QT601-2 QUANTEC CONTROLLER

installation and programming manual

Approved Document No. DNU6012001 Rev 5

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ITEMS SUPPLIED WITH THE PANEL

- Installation & Programming Manual (i.e. this manual).

  Explains how to install, commission and maintain the Quantec control panel.
  This manual must not be left accessible to General and Authorised Users.

- Manager's / Matron's Guide (Doc. No. DNU6012005).

  Gives operational information for Authorised Users about entering day/night mode, changing the date & time, printing the log report, editing User IDs, etc.

- Electrical accessory pack (SAF0601001) containing the following:

  1 x Allen key for unfastening / securing the panel lid
  1 x Mains fuse (1A HRC ceramic, 20 mm)
  1 x set of battery connection leads.

IMPORTANT NOTES

This equipment must only be installed and maintained by a suitably skilled and technically competent person.

• This equipment is a piece of Class 1 equipment and MUST BE EARTHED.

• No responsibility can be accepted by the manufacturer, or distributors of this equipment for any misinterpretation of an instruction, or guidance note, or for the compliance of the system as a whole.

• The manufacturer's policy is one of continuous improvement and we reserve the right to make changes to product specifications at our discretion and without prior notice. E&OE.

• When Quantec is powered up for the first time, the Controller may need to reset its Configuration Data to default values. The message 'Fit NVM Link', or 'E' to Abort' will be displayed. When the NVM link is fitted the message 'INITIALISING DATA, PLEASE WAIT' will flash on the display. This procedure may take up to 1 minute and MUST be completed before Quantec will operate properly.

System Design

Addressable Call System design is beyond the scope of this document. A basic understanding of addressable call system components and their use is assumed.

We strongly recommend that a suitably qualified and competent person is consulted in connection with the design of the call system and that the system is commissioned and serviced in accordance with the contract specification and national standards. The building manager responsible for the property should be contacted at an early stage in case he/she has any special requirements.

Equipment Guarantee

This equipment is not guaranteed unless the complete system is installed and commissioned in accordance with the laid down national standards by an approved and competent person, or organisation.

CE This product has been manufactured in conformance with the requirements of all applicable EU Council Directives.

SUMMARY OF NEW FUNCTIONS & SYSTEM ENHANCEMENTS

The enhancements / programming functions listed below are available from 1 July 2010 if the following firmware versions are installed: Quantec Controller version 10A5; Display version 3.2; Display Interface QT615 version 3.5; Call Point version 1A06; Radio Receiver version 4.0; Surveyor version V1M03; PCTOOLS version 4.2.

User ID

Allows a patient's infrared neck pendant or a worker's infrared staff attack transmitter to be given a unique User/Caller ID and custom name. This information can be programmed to show on relevant Quantec Displays, or to only show in Quantec's Surveyor Data Management Software. This information is also held in the Quantec Controller's on-board datalogger.
Knowing which patient is calling (in addition to which room they called from) can assist carers in deciding how to respond to a call. Likewise, being able to determine which worker has been attacked can help flag training issues. For example, if there are multiple incidents involving one member of staff it may indicate a problem.
Initial programming of User/Caller ID data requires a QT423 Configurator and its PC software tools. Should a resident, or worker move on, authorised users can easily change a pendant or transmitter's User/Caller ID at the Quantec Controller.

Attack Tracking

Allows Quantec to 'track' the course of an Attack generated via an infrared staff attack transmitter.
It is not uncommon for attack situations to spill over into neighbouring rooms, or for assailants to chase a potential victim through a building. In such circumstances, Quantec will analyse the User/Caller ID of the worker's staff attack transmitter and only display the last infrared or radio receiver it activated (i.e. the current location of the attack).
A full record of the attack, showing all activated receivers and the order in which they were triggered, is logged in the Surveyor Data Management Software, data which can be used as evidence should criminal proceedings arise.

Staff Attendance Pendants

Allows nursing or security staff entering rooms to log their 'Attendance' via an infrared call point or ceiling receiver.
Attendance calls, and the User/Caller ID of the pendants which make them, are logged in Quantec's Surveyor Data Management Software, allowing management to monitor which staff are performing their duties. This information is also held in the Quantec Controller's on-board datalogger.
Each pendant has a typical transmitting range of 10 metre line-of-sight (infrared) and 60 metre (radio) and is powered by a replaceable battery providing up to 12 months operation. Should a battery be nearing the end of its life, the Pendant's User/Caller ID is flagged in the Surveyor software and at the Quantec Controller's datalogger with a low battery warning.

Patient Neck Pendants

Allows patients to remotely trigger Standard calls via infrared call points, ceiling receivers and radio receivers. Ideal for use in individual bedrooms, or communal areas such as lounges (where they eliminate the need for long and potentially hazardous tail call leads). Each pendant can be programmed with a unique User/Caller ID so staff can see which patients are calling. Battery requirements and transmitting ranges are as per our new Staff Attendance Pendants (described above).

Ensuite Call Level

Allows slave devices such as ceiling pulls in bathrooms, or WCs to generate a distinct 'Ensuite' call level. Calls from bathroom areas are typically considered a higher priority than standard calls and are therefore indicated on the system at the same level as 'help required' calls. For the Ensuite function to work correctly, ensuite devices must be connected to an appropriately programmed new-style Quantec call point.

Call Points with Additional Slave Inputs

Quantec's call points (all variants) include an additional slave input and be programmable to operate in a multitude of different ways using a QT423 Configurator and its PC software tools. For example, it is possible to configure a call point's CALL button to make an Emergency call on its initial activation, a slave ceiling pull to make an Ensuite call, a slave panic button to make an Attack call and a tail call lead to make a Help Required call (or any other combination). Reset buttons can also be programmed so they bypass the Presence call level.

Custom-Site Name Facility

Allows a custom site name of (up to 16 characters) to be assigned to all Quantec Displays. This new engineer-programmable function allows end users to add a personal touch to their call systems and is particularly impressive in hotel, leisure and healthcare applications.

More Advanced Paging

Allows any call on the Quantec system to be routed to handheld alphanumeric pagers in a much more sophisticated way than was previously possible. For example, messages can now be sent to different pagers, dependent on the level of call, the area the call came from and whether the call is made during the day or at night to accommodate lower staffing levels. A re-paging function is also available to ensure calls do not remain unanswered for extended periods of time.

DECT Capability

Allows call messages to be directed to many third-party DECT telephone systems. Output options are as per Quantec's advanced paging functions (described above). Please contact C-TEC's technical department for more detailed DECT system compatibility information.

Improved Surveyor Software

Surveyor is a powerful call system data management software package. It now allows the additional logging of User/Caller ID data, Attendance call data and transmitters / pendants with low batteries.
Surveyor allows building managers to take tighter control of their care facilities by outputting reports on busiest shifts, call response times and more - data that can potentially save a business thousands of pounds.

THE QUANTEC CONCEPT

The Quantec addressable call system is ideal for nursecall, general call and 'staff attack' applications.

In today's healthcare environments, it is usual for staff in nursing homes and hospitals to be responsible only for certain areas of the building depending on factors such as layout, type of care, staff to patient ratios, etc. Thus, in order to create an effective call system, all call points and monitoring points within the building need to have their messages 'routed' only to the Displays relevant to certain staff.

Quantec does this by setting all the call points within one part of the nursing home as one 'Area', and all the call points within another part of the building as another Area. Similarly, Displays are set as members of different 'Groups', again dependent on their location within the building. The object of grouping devices in this manner is to allow simple routing equations which describe how messages are directed around the system by the Quantec Controller.

However, before being set as members of an Area or Group, all network devices (except ancillary devices, e.g. slave overdoor lights, ceiling pulls) need to be given a unique address (ID) number so they may be identified by the Quantec Controller.

