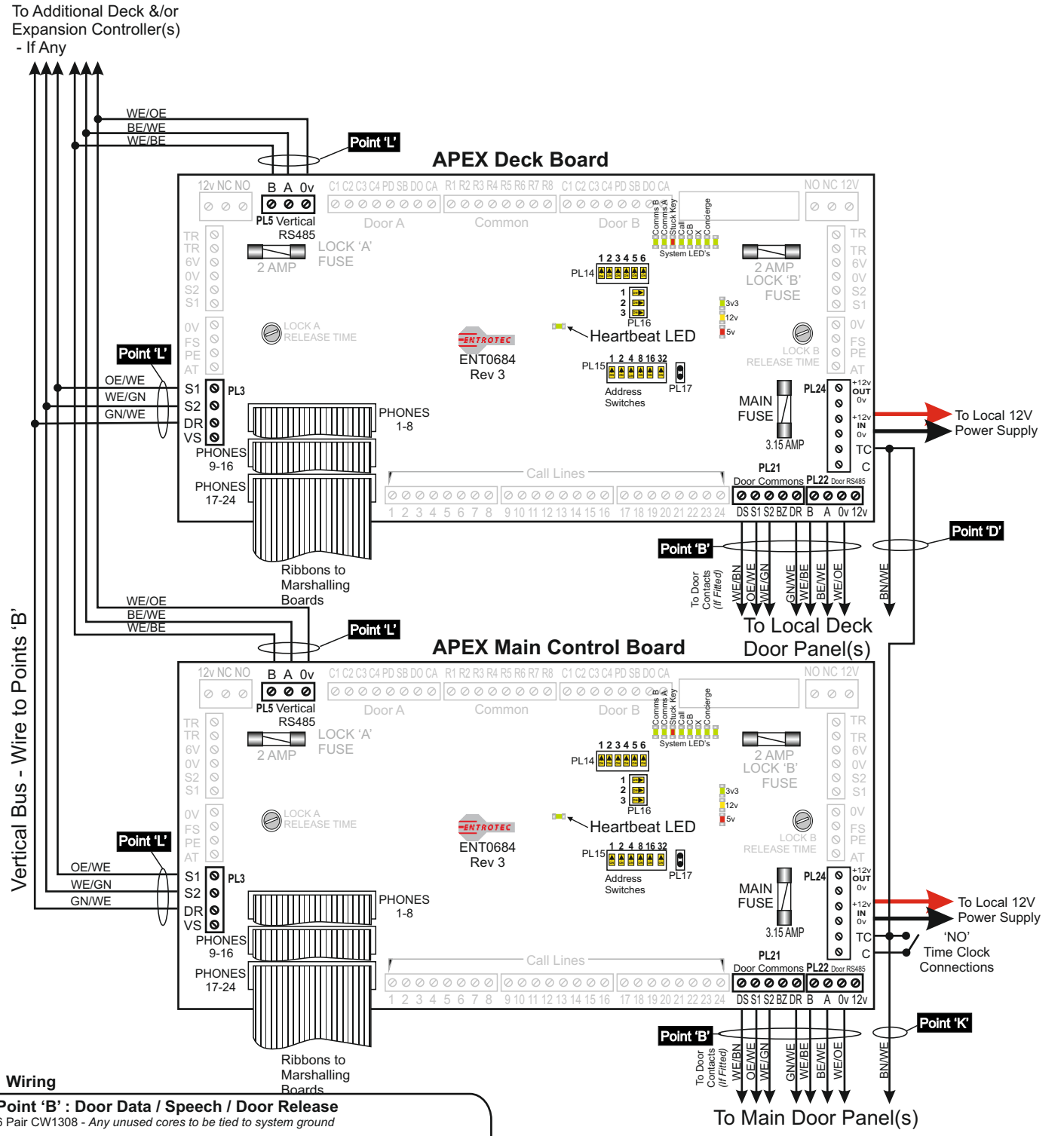


Key
A = RG59 Coax.
X = Pre-wired by Entrotec.

Typical Apex Deck Access Audio System



Audio Deck Access System Controller Wiring.



Wiring

Point 'B' : Door Data / Speech / Door Release
6 Pair CW1308 - *Any unused cores to be tied to system ground*

Point 'D' : 'Normally Open' Trades Time Clock Signal
1 Core of CW1308 (Use Point 'B' or 'L' 6 Pair)

Point 'K' : 'Normally Open' Trades Time Clock Signal
1 Core of CW1308 (Use Point 'B' 6 Pair) - *Can Be Wired Straight From Time Clock*

Point 'L' : Vertical Data / Speech / Door Release
6 Pair CW1308 - *Any unused cores to be tied to system ground*

Address Switch / Link Settings

Each APEX control board on a system should be uniquely addressed. These are factory set where possible.

APEX Main Board Address Switches: PL15.

To set as: Controller 1 = Switch 1 On, Controller 2 = Switch 2 On, Controller 3 = Switches 1&2 On etc. All Switches off = Controller 0.