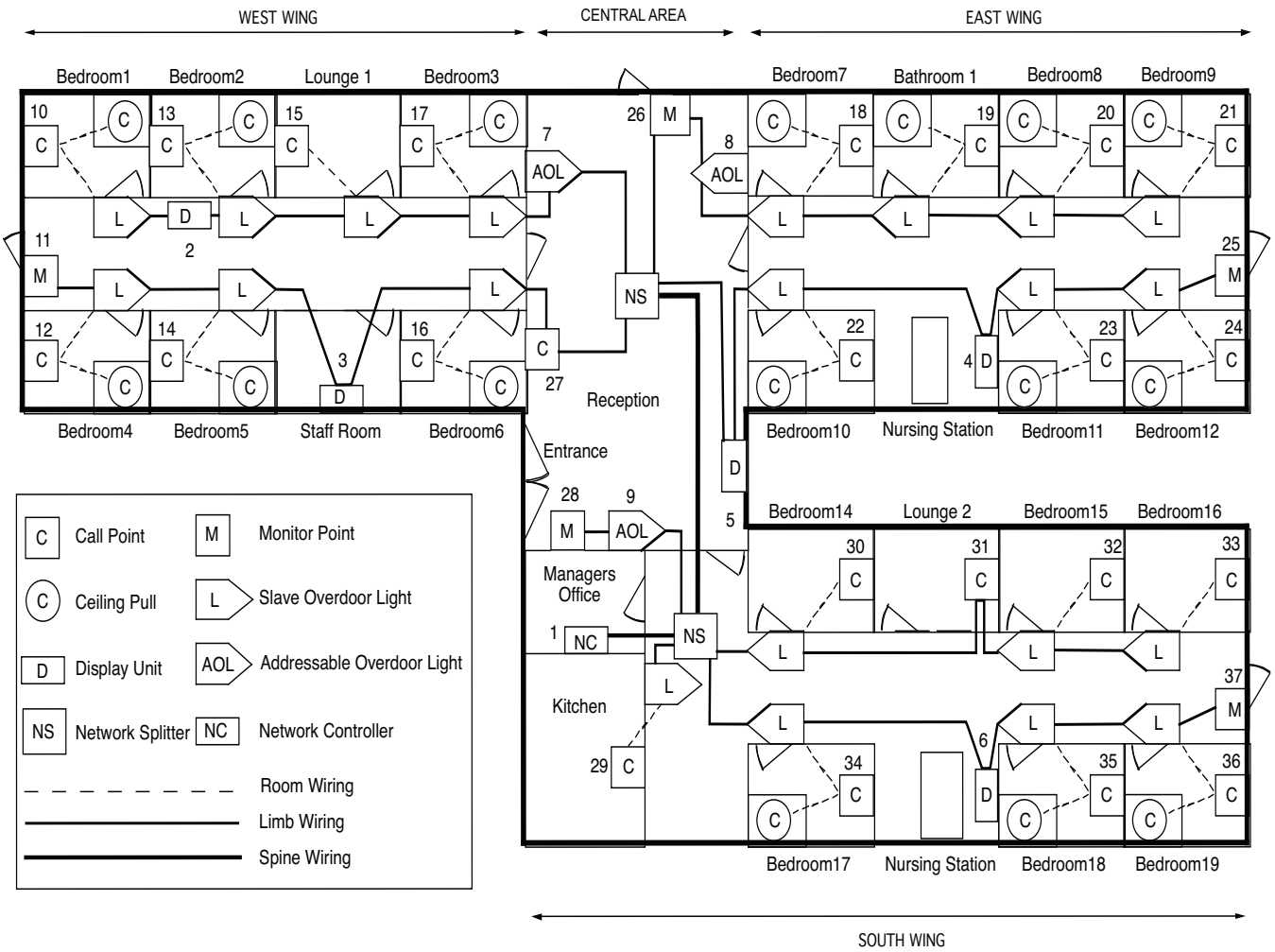
The example illustration of a fictional nursing home (below) explains how the Quantec concept can be applied. The method of routing shown is one of several variations which may be set.

All calls made from Bedrooms 1 to 6 and Lounge 1 will be dealt with by staff located in the West Wing. Therefore, all the call points/monitoring points in the West Wing (devices 10-17) are assigned as members of one Area (Area A) and all Displays in West Wing (devices 2 and 3) are assigned as members of one Group (Group 1). A similar scenario applies to the East Wing, the Central Area and the South Wing.

Also, it is possible to program the addressable overdoor light outside the West Wing (device 7) so it will indicate when a call has been made from any calling devices in Area A. To do this each addressable overdoor light needs to be assigned as a member of a 'Zone'. (If used, addressable sounders should also be assigned as members of a Zone.)

By referring to the nursing home installation plans it is possible to determine the Area, Group and Zone 'sets' for the entire site, and plot them onto a Device Assignment Table, similar to the one shown on the following page.

Note: Templates for Device Assignment Tables are located at the back of this document.



The Device Assignment Table (below) can be used as a reference aid when programming Quantec. However, before programming can begin, the day-to-day requirements of the call system must be ascertained from the client to enable the routing relationships between the various Areas, Groups and Zones.

Example Requirement 1: At night, when fewer staff are on duty, calls need to go to different nursing stations than during the day, i.e. from unmanned nursing stations to staffed locations.

Example Solution 1: Two different routes can be programmed into Quantec - a primary day route (to specify which call areas sound where during daytime hours) and a night route (to specify which call Areas sound where at night).

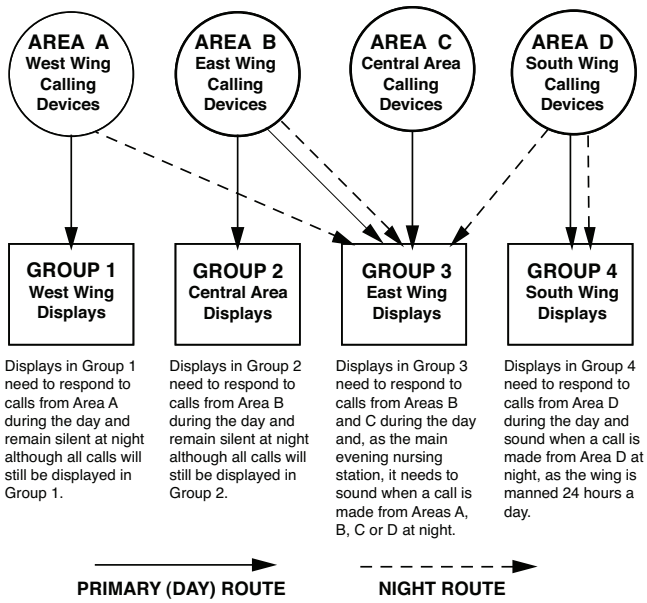
Quantec can be programmed to enter and exit night mode either automatically (by an engineer), or manually (by an authorised member of staff).

Quantec DEVICE ASSIGNMENT TABLE

DEVICE		Call Point AREA	Display GROUP	Addressable Overdoor Light ZONE	PLACE DESCRIPTION	
Number	Type				Name	Number
1	MAIN		4		Display	NET1
2	D		1		Display	1
3	D		1		Staff Room	1
4	D		2		Display	2
5	D		3		Display	3
6	D		4		Display	1D
7	Z			1	OD Light	1
8	Z			2	OD Light	1
9	Z			3	OD Light	6
10	C	A			Bedroom	WW1
11	M	A			Exit	WW1
12	C	A			Bedroom	WW4
13	C	A			Bedroom	WW2
14	C	A			Bedroom	WW5
15	C	A			Lounge	WW1
16	C	A			Bedroom	WW6
17	C	A			Bedroom	WW3
18	C	B			Bedroom	EW7
19	C	B			Bathroom	EW1
20	C	B			Bedroom	EW8
21	C	B			Bedroom	EW9
22	C	B			Bedroom	EW10
23	C	B			Bedroom	EW11
24	C	B			Bedroom	EW12
25	M	B			Exit	EW1
26	M	C			Exit	CEN1
27	C	C			Annexe	CEN2
28	M	C			Entrance	CEN3
29	C	D			Kitchen	1
30	C	D			Bedroom	SW14
31	C	D			Lounge	SW2
32	C	D			Bedroom	SW15
33	C	D			Bedroom	SW16
34	C	D			Bedroom	SW17
35	C	D			Bedroom	SW18
36	C	D			Bedroom	SW19
37	M	D			Exit	SW1
38	R	D			Car Park	EXT

Max. no. of Addressable Devices = 255; Max. no. of Areas = 26; Max. no. of Groups = 32; Max. no. of Zones = 64
D = Display; Z = Addressable Overdoor Light or Sounder; C = Call Point; M = Monitor Point; R = Radio Receiver

For example in the nursing home highlighted earlier, it may be decided that the routing relationship between Areas and Groups needs to be as follows:



It should be noted that in night mode, displays not programmed to sound when a call is made will still display ALL calls on the system visually.

In night mode. any call point which has a 'call follower sounder' installed (optional) and is in the 'presence' state will indicate that another call has been initiated by emitting a soft tone.

Example Requirement 2: Although each wing of the nursing home will be staffed independently, if a call is not answered within a certain period of time, it must be automatically flagged elsewhere in the building to ensure a response. Similarly, if a nurse has to leave her nursing station, she must be able to manually divert calls in her absence.

Example Solution 2: Quantec can be programmed to divert calls from one Group of Displays to Groups located elsewhere, either automatically (after a pre-determined time) or manually. For instance, if any call signalled to Group 1 Displays is not answered after 1-8 minutes (adjustable) it can be programmed to automatically divert to Displays in, say, Groups 2 and 3. Once the routing relationships between Areas and Groups has been decided they should be programmed into a Group Routing Table, similar to the example shown below (for details of how to set the time-outs for automatic divert, refer to the 'Programming Quantec' section).
Note: Templates for Group Routing Tables are located at the back of this document.

Quantec GROUP ROUTING TABLE (max. 8 Areas / Groups per equation)

Group	Primary Areas	Night Areas (Beep)	Divert to Groups
1	A		2, 3
2	B		
3	B, C	A, B, C, D	
4	D	D	

Example Requirement 3: In addition to standard slave overdoor lights (positioned outside rooms), a method of visually guiding staff along small off-shoot corridors to the source of a call is also required.

Example Solution 3: Quantec's addressable overdoor lights can be programmed to respond to calls from any Area(s) just as Groups of Displays can. For instance, the addressable overdoor light in Zone 1 of the example illustration needs to respond to all calls from Area A. It is possible to program a series of strategically placed addressable overdoor lights to lead staff directly to the source of a call by putting up to eight Areas in the Area equation, i.e. 'Follow My Leader' lights.

For each Zone there are, in fact, two equations - one for Areas and one for devices. The device equation would be used if an addressable overdoor light was positioned outside a room with more than one call point, or where (say, in a refurbishment) only two wires are available. By including the device numbers of the relevant call points within that room in the device equation, the addressable overdoor light will illuminate when a call is made.

Once the routing relationships between Zones, Areas and (if applicable) devices has been decided, they should be programmed into a Zonal Routing Table (see example below).
Note: Templates for Zonal Routing Tables are located at the back of this document.

Quantec ZONAL ROUTING TABLE (max. 8 Areas / Devices per equation)

Zone	Area Equation	Device Equation
1	A	
2	B	
3	D	

Example Requirement 4: Although standard patient and HELP REQUIRED calls should be flagged in each independently staffed wing, to ensure a swift response to any EMERGENCY or ATTACK calls, these should be flagged throughout the nursing home as soon as they are made.

Example Solution 4: EMERGENCY and/or ATTACK calls can be sent either locally or globally during the day, dependent on each client's specific requirements. If 'Local' is chosen, the calls are sent only to the Display Groups set up in the routing table. Alternatively, if 'Global' is selected, the calls are sent out to every Display on the network. (Refer to the 'Programming Quantec' section for further details.)

Example Requirement 5: To assist in the efficient running of the nursing home and to combat any accusations from patient's relatives that calls are not being answered quickly enough, a reliable form of evidence is required to prove that nurses are attending to patients as quickly as possible.

Example Solution 5: Quantec's Controller includes a built-in datalogger which, if selected, will record all activities on the call system, including calls, resets and faults.

SYSTEM WIRING OVERVIEW

GENERAL WIRING RULES

- Quantec utilises a unique data protocol that works down just two wires.
- All system wiring is made in a 'Spine' and 'Limb' configuration, using network splitters, allowing the use of ordinary unscreened cable which simplifies installation, fault-finding and commissioning.
- A maximum of 255 addressable devices can be connected to a Quantec Controller (dependent on network topology).
- Distribute Splitters evenly throughout the site and locate at an accessible height.
- As addressable devices are soft addressed, no consideration needs to be given to how they will interact until system programming.
- Slave devices such as slave ceiling pulls, slave overdoor lights and slave infrared ceiling receivers connect to Quantec via a master call point, master ceiling receiver, monitoring point or universal programming device using 2, 3 or 4 cores of strand security cable - refer to the shaded areas on Page 9 for guidance.
- A QT423 Configurator is needed to program the special functions available on devices marked *

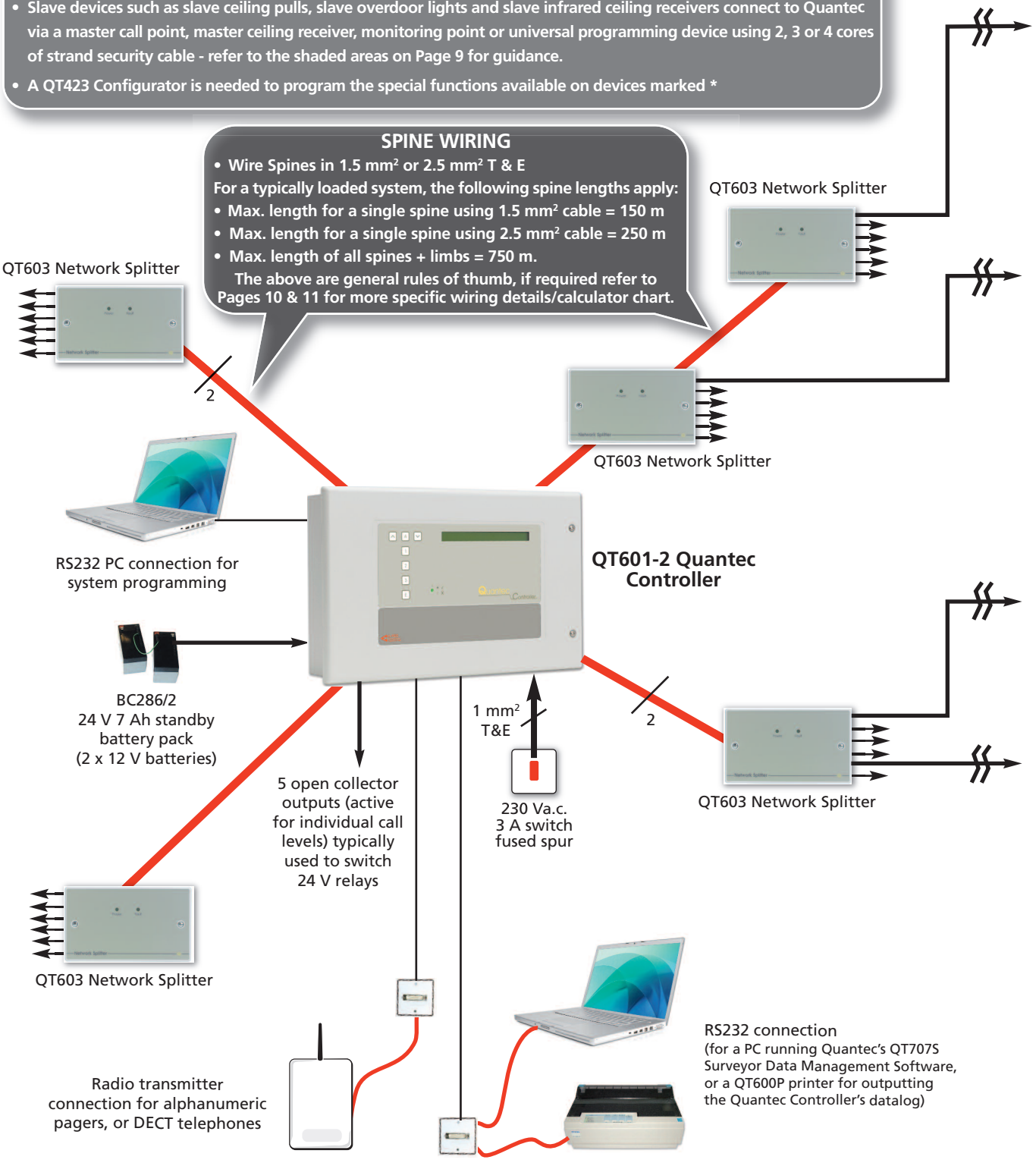
SPINE WIRING

- Wire Spines in 1.5 mm² or 2.5 mm² T & E

For a typically loaded system, the following spine lengths apply:

- Max. length for a single spine using 1.5 mm² cable = 150 m
- Max. length for a single spine using 2.5 mm² cable = 250 m
- Max. length of all spines + limbs = 750 m.

The above are general rules of thumb, if required refer to Pages 10 & 11 for more specific wiring details/calculator chart.



QT302RXS Slave IR Ceiling Receivers (max. 3 per master IR receiver)

IR/RF Pendant*

IR/RF Transmitter*

3

QT608C Corridor Display

2

QT302RX Master IR Receiver

QT606 Slave Overdoor Light

4

QT688/2 Hi-Output Sounder*

To magnetic contacts on a fire exit or drug cupboard, or the n/o or n/c switch on a door bell, telephone, PIR, etc.

2

QT604 Monitoring Point

2

Addressable Call Point*

QT608CD1 Large Corridor Display

QT615 Display Interface

QT606 Slave Overdoor Light

4

QT606A Addressable Overdoor Light

To third party strobe, CCTV trigger, auto-dialler or BMS

QT612 Relay Output Device*

QT422RX Radio Receiver

2

QT421 Integrity Transmitter

2

QT608C Corridor Display

2

Addressable Call Point (with IR)*

LIMB WIRING

- Wire Limbs in a minimum of 4 core cable (7/0.2 mm² strand) twisted into one pair to reduce voltage drop.
- No. of Limbs per Splitter = 6; Max. length per limb = 60 metres.
- Max. number of addressable devices per limb = 15; Max. number of addressable devices per Splitter = 60.
- If possible, distribute devices at approximately equal distances along the length of the limb.
- Addressable devices require 2 network connections, Slave devices require 2, 3 or 4 cores as shown.

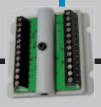
The above are general rules of thumb, if required refer to Pages 10 & 11 for more specific wiring details.

QT606 Slave Overdoor Light

4

SPE0616 Stainless Steel Call Point

To third party switch assembly or Day/Night switch



QT611 Universal Programming Device*

SPE0613 Stainless Steel Isolatable Call Point*

2

SPE0614 Stainless Steel Corridor Display

Addressable Call Point*

2

2

QT606 Slave Overdoor Light

QT302RXS Slave IR Receiver (max. 3 per master call point)

4

3

2

Slave Panic Button

Addressable Call Point*

3

QT607 Slave Ceiling Pull (max. 3 per master call point)

If slave overdoor lights are fitted in corridors, good practice is to loop the network in and out of the overdoor lights and then spur off into the relevant addressable call point inside the room.