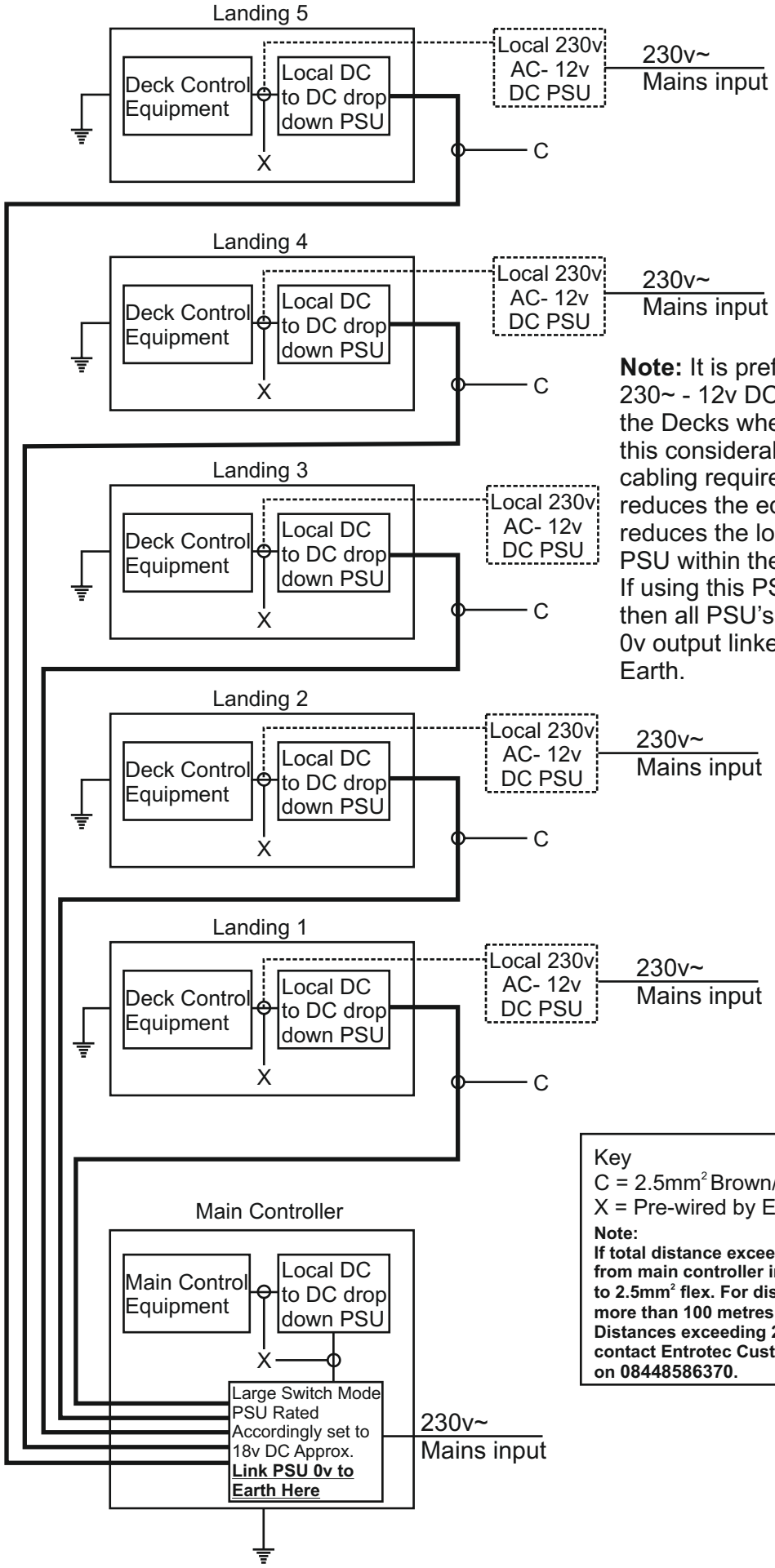
IMPORTANT.

ALL CABLES TO BE KEPT WELL AWAY FROM HIGH VOLTAGE CABLES.

PLEASE CONSULT OUR FULL INSTALLATION MANUAL OR CONTACT OUR CUSTOMER SUPPORT FOR ADVICE ON 08448586370.

Download the most up to date manuals from the technical page on our website. Http://www.entrotec.com/technical/downloads/

PSU Wiring for Deck Access Systems.

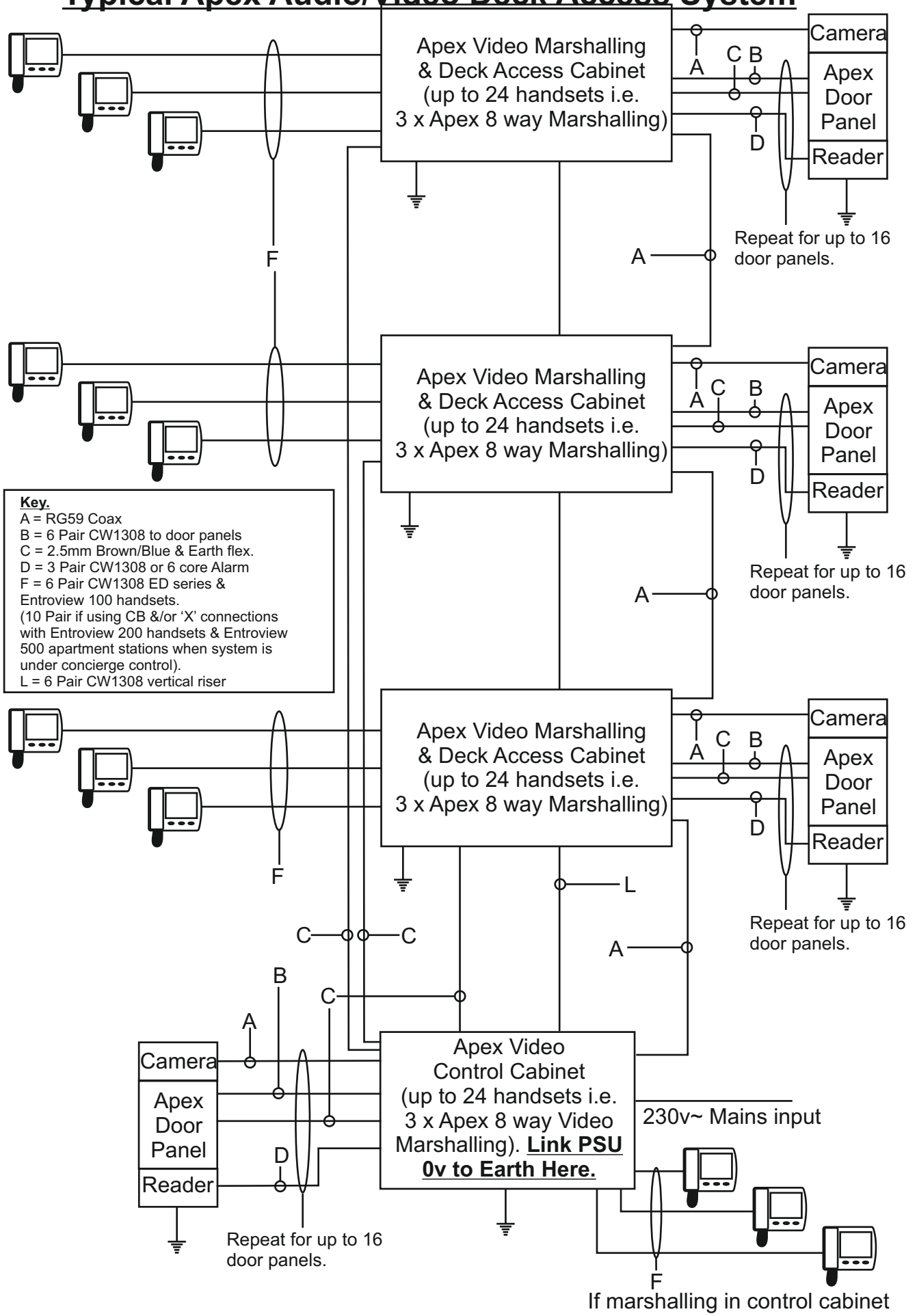


Note: It is preferable to use local 230~ - 12v DC power supplies at the Decks where ever possible as this considerably reduces the PSU cabling requirement (negates 'C'), reduces the equipment costs and reduces the load on a single main PSU within the Main Controller. If using this PSU arrangement then all PSU's **must** have their 0v output linked to the system Earth.

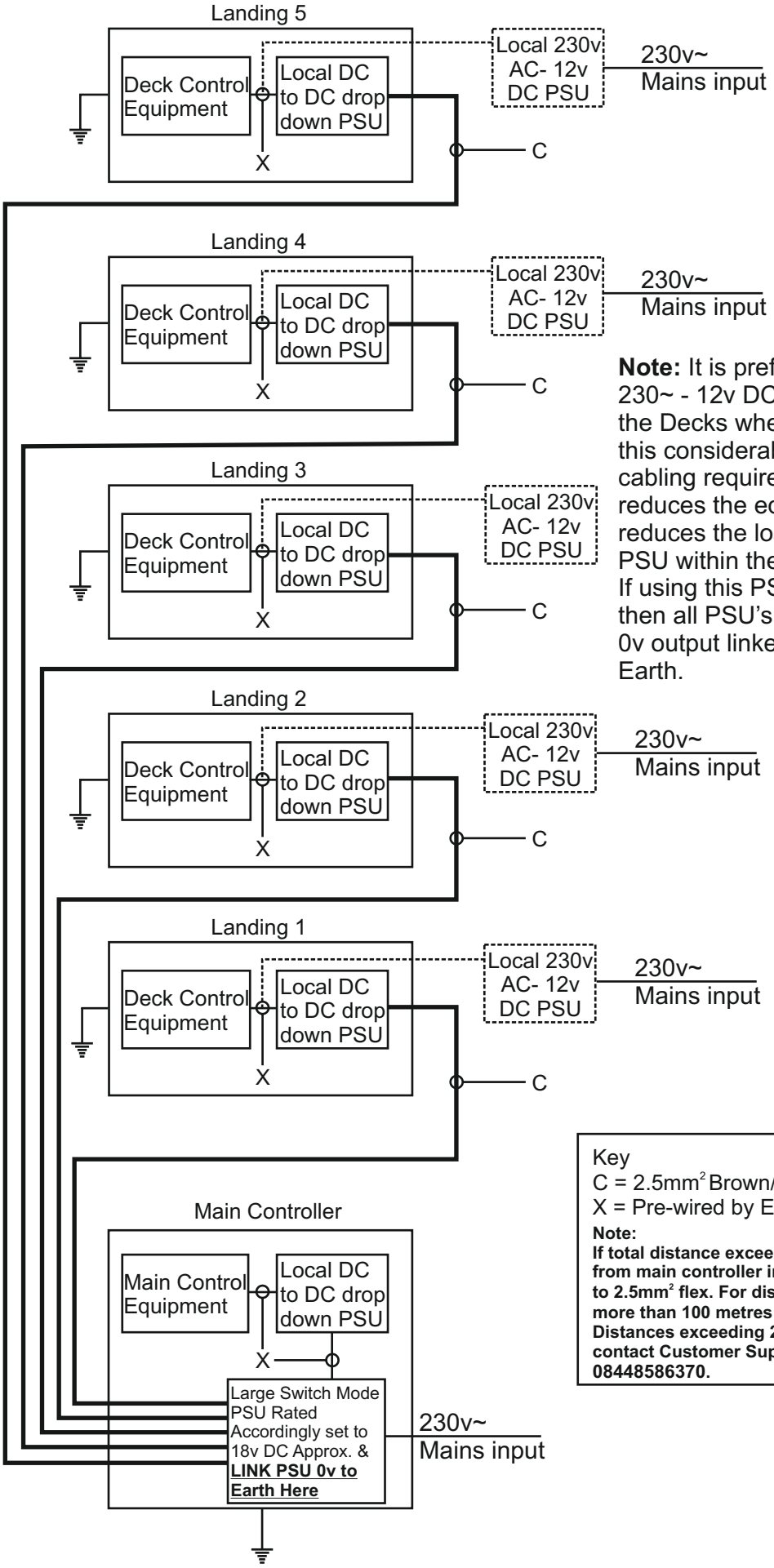
Key
C = 2.5mm^2 Brown/Blue & Earth Flex
X = Pre-wired by Entrotec.