QT688/2 Hi-Output Sounder*

2

Call Point*

QT608CD Corridor Display (without controls)

2

QT602D Slave Call Point

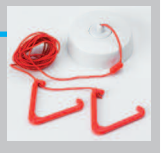
4

QT606 Slave Overdoor Light

QT302RXS Slave IR Receiver (max. 3 per master call point)

3

3



QT607 Slave Ceiling Pull (max. 3 per master call point)

IR/RF Pendant*

IR/RF Transmitter*

Planning an Installation

The **Quantec Controller** can be located anywhere on the network, although it is normal practice to install it centrally to reduce wiring runs, ideally in a manager or supervisor's office. If Quantec's Surveyor data management software is required, the PC used to run the software must be located within 20 metres of the Controller.

Network Splitters are best located in corridors where they can be easily accessed. In addition to protecting the system from open and short circuit faults, the more that are fitted, the easier it is to install, commission and maintain the system.

As a general rule of thumb, install one splitter per corridor junction (located at the end of the corridor nearest to the Quantec Controller). However, if the corridor is longer than 50 metres, install the network splitter in the centre of the corridor to reduce the wiring runs required for each limb.

Note that the **ONLY** recommended method of wiring Quantec involves using network splitters. **DO NOT** wire any devices to the spine other than network splitters. The more splitters you use, the easier and quicker it is to program/fault-find.

Refer to Splitter PCB layout drawing (below).

Each network splitter has:

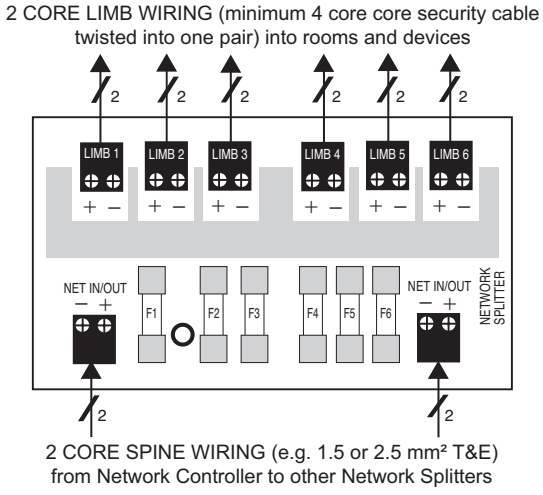
- one input and one output network 'spine' connection (both unfused).
- 6-fused (400mA) 'limbs' for wiring individual circuits containing networked devices.

When wiring to a network splitter, **ALWAYS** remove the plug-on connectors from the PCB and reconnect them when the wiring is secure in the terminal block. Failure to so could result in the terminal block twisting and the PCB being damaged.

Each splitter has two indicators, 'Power' indicates power is being supplied to the network and 'Fault' indicates one of the splitter's circuits has a blown fuse. (N.B. unused circuits may have their fuses removed without showing a fault).

No more than 60 addressable devices can be connected to each network splitter.

Quantec Network Splitter PCB Layout



General Purpose Wiring Instructions

With Quantec a limiting factor is voltage drop, which should be limited to 5 volts worse case. As call points and overdoor lights take different amounts of current depending on whether they are in a calling or quiescent state, it is difficult to predict the exact consequences of voltage drop without knowing the exact configuration.

The System Wiring Overview on Pages 8 & 9 lists general rules of thumb for wiring a Quantec system. In addition the following is assumed:

1. Network splitters will be used throughout the network.

2. All spines will be wired in 1.5 mm^2 or 2.5 mm^2 c.s.a cable.

3. All limbs will be wired in 7/0.2 mm^2 strand cable. Use a minimum of 4 core cable, doubling up by paralleling 2 cores for the positive (NET+) and 2 cores for the 0 volt (NET-). Don't use single strand cable as it breaks too easily!

4. If Overdoor Lights are used, or devices are installed at the end of a limb, use 6 core cable, twisted into 1 pair.

5. A maximum of 15 networked devices may be connected to any limb, with the most distant device no further than 60 metres from the network splitter.

6. If possible, devices should be distributed at approximately equal distances along the length of each limb.

First Fix

1. Plan cable routes and site the network splitters in strategic positions as previously described. Please note, as the system is addressable the programming of devices is not dependent on their location on the network. Therefore, devices that are difficult to access do not have to be connected to the same network splitter as other call points in the same area. For reference purposes, an example of the planned cable routes for a fictional nursing home is shown on Page 5.

Care should be taken when planning cable routes not to exceed voltage drop limitations detailed above.

Spine Length Calculator

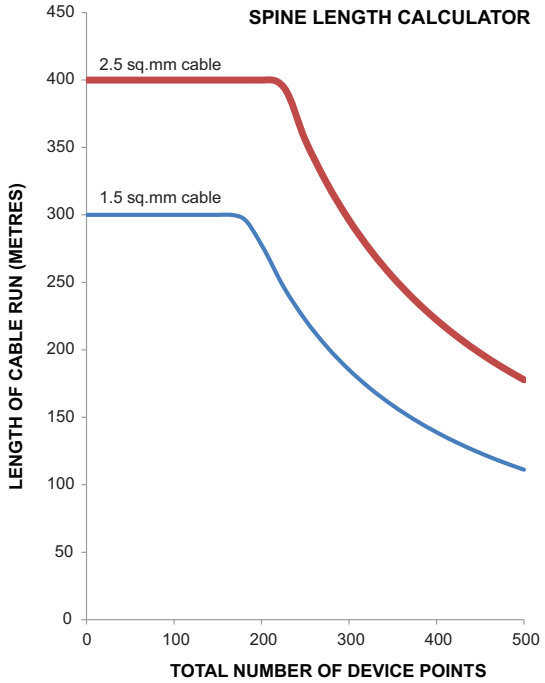
Use the Spine Length Calculator (below) to work out the maximum spine cable lengths taking into account the number and type of devices connected to any network splitter(s) on that spine. If several splitters are connected to one spine then the calculation is for every device connected to that run of 1.5 mm² or 2.5 mm² cable on all splitters.

All spines wired from the Quantec Controller should be calculated separately.

For the fictional nursing home highlighted earlier (Page 5), which has two splitters connected to one 'spine', the points calculation (with reference to the Spine Length Calculator) would be as follows:

Displays (5 x 4 points)	20 points
Addressable OD Lights (3 x 7 points)	21 points
Call Points (23 x 1 point)	23 points
Monitoring Points (5 x 1 point)	5 points
Slave OD Lights (21 x 1 point)	21 points
Ceiling Pulls (16 x 0 point)	0 points
Total Number of Device Points	**90 points**

Therefore, the maximum length of cable run for this particular spine would be 300 metres of 1.5 mm² cable or 400 metres of 2.5 mm² cable.



Device Point Values

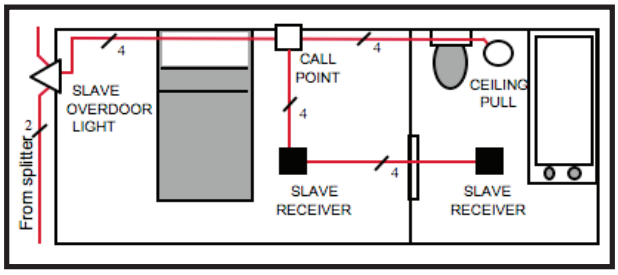
All Quantec devices have a 'points' rating which takes into account their current consumption and voltage drop risk:

Call Point = 1	Addressable ODL / Sounder = 7
Monitoring Point = 1	Display = 4
IR Slave = 0.5	Display Interface = 1.5
Slave OD Light = 1	Ceiling Pull = 0

To determine the maximum length of a particular spine, calculate the total points value of all the devices that will be connected to any network splitter(s) on that spine and read off the relevant figure on the graph above.

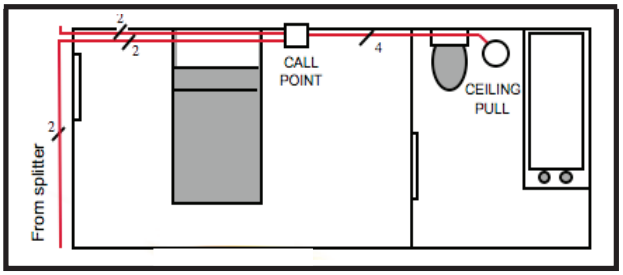
2. Connect 'spines' and fix wiring to overdoor lights (call points if overdoor lights are not used) and mark up the Splitter Connection Record Sheet (located at the back of this document).

3. Wire 'limbs' in each individual room as required. Typical room wiring diagrams are shown below:



Device wiring when Overdoor Lights are used

(Loop the network through the slave overdoor lights then wire spurs to the call points. This tends to reduce the cable run to the furthest point.)



Device wiring when Overdoor Lights are not used

Second Fix: 1st Stage

1. Fit the Quantec Controller.

2. Connect the network splitters and spines of the network.

3. Power up the system and check that all the network splitter 'power' lights are on. If they are all off, there is probably a short. If only one is off, there is an open circuit. Rectify any faults. The integrity of the basic network is now proved.

4. Connect the rest of the equipment (call points, ceiling pulls, overdoor lights, monitoring points, etc.) as detailed in the wiring diagrams supplied with each device.

5. Plug the limbs onto the network splitters one at a time. For each limb in turn check that the green power light on the network splitter is lit and that the furthest networked point on that limb goes into unassigned call when the device is operated. Rectify any wiring faults as necessary.

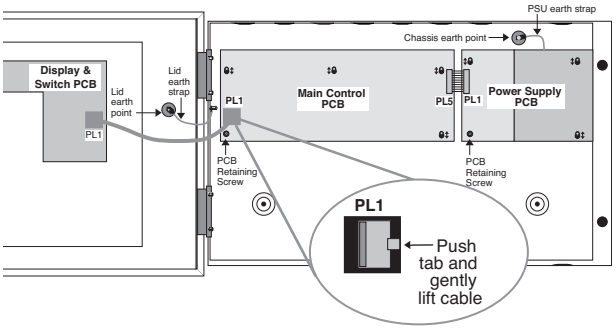
Second Fix: 2nd Stage

Refer to Pre-Commissioning Instructions (Appendix 7) and Programming Quantec section (Pages 15 to 29).

MOUNTING THE ENCLOSURE

The Quantec Controller is supplied with a plastic hinged lid, a metal back box and three separate PCBs, the relative location of which is indicated in Figure 1 below.

Figure 1 : Controller PCBs layout



The Controller must be sited internally in an area not subject to conditions likely to affect its performance, e.g. damp, salt-air, water ingress, extremes of temperature, physical abuse, etc. The liquid crystal display on the enclosure's front should ideally be situated at eye level.

The Quantec Controller can be surface, or semi-flush mounted (refer to Figure 3, bottom right).

Exposing the Base Mounting Holes

To expose the Quantec Controller's base mounting holes, its two base PCBs must first be removed. It is also recommended that the hinged lid is removed to prevent accidental damage during the fixing process.

To Remove the Lid:

• Take the Controller out of its box and undo the two screws on the right hand side of the lid using the allen key provided.

• Hinge the lid 180° to the left (do not overbend the hinges).

• Disconnect the lid / base connecting cable (PL1) from the Main Control PCB. Care should be taken when detaching this connector to depress the telecoms-style locking tab to prevent damage (refer to the inset in Figure 1 above).

• Carefully remove the four M4 retaining nuts that secure the hinges.

To Remove the Base PCBs:

• Ensure power has been removed from the panel and that the Power Supply PCB is safe to handle.

• Disconnect connector cable (PL5) on the Main Control PCB.

• Pull the PSU earth strap off the spade connector at the main chassis earth point.

• Carefully undo the PCB retaining screw located at the bottom left-hand side of the relevant PCB using a crosshead screwdriver.

• Push the PCBs up and then forwards over the mounting pillars taking care not to damage any of the components.
The Controller's lid and base PCBs can now be removed to prevent accidental damage.
Note: The base PCBs are static-sensitive and relevant anti-static handling precautions must be observed when handling them. Refer to Appendix 3 for further details.

Decide carefully how the wiring will be fed into the panel with reference to Figure 2 below and remove the required knock-outs for cable entry. Always ensure that if a knock-out is removed, the hole is filled with a good quality cable gland. Any unused knock-outs must be securely blanked off.

It is essential that the 230 Va.c. cable is fed into the enclosure via one of the inlets at the top right hand corner of the enclosure. For further CRITICAL information on Mains connection please refer to Page 13.

Using the four mounting holes, fix the base securely onto/into the wall. The mounting holes are suitable for use with No.8 roundhead or countersunk woodscrews. Assess the condition and construction of the wall and use a suitable screw fixings. Any dust or swarf created during the fixing process must be kept out of the enclosure and great care must be taken not to damage any wiring or components.

Figure 2 : Internal view of back box (with PCBs removed) showing mounting holes, knockouts and earthing points

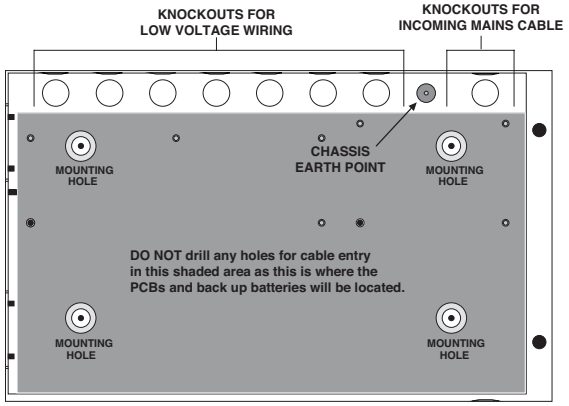
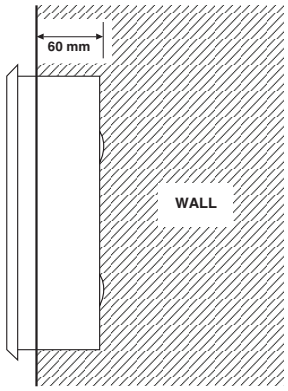


Figure 3 : Semi-flush mounting diagram



CONNECTING THE PANEL

The Power Supply PCB

THIS UNIT MUST BE EARTHED!

The Controller's PSU combines the functions of a power supply unit, battery charging unit and battery monitoring unit. It is a 185-265 Va.c., 50-60 Hz off-line, switched mode PSU which stores hazardous voltages of up to 400 Vd.c.

Mains Connection

DO NOT connect Mains to the PSU until the installation is complete and all PCBs are correctly attached, the lid/base connecting cable is in place, and all retaining screws are firmly fastened down.

The general requirement for the Mains to the Controller is fixed wiring, 3-core cable (no less than 0.75 mm^2, no more than 2.5 mm^2) or a suitable three conductor system that meets the appropriate national wiring regulations.

The panel should be fed from an isolating switch fuse spur, fused at 3 A. This should be secure from unauthorised operation and be marked "CALL SYSTEM : DO NOT SWITCH OFF". This Mains must be exclusive to the Quantec Controller.

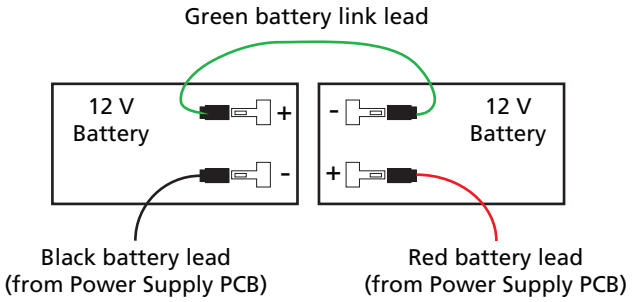
Correctly terminate the incoming cables, as shown in Figure 4 below. If required, the 5 mm connector block (CONN1) can be pulled from the PCB for ease of installation. Ensure that the incoming Mains earth is connected directly to this connector block and **NOT** to the chassis earth point.

The Power Supply PCB is connected to the Main Control PCB by a 10-way pitch connector. This connects from PL1 on the Power Supply PCB to PL5 on the Main Control PCB.
Primary Fuse: 1 A HRC ceramic to IEC 127 (EN60127 Pt 2).
Battery Fuse: 3.15 A F to IEC 127 (EN60127 Pt 2).
DO NOT USE ANY OTHER TYPE/SIZE OF FUSE IN THESE POSITIONS.

Standby Battery Connection

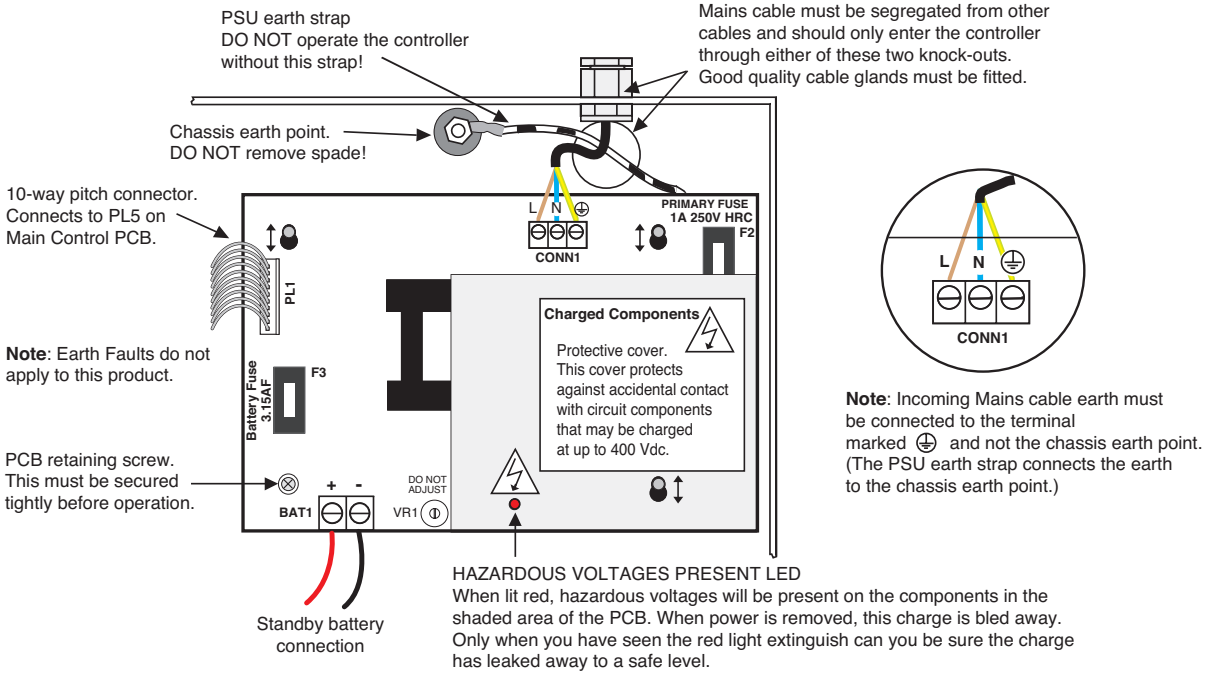
The power supply PCB contains circuitry that not only charges stand-by batteries, but also measures the condition of them to protect against deep discharge.