Note:
If total distance exceeds 50 metres from main controller increase 'C' to 2.5mm^2 flex. For distances of more than 100 metres use 4mm^2. Distances exceeding 200 metres contact Entrotec Customer Support on 08448586370.

Typical Apex Audio/Video Deck Access System



PSU Wiring for Video Deck Access Systems.

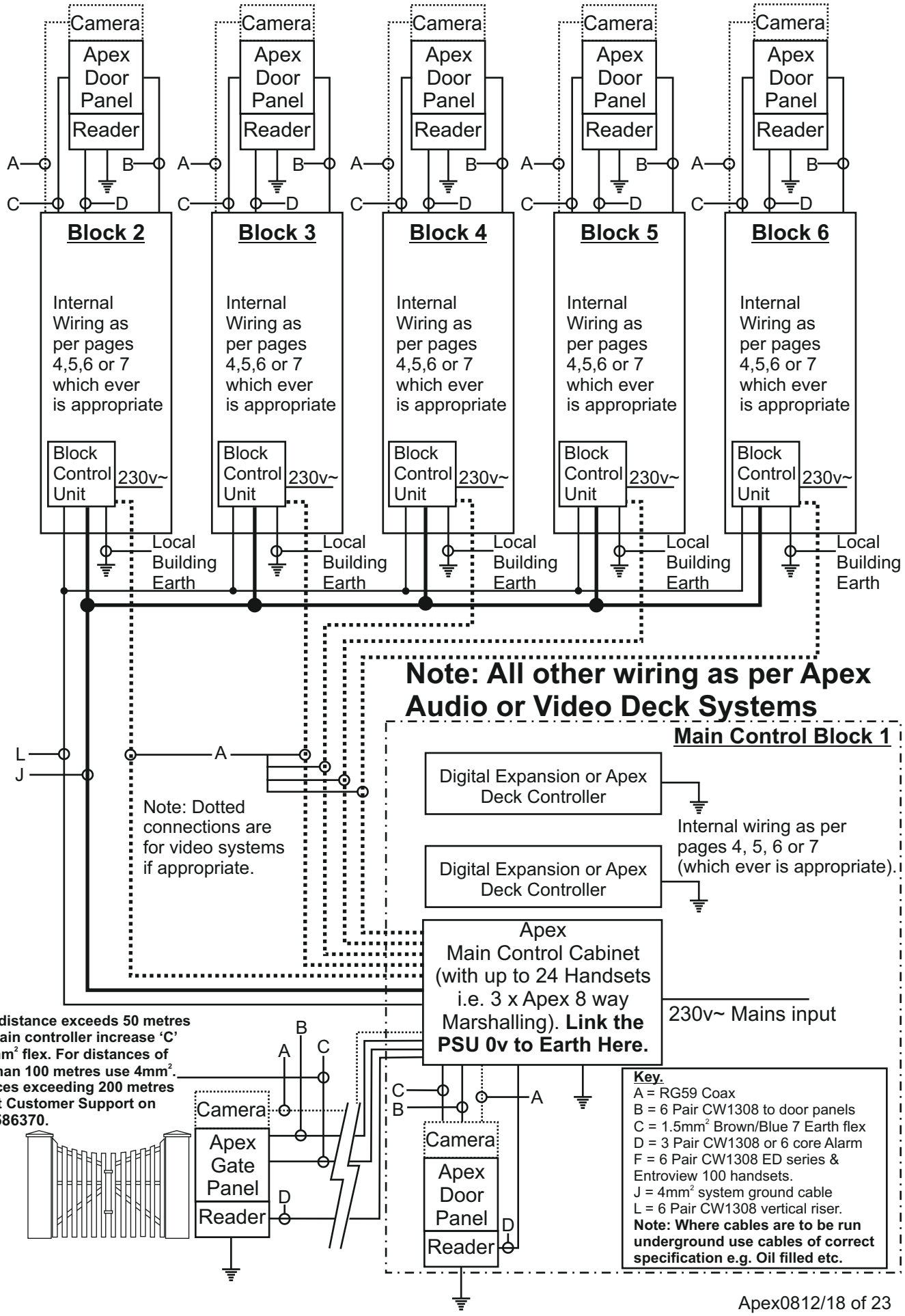


Note: It is preferable to use local 230~ - 12v DC power supplies at the Decks where ever possible as this considerably reduces the PSU cabling requirement (negates 'C'), reduces the equipment costs and reduces the load on a single main PSU within the Main Controller. If using this PSU arrangement then all PSU's **must** have their 0v output linked to the system Earth.