One feature of this circuitry is that it allows the installer to power the system without connecting the mains supply. For this to work, two fully charged 12 V VRLA batteries should be connected in series, as shown below (always ensure correct polarity connection).



IMPORTANT: When Quantec is powered up for the first time, the Quantec Controller may need to reset its Configuration Data to its default values. The message 'Fit NVM Link', or 'E' to Abort' will be displayed. When the NVM link is fitted the message 'INITIALISING DATA, PLEASE WAIT' will flash on the display. This procedure may take up to 1 minute and MUST be completed before Quantec will operate properly.

Figure 4 : Mains Connection to Power Supply PCB



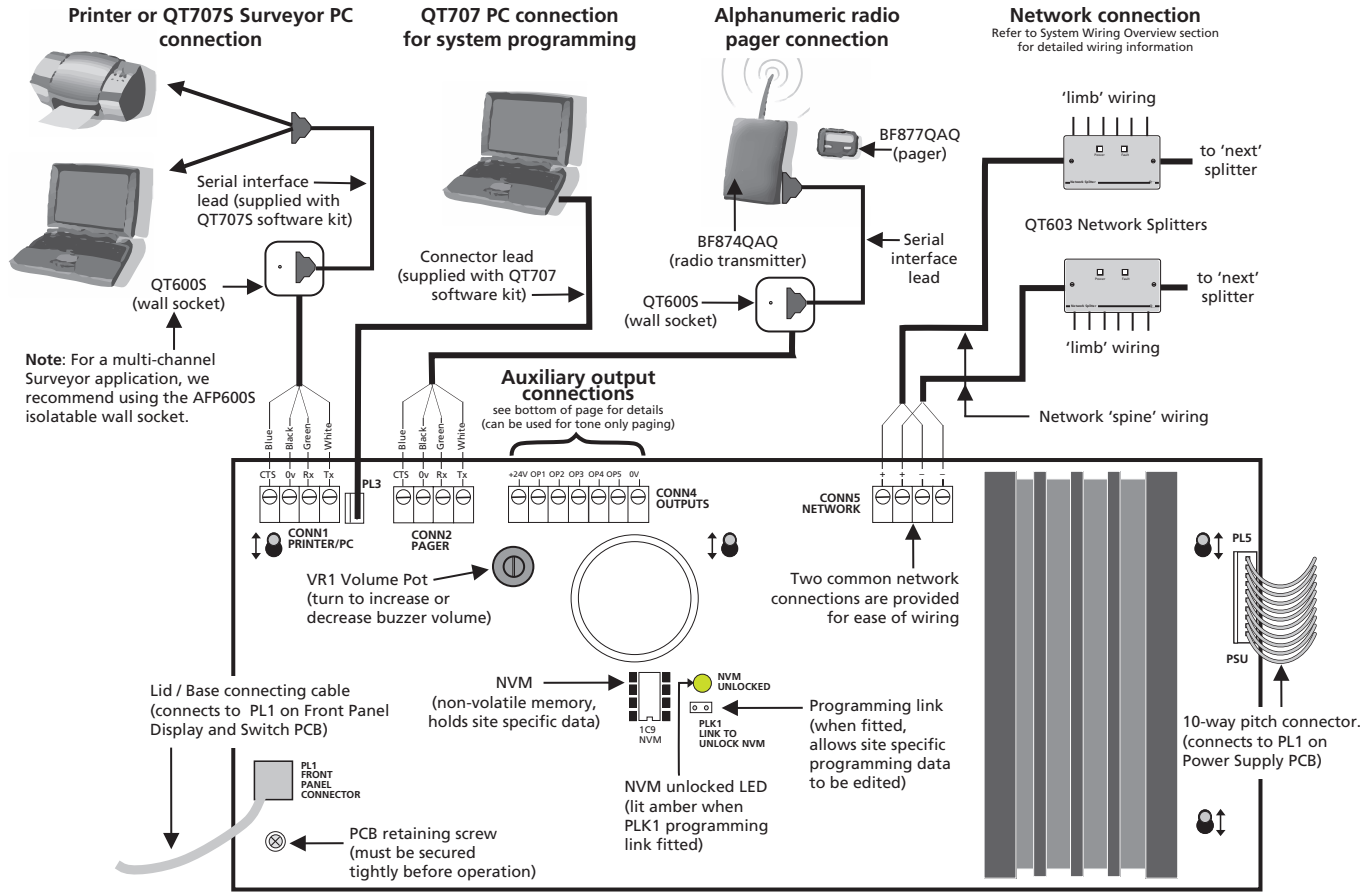
The Main Control PCB

The Main Control PCB includes all the terminals required for the connection of the network wiring and optional system ancillaries such as printer/PC/paging equipment. It also features a 4-way pitch connector for the connection of an IBM compatible PC for programming purposes.

Information on how to wire all of the above can be found in Figure 5 below.

The Main Control PCB is connected to the Power Supply PCB via a 10-way pitch connector (PL5) and to the Front Panel Display and Switch PCB via an 8-way telecoms style cable (PL1).

Figure 5 : Main Control PCB Connection Details



Printer/ PC Connection

CONN1 is provided for the connection of a standard 80 column RS232 printer (required if you wish to keep a permanent record of data from the Controller's datalogger) or a PC (required if you wish to utilise Quantec's QT707S Surveyor Data Management software).

The QT707S Surveyor software requires a PC running Windows 98, 2000, XP, VISTA or Windows 7 and is supplied with a CD, QT600S (or AFP600S) wall socket and interface lead.

Most 80 column RS232 printers will work provided they are set up as follows: data word = 8 bit; stop bit = 1; baud rate = 9600; parity = none. If in doubt, a pre-tested Printer Kit c/w printer, wall socket and interface lead is available; Part No. QT600P.

Laptop PC Connection (for programming)

If you wish to program Quantec using its QT707 upload/download software, an IBM compatible PC running Windows 98, 2000, XP, VISTA or Windows 7 should be connected to the PCB as shown. Quantec's QT707 software kit includes a lead with a 9-way serial port connector.

Radio Pager Connection

Alphanumeric radio paging can be achieved using a BF874QAQ transmitter connected to the PCB via a QT600S wall socket as shown above (the BF874QAQ kit includes the wall socket and a serial interface lead). Alphanumeric display pagers are also available separately (Part No. BF877QAQ).

Auxiliary Output Connection

A typical application for the Controller's auxiliary outputs is to introduce tone only paging equipment onto the system, to drive strobes or interface to other systems. Refer to Appendix 4 for typical wiring information.

PROGRAMMING QUANTEC

Before programming commences, we recommend you read 'The Quantec Concept' section on Pages 5 to 7.
Commissioning is the most critical part of the installation and a basic understanding of how Quantec works and the concept behind it is essential.

Programming Methods

The Controller can be programmed using two methods:

(1) Using its front panel buttons and LCD display

Although time consuming, all aspects of programming can be undertaken using this method and no other piece of equipment is required.

(2) Using the Quantec upload/download software (QT707)

Allows quick and easy input of data and routing arrangements via an IBM compatible PC. This method is much quicker than method 1 and provides the added bonus of allowing off-site programming (if the relevant details are available) and the archiving of programming information for future reference.

Only the first method is covered in detail in this manual. Information on how to program Quantec using its upload /download software can be found in the separate instructions and help files supplied with the QT707 software.

The efficiency with which the programming function is carried out depends on:

- The accuracy of information received regarding the wiring and devices fitted.
- The freedom of the installation from faults and errors.
- The completeness of the information received from the client/specifier as regards text information and the manner in which the equipment is to operate.

The only factor normally within the control of the programmer is the final item and even if this is done perfectly, the quality of the installation will always be based upon the quality of the first two factors.

To help ensure that the information received is complete as possible, we recommend the installing contractor is provided with a copy of this document before starting the job. This document contains sections which should be completed by the installing contractor prior to system handover, specifically in the System Wiring Overview section and Pre-Commissioning Instructions (Appendix 7).

Typical Programming Sequence

A full explanation of Quantec's programming functions can be found on Pages 16 to 25 of this manual. The actual commissioning sequence used will vary depending on the information available and personal preference. However we recommend it follows a similar pattern to that described in the next column:

(1) Power up the system and assign the devices on the limbs. Experience shows the easiest way to do this is using the Controller's AutoScan function. This sequentially assigns the next available ID location to unassigned devices as they are operated and allows the system to be programmed very quickly. Refer to Assigning Multiple Devices section 1.2.
Hint: When autoassigning the system, plan your route around the building on a drawing, marking on it the device numbers you anticipate will be assigned to each networked device. It is advisable to assign each limb one at a time, periodically stopping the autoassign function to check that a particular device is programmed as anticipated. A handy way of doing this is to program a Display and then press the A button which will display its ID number. Whilst the autoassign function is active, pressing a call button on any unassigned device will automatically assign the next available device number to it.