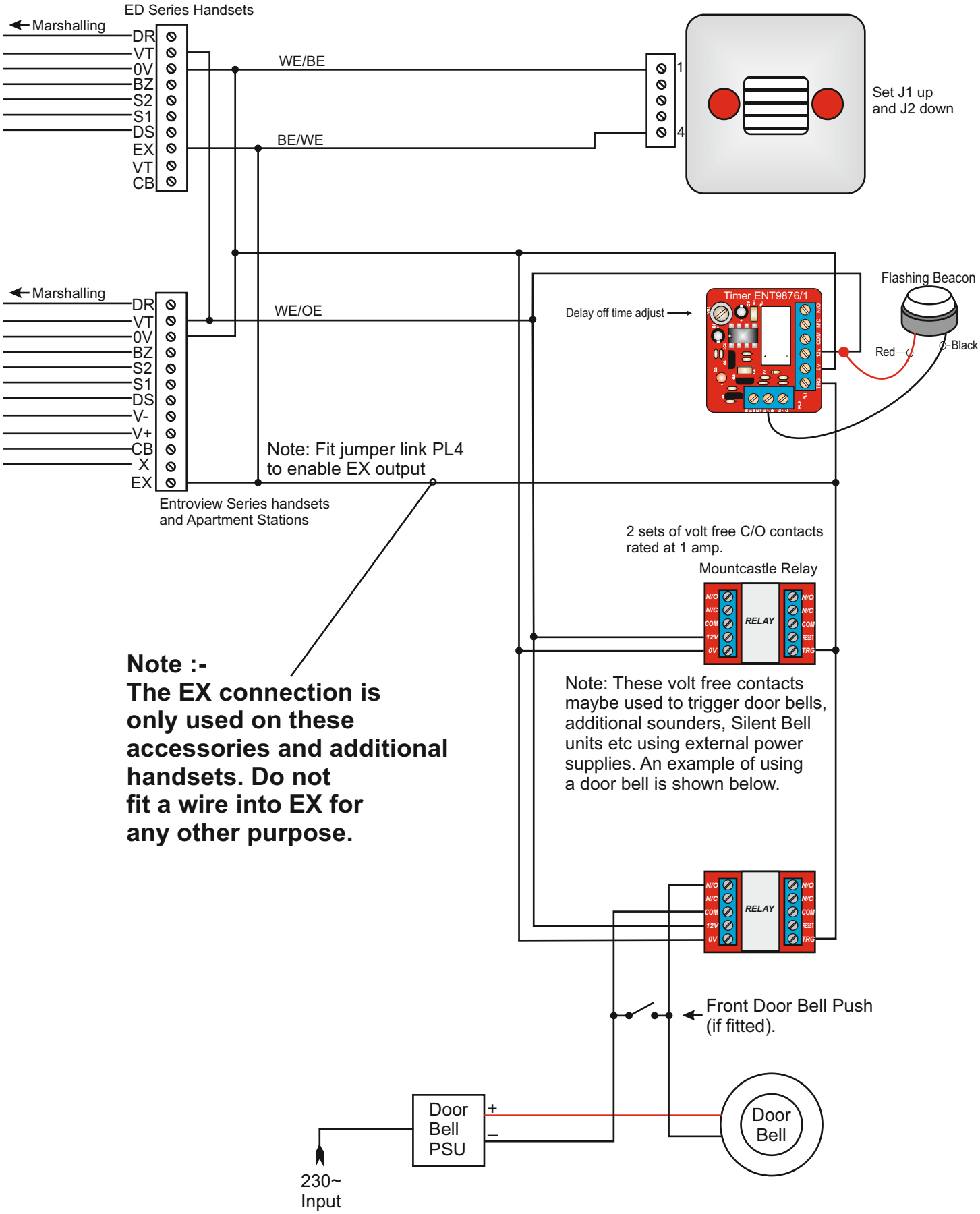
Key
C = 2.5mm^2 Brown/Blue & Earth Flex
X = Pre-wired by Entrotec.

Note:
If total distance exceeds 50 metres from main controller increase 'C' to 2.5mm^2 flex. For distances of more than 100 metres use 4mm^2. Distances exceeding 200 metres contact Customer Support on 08448586370.

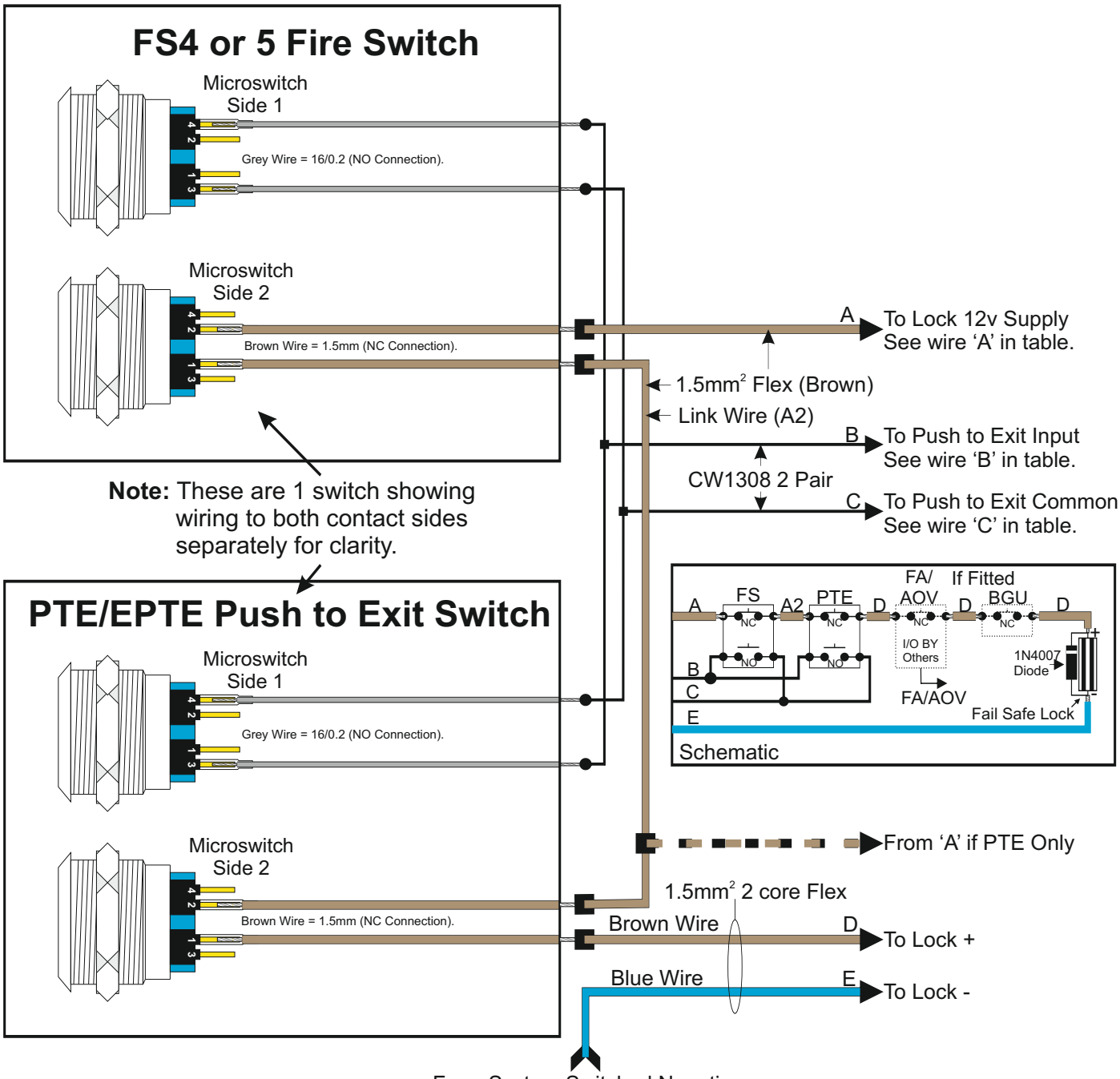
Apex Multi Block Audio & Video System



Handset Auxiliary Equipment Connections.



FS4/5 & PTE/EPTE Wiring Diagram.



Connection Table:

Connection Terminal:	Apex DP	Elite Cont.	Entrocare DP	E100	E2000	KMS Simple Key	PAC 512
Wire A (Brown 1.5mm²)	PL1/12V	PL6/12V (PL28/12V)	PL1/12V	12V Lock	2/+12V	DC Out +	Access/Lock
Wire B (CW1308)	PL3/0V	PL5/C (PL33/C)	PL3/0V	Door1 0V (Door2 0v)	11/GND	GND 1 (GND 2)	Door 1 0V (Door 2 0V)
Wire C (CW1308)	PL3/PE	PL5/PE (PL33/PE)	PL3/PE	Door1REX (Door2REX)	9/OL1 (10/OL2)	RTE 1 (RTE 2)	Door 1 RTE (Door 2 RTE)
Wire D (Brown 1.5mm²)	Lock + or BGU	Lock + or BGU	Lock + or BGU	Lock + or BGU	Lock + or BGU	Lock + or BGU	Lock + or BGU
Wire E (Blue 1.5mm²)	PL1/NC	PL6/NC (PL28/NC)	PL1/NC	Door1 NC Relay (Door2 NC)	31/N/C (34/N/C)	Door Lock1 NC (Door Lock 2 NC)	Lock 1 NC (Lock 2 NC)

Note: Connections in brackets are for 2nd door connections. Also note if system Door Entry DE then all connections for locks are made at the Door Entry System (i.e. Access Controllers trigger Door Entry PE inputs with a NO 0V).

Fault finding and testing.

The Apex series systems are equipped with a 6 amp mains isolation dual pole circuit breaker and a switched mode power supply. The only source of AC is 230~ mains input to the breaker so AC locks are not suitable for these systems. All readings given below are DC readings and are all made with 0v (system earth) as the reference point.