(2) Verify that the devices are programmed correctly by checking the last assigned number at the Controller, or by using the Display Device function section 3.1. Once a device is programmed, it retains its ID even when power is removed. If programmed by mistake, you must reset the ID to unassigned by shorting the two Reset ID pins on the networked device PCB whilst it is powered up. **Note**: Once a device's ID number has been reset, it enters the unassigned state. At this point the old ID number must be deleted from the Controller as it will try and scan for the device and not be able to find it. Refer to Editing Existing Devices section 1.3.

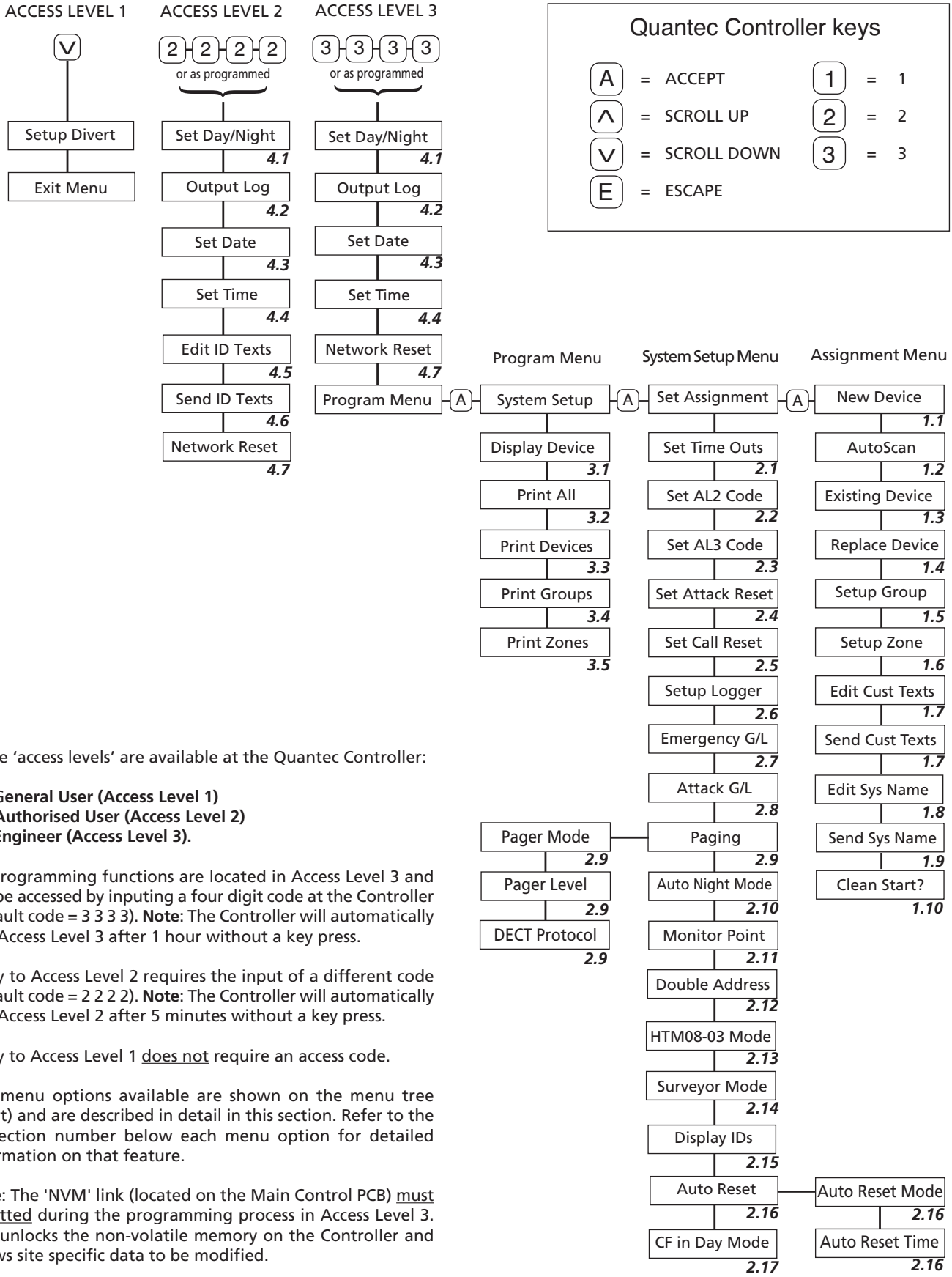
(3) Print off a list of devices. If you don't have a printer you must write this information down by scrolling through the Device Assignment Table at the Controller. This initial list (if you are using a printer) will show no names attached to the devices and can be given to the client so they can write down what they wish to call each device. **Note**: 45 custom and 40 pre-set place names are available. Refer to Editing Custom Texts section 1.7.

(4) Discuss with the client all the routing options for calls (i.e. night mode operation, splitting of network into manageable areas, routing of calls to different Displays, divert / autodivert functions, timeouts, logging options, etc). Most options are highlighted in the Quantec Concept section of this manual.

(5) Program in the names and operating modes, routing tables, etc. as agreed with the client (refer to sections 1.3 - Editing Existing Devices, 1.5 - Assigning or Editing Area/Group Relationships, 1.6 - Setting up Addressable Overdoor Lights and Sounders, 1.7 - Editing Custom Texts and section 2 - The System Setup Menu. **Note**: All Call Points / Monitoring Points default to Area A; all Displays default to Group 1 and all Addressable Overdoor Lights / Sounders default to Zone 1. Group 1's routing equation defaults to Area A, Group 2's routing equation defaults to Area B, etc. Zones have no routing data by default.

(6) Print off a full list of the system devices and programming set-up data and verify it is as planned. Correct any errors as necessary. Print and keep a copy of the set-up for reference.
Hint: If you don't have a printer, the above lists must be derived manually by scrolling through the Controller menus and writing the list down.

Overview of Access Levels



Three 'access levels' are available at the Quantec Controller:

- **General User (Access Level 1)**
- **Authorised User (Access Level 2)**
- **Engineer (Access Level 3).**

All programming functions are located in Access Level 3 and can be accessed by inputing a four digit code at the Controller (default code = 3 3 3 3). **Note**: The Controller will automatically exit Access Level 3 after 1 hour without a key press.

Entry to Access Level 2 requires the input of a different code (default code = 2 2 2 2). **Note**: The Controller will automatically exit Access Level 2 after 5 minutes without a key press.

Entry to Access Level 1 does not require an access code.

The menu options available are shown on the menu tree (right) and are described in detail in this section. Refer to the subsection number below each menu option for detailed information on that feature.

Note: The 'NVM' link (located on the Main Control PCB) must be fitted during the programming process in Access Level 3. This unlocks the non-volatile memory on the Controller and allows site specific data to be modified.

Access Level 3 Programming Functions

1.0 The Assignment Menu

The Assignment Menu allows the introduction of unassigned devices onto the network and the setting up of routing arrangements for Areas, Groups and Zones. It also allows the parameters of any existing device, including its name, to be changed.

1.1 Assigning Individual Devices

Move through the menus to the Assignment Menu and select the 'New Device' prompt. The next unused ID number will be presented:

```
New Device
Number to be 002
```

This can be altered if required using the scroll keys, but it is usual to accept this prompt. (Network devices can be assigned any ID number from 2 to 255. Address 1 is always allocated to the Quantec Controller.) After pressing the Accept key, the next prompt is to activate the new device:

```
Activate Device
002 or ESC
```

When the unassigned device is activated, the Controller will respond by showing the type of device in code form, e.g.

```
Device 002 CLPT
Select Area A
```

(CLPT = Call Point; DISP = Display; MNPT = Monitoring Point; ZNID = Addressable Overdoor Light or Sounder)

Use the scroll and Accept keys to enter the appropriate Area, Group or Zone with reference to the Device Assignment Table on Pages 36 to 38. Once the relevant Area, Group or Zone has been accepted, a location prompt will appear:

```
Device 002 CLPT
----------
```

Using the scroll and Accept keys, the device can now be given a place name from the list of locations (refer to Appendix 1 for a list of Quantec's 40 pre-set place names and note that it is also possible to program up to 45 custom place names using the 'Edit Custom Texts' function described in section 1.7). On pressing the Accept key, your choice will be confirmed, e.g.

```
Device 002 CLPT
TV Room      ----
```

By using the scroll and Accept keys, four single alphanumeric characters can now be tagged onto the end of the place name.

All four terms must be accepted, even if they are blank (e.g. a TV room in the East Wing could be TV Room EW01). When the final character has been accepted, the 'Assign New Device' prompt reappears. **Note:** Exiting this option before the final character has been accepted will cancel the description change.

1.2 Assigning Multiple Devices

Assigning many individual devices using the 'New Device' function can be very time consuming. Therefore, an 'AutoScan' method is available for assigning multiple devices.

Move through the menus to the Assignment Menu and Accept the 'AutoScan' prompt. The Controller will then wait for a call from any unassigned device:

```
AutoScan Mode
Waiting for call
```

Activate the first unassigned device in the sequence to be programmed, at which point the Controller will assign the next available ID number from 2 to 255. (Address 1 is always allocated to the Controller.)