There are 7 basic sections to the Apex system (not including ancillary equipment).
* Timers
* Lock release lines
* Data Lines
* Power supply lines
* Call/call tone lines
* Speech lines
* Door monitoring lines

Each point is dealt with separately below::

1) Timers.

The Apex system is the result of experience gained over 22 years in the Door Entry industry and offers many unique features that allow the system to be very flexible and 'upgrade-able' without the need to add or change the original equipment supplied in most cases. Most of the functions have preset-able time periods (either by preset potentiometers or jumper links).
The timers should be set to the desired time period required**.**

1a). The 'call tone period' jumpers (PL14 Switches 1 & 2) on the main PCB (ENT0684) set the length of the call tone sent to the handset and external panel as does PL15 (CTP) on the Digital Expansion PCB. These should be set for the maximum tone time required (preset-able between 20 & 60 seconds) to allow the call to be heard and answered by the recipient. If this is set too short then the user may not answer the call in time and if set too long then it could lead to annoyance of occupants near to the door panel because of the level set at the external panel is too loud.

1b). The 'call up period' jumpers set the length of time that a handset is 'live' for once a call is made. If it is set too long on a multi-door installation then it will lock the system to a specific call for too long a period making the system appear slow and unresponsive. On a single door installation the calls can be made in quick succession changing the calls between one handset and another at will. On multi-entrance digital systems the Apex locks the call to the call being made and disables the 'other' entrance panels until that call has been terminated by the recipient replacing the handset or the time out period has been exceeded. On 'Deck Access' digital systems calls can be made from any unused decks during this period. This is done to enable full secrecy of speech and lock release integrity and stop calls being cancelled to a handset by another caller arriving at a different external panel. The period of adjustment is between 20 and 60 seconds.

1c). The 'speech time period' sets the length of time that a caller can speak for before the system resets. This is variable between 45 and 120 seconds. If set too short then the system will reset before the caller has time to finish their conversation and if the time period is excessive on multi- entrance systems, it will lock the system to a specific call and make the system appear slow and unresponsive. These periods are reset by the handset being replaced or the cancel button pressed on digital panels.

2).LOCK RELEASE LINES.

The door release circuit is operated via the onboard single pole relays within the door panel(s).
12V DC on terminal 1(12v) of PL1 is the +12v supply to the lock and the NC and NO terminals are the switched negative. This circuit is protected by a 2 amp 'Lock Fuse'. The onboard timer on each door panel has a preset-able potentiometer marked as 'Lock Time'. This preset should be adjusted to give the required lock release time. There is also an anti tailgating circuit which resets the timer to '0' when the door has been opened by the use of NC door monitoring contacts. If this circuit is not being used then a wire loop between 0v and AT must be fitted. Please note that magnetic lock contacts are unsuitable as they monitor power on the lock and not the door position.

NOTE: Although the systems are protected against spikes & back E.M.F. it is imperative to fit a diode at the lock release itself unless the locks are pre-protected by an on-board suppression circuit, if in doubt fit the diode. The cathode (striped end) should be on the + terminal (12V supply) the other end connected to the - terminal.

All trigger lines for the lock release timer i.e. Service/Trades switch, Internal Push to exit and DR lines from handsets start high i.e. 5V and are taken low (0V) by the operation of the appropriate switch being activated. The handset lock release lines have anti lock down (ALD) circuits built into their PCB and therefore the “ALD” circuit can be monitored at the appropriate handset terminal point on the “marshalling board” but only gives a quick low going pulse when operated at the handset.
To check the DR line from a particular handset using a multimeter, insert the negative probe into the 0V line for that handset (terminal 3) and positive probe in the DR line (terminal 1) when the handset has been called the DR line should float high (5V approx.) and when the lock release button is depressed the line should go low (0V) and gradually float back to the 5V rail, in reality a fast digital meter will at best see the line drop to approx. 0.5V output and then steadily rise. To check a particular handset output terminal lock release line, call the handset & short between terminal 1 (DR) and 3 (0V), if the lock release circuit activates by doing this but not by depressing the lock release button at the handset, go to the appropriate handset and disconnect the DR wire and short to 0V terminal, if the lock release circuit activates but not from the handset when the DR wire is replaced the handset is faulty, if it fails to operate the lock release, the wire/cable is faulty. NOTE: A handset has to be called to enable the lock release circuit and the handset has to be “off- hook”.

3). Data Lines.

The Apex system has RS485 data communications which require a twisted pair data set of cables.
If the BT CW1308D colour coding specifications are not used then it is imperative that the connections to data A and data B form part of a twisted pair of cables e.g. if not the white/blue blue/white pair as suggested elsewhere in the manual then the use orange/white white orange pair etc.
Please also note that data is not current driven and therefore ‘doubling-up’ of cables will not increase its distance capability, in fact it will probably introduce reflections and noise that reduce its efficiency.
Data A should be approximately 2.8 volts and Data B should be approximately 2.1 volts (referenced to system Gnd (0v)) with the system idling. Most multimeters will not be fast enough to display the data packets sent other than a slight ‘flicker’ of the digital readout on the meter. There are data comms re-assurance LED’s on the PCB’s to confirm the transmission and reception of data packets sent and received. On the main PCB these LED’s are to the right of the timing switches (PL14). The LED’s monitor Comms A, Comms B, Call, CB (Call Back on concierge systems), X (alarm inputs from flats) and Concierge. On the Digital Expansion these LED’s are to the right of the PIC programming port. All PCB’s also have a ‘heartbeat’ LED which continually flash to confirm that the PCB is ‘alive’, if this is not flashing check that the power LED’s are lit (3v3, 5v & 12v on the main and expansion PCB’s) and 5v & 12v on the door panel PCB. If the power LED’s are lit but the heartbeat LED is not flashing the microprocessor is not running and the PCB is effectively ‘dead’.

4). Power Lines.

Power supply lines on large or multi door systems are very important. It is essential that the cable carrying the load is up to specification for the current being drawn at any given point on the system. Please also note that the Apex system is a low current system with the largest load being exerted on any part of the system being a video handset when called and that is 400mA maximum. The biggest load on any door entry system is drawn by the locks and auxiliary equipment attached to it. This has to be allowed for during installation and whilst Entrotec can advise on typical cables required to carry the load to a particular point on a system it is ultimately up to the installer to ensure that the cable is up to specification for the load exerted.
Earthing is also extremely important but is not to be confused with the system earth (or ground). The system earth should only be attached to **1 earthing point** and all other system earths referenced and connected to that point. All metalwork including door panels, control boxes and marshalling boxes should be connected to the local building earth (in multi-block systems) which may or may not be at the same potential as the system earth. All PCB’s are mounted (isolated) so as not to connect them to the back boxes etc.

Typical System Power requirements/loads.

Main PCB (ENT0684**) = 230mA @ 12v DC (per PCB fitted within a system).
Expansion PCB (ENT0682**) = 130mA @ 12v DC (per PCB fitted within a system).
Door Panel PCB (ENT07112**) = 70mA @ 12v DC (per PCB fitted within a system).
Marshalling PCB (ENT0792**) = 100mA @ 12v DC (per PCB fitted within a system).

CALL/CALL TONE LINES

There are 2 types of 'call lines' associated with the Apex system. The 'Call Lines' turn on the handset port to enable the paths for speech, call tone and door release lines to the handset. The 'Call Tone Line' broadcasts the tone to any handset port that has been enabled (turned on).

Call Lines
Each Call Line appears at 2 positions on the Apex Main and Digital Expansion PCB's and they are on the ribbon cable (8 call lines per ribbon x 3 = 24) or at the Call Line terminals along the bottom of each PCB (1 to 24). These call lines sit at 5v when the system is idling and the appropriate line drops to 4.2v when called (or 2.5v if no marshalling fitted. Please note that 1 - 24 does not necessarily refer to phone numbers 1 -24 but should be viewed as slots at a particular part of the system.

Call Tone Lines.
Each Apex Main and Digital Expansion PCB emits a call tone to it's marshalling PCB's when a call is made to it. The Call Tone as standard is a 2.5v Square Wave which is amplified within the handsets to the 12v level. The tone line appears at 2 positions on the Apex Main and Digital Expansion PCB's and they are on the ribbon cable(s) as a common line and at the BZ connection terminals (PL21 & PL14 respectively). A test meter placed across BZ & 0v would display a 2.5v DC signal when calling but would move quickly up and down in time with the call tone.

Speech Lines.

The two speech lines (S1 & S2) on an Apex system are isolated from other handsets and speaker amps until the particular handset is called. There is no voltage on the appropriate terminals until a call is made. When a call is made and the handset is still on the cradle S1 & S2 should read approx. 5V and when a handset is lifted S1 should go to 0.9V. S2 should go to 2.5V approximately measured between the appropriate terminal and 0V of the handset port in question. A test handset that is known to be working is invaluable when trouble shooting a system as all the appropriate tests can be made without gaining access to a flat and also "proves" wiring to the front panel and system wiring integrity. The power to the speaker amp is via the door panel(s) ribbon cable +6 & 0V , this should be approximately 6V. If there is no voltage present (or it is less than 4 volts) at these points, remove the + & - cables from the speaker amp and measure the voltage , if the voltage returns to 6V then this is being pulled down due to a continuous short on the 6V power lines or the speaker amp has a fault. The 6v line has thermal shut down and this safety feature isolates the speaker amps at each panel on multi-door systems. The most common fault with speaker amps is that they have got wet due to inadequate sealing of the door panel. Door panels or bezzelled back boxes should be sealed with silicon across the top and sides of the box or panel leaving the bottom unsealed to allow any water ingress to escape.

Door Monitoring Lines.

The door monitoring line (DS = door status) is common to all handsets. On a standard digital system the DS line is linked up the building and when the door contacts close (when the door opens) all handset monitoring LED's are lit. On a deck access system it is important to decide which door or doors are monitored. If only the local door(s) need to display a door open signal at the handset then do not interlink the decks (DS line). If they are interlinked then all doors opening will be displayed at each handset which would probably not be appropriate or necessary. The DS line sits at 12v and goes to 0v when a door is opened.

Programming and Re-programming.

Each slot on the Apex Main and Digital Expansion is programmed at Entrotec with the customers specific numbering requirements. This numbering very often changes during the installation for one reason or another. This would normally mean that the boards would have to be returned for re-programming. With the Apex this re-numbering can be done on site by the installer, all that is required is a laptop to do the re-programming, and an Apex programming kit. If this is required then call sales on 01506 886230. This kit also allows other system features to be monitored or changed and can be an invaluable aid to fault diagnosis.

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