In Autoscan mode the Area, Group or Zone set membership and location description data is not entered immediately. Instead all outstanding devices can be activated sequentially. As each device is activated it is assigned an ID number automatically and, for reference purposes, the last device ID number is displayed on the Controller.

HINT: When programming a site with many devices, it is recommended you keep a list of each ID number as each device is activated and check at regular intervals with the Controller that the last ID numbers entered correspond. If they do not, either a mistake has been made or someone has operated an unassigned device elsewhere in the building. (If this is the case, refer to sections 1.3 - Editing Existing Devices and 3.1 - Display Device.)

When the Autoscan sequence is complete exit the Autoscan option. At this point all assigned devices have default set memberships and no location descriptions. To add/change these refer to section 1.3 - Editing Existing Devices.

1.3 Editing Existing Devices

The parameters of any device already on the system can be reassigned at any time. Alternatively, devices may be temporarily disabled (for maintenance purposes), or deleted from the system altogether. One of the prime uses of the 'Existing Device' function is to change the default (blank) settings given to devices entered onto the system via the Autoscan function.

To edit, move through the menus to the Assignment Menu and Accept the 'Existing Device' prompt. The details of one of the devices on the system will then appear, e.g:

Device 002 CLPT	(the type of device, location and set descriptions may vary depending on the parameters previously assigned)

Use the scroll keys to select the ID number of the device you wish to change. A number of options will then appear, e.g:

Device 002 ReAss Del Disab or ESC

Use the keys to either reassign the parameters of the device, delete it from the system, or disable it. (Please note, if the device has previously been disabled, an 'Enable' option will appear.) If the 'ReAss' prompt is accepted, the Controller responds by showing the type of device in question in code form, e.g:

Device 002 CLPT Select Area A	(CLPT = Call Point; DISP = Display; MNPT = Monitoring Point; ZNID = Addressable Overdoor Light or Sounder)

Use the keys to enter the appropriate Area, Group or Zone with reference to the 'Device Assignment Table' on Pages 36 to 38. Once the relevant Area, Group or Zone has been accepted, a location prompt will appear, e.g:

Device 002 CLPT ----------

Using the scroll and Accept keys, the device can now be given a place name (refer to Appendix 1 for a list of Quantec's 40 pre-set place names and note that it is also possible to program up to 45 custom place names using the 'Edit Custom Texts' function described in section 1.7). On pressing the Accept button, your choice will be confirmed, e.g:

Device 002 CLPT TV Room ----

By using the scroll and Accept keys, four single alphanumeric characters can now be tagged onto the end of the location. All four terms must be accepted, even if they are blank (e.g. a TV room in the East Wing could be TV Room EW01). Exiting this option before the final character has been accepted will cancel the description change. When the final character has been accepted, the 'Assign New Device' prompt reappears:

Device 002 ReAss Del Disab or ESC

Additional devices can now be edited, or to return to the Assignment Menu, press Escape.

1.4 Replacing a Faulty Device

This maintenance function allows you to replace a faulty device with a new one without having to delete its name, location and Area, Group or Zone details from the system.

To execute, select the 'Replace Device' prompt from the Assignment Menu. The Controller will respond with a message similar to the one below:

Device 002 CLPT

Use the scroll keys to select the ID number of the device you wish to replace and press Accept. Depending on the ID number you have selected, the following message will appear:

Activate Device 002 or ESC

Activate the new device and await confirmation that it has been assigned. To check the replaced device's details are as expected, use the 'Editing Existing Device' function described in section 1.3.

1.5 Assigning or Editing Area/Group Relationships

In order to route Areas (calling devices) to relevant Groups (Displays), routing equations must be programmed into the Quantec Controller. Move through the menus to the Assignment Menu and Accept the 'Setup Group' prompt. The following prompt will be displayed:

Select Group 001 Pri Nite Div ESC

To set up or change the primary (Day) equation for Group 1 use the scroll keys to highlight "Pri" and press Accept. This equation describes to which Area(s) of calling devices the Group of Displays will respond when Quantec is in day mode. Depending on data already entered, the following will appear:

Group 01 Pri Mode A

Group 1 Displays default to Area A; Group 2 to Area B, etc. These may be altered to suit the system.

Use the scroll and Accept keys to enter the appropriate Area(s) with reference to the 'Group Routing Table' on Page 39. Up to eight Areas can be selected for a Group. All eight terms must be accepted, even if they are blank. Pressing Escape before this process is complete will abort editing without making changes. When the eighth term has been accepted the ‘Select Group’ prompt will again be shown, e.g:

Select Group 001 Pri Nite Div ESC

To set up or change the Night equation for Group 1 use the scroll buttons to highlight "Nite" and press Accept.

When in night mode, Quantec routes all Areas to all Groups but only the Display Groups that are programmed to beep in the 'Night' mode will do so. Use the scroll and Accept keys to enter the appropriate Area(s) with reference to the 'Group Routing Table' on Page 39. All eight terms must be accepted, even if they are blank as pressing Escape before this process is complete will abort editing without making changes.

When the eighth term has been accepted the ‘Select Group’ prompt will appear again, e.g.

Select Group 001 Pri Nite Div ESC

To set up or change the Divert equation for Group 1 use the scroll keys to highlight "Div" and press Accept.

This equation describes where calls from the selected Group should be diverted to if a call has not been accepted before a pre-determined time has elapsed or manual divert has been selected from a Display’s menu. By default, Divert equations are blank (i.e. divert will not operate). Use the scroll and Accept keys to enter the appropriate Area(s) with reference to the 'Group Routing Table' on Page 39. All eight terms must be accepted, even if they are blank. Pressing Escape before this process is complete will abort editing without making changes.

1.6 Setting up Addressable Overdoor Lights and Addressable Sounders

To route a call to the relevant Addressable Overdoor Light(s) or Sounder(s), Zone equations must be programmed into the system. Move through the menus to the Assignment Menu and Accept the 'Setup Zone' prompt. The following prompt will appear:

Select Group 001 Areas / Devices

Use the scroll and Accept keys to enter the appropriate Areas/Devices with reference to the 'Zonal Routing Table' on Page 40. The Zone equation describes to which Areas and/or devices the Zone will respond to in both primary (day) and night mode.

Note: Addressable overdoor lights and addressable sounders can include both Areas and individual calling devices in their routing equations. By default these equations are blank. This means addressable overdoor lights and sounders will not function until their routing equations have been defined. A maximum of eight Areas can be assigned to each Group. All eight terms must be accepted, even if they are blank. Pressing Escape before this process is complete will abort editing without making changes. In night mode, Addressable Overdoor Lights and Sounders are silent.

1.7 Editing and Sending Custom Texts

Up to 45 custom place names* of up to 11 characters each can be added to Quantec's library of 40 pre-set place names (refer to Appendix 1 for a listing of the pre-set place names).

To add or edit a custom name, move through the menus to the Assignment Menu and Accept the 'Edit Cust Texts' function. The following prompt will appear:

Edit Text 01 Custom 1	(the flashing text on the second line may vary depending on the parameters previously assigned)

Use the scroll and Accept keys to select the custom text field you wish to change. On pressing the Accept key you will be able to type over the existing text with up to 11 alpha-numeric characters using the scroll, Accept and Escape keys.

To help speed up the text entry process, in addition to upper and lower case letters A to Z, numbers 0 to 9 and symbols '/', '-', ':' and '@', Quantec's text editing function has a number of special characters, as listed below:

C This clears the character you have selected and ALL characters to the right of it.

E This allows you to select the end input character on a particular field, i.e. SURGERY**E**. When accepted, this saves you from having to enter blank characters all the way to the end of a text field.

D This deletes the character you have selected and moves ALL text to the right of it one position to the left.

I This inserts one space BEFORE the character you have selected.

When the final character has been entered, the text on the second line will again begin to flash, e.g:

Edit Text 01 Surgery	(the flashing text on the second line will obviously vary depending on the text you have entered)

Use the scroll keys to add/edit any additional custom place names or press Escape to return to the previous menu.

To add the newly programmed custom names to Quantec's 40 pre-set place names you must send them to the Displays' memories. To do this, move through the Assignment Menu to the 'Send Cust Texts' function and press Accept. The following message will appear:

Sending Texts Please Wait

When the sending process is complete, the Controller will automatically return to the Assignment Menu. The renamed custom text fields will now be available to the appropriate device naming functions (e.g. 'New Device' and 'Existing Device').

*** Note**: Corridor Displays with a software revision number of 1.5 or earlier will only accept 20 custom place names. If you wish to use more than 20 you must upgrade the Displays to software revision number 1.6 or above.

1.8 Editing System Name

This option allows a custom site name of up to 16 characters to be assigned to all Quantec Displays. This system name is displayed on the top line of each Display when in normal mode.

Edit the system name in the same manner as previously described for custom texts (section 1.7). Once edited the system name is automatically transmitted on the system.

1.9 Send System Name

This option is used to transmit the system name to network devices, if say, a new Display has been added to the system.

1.10 Clean Start

Selecting this function forces the Controller to reset all site data to the factory default settings. To prevent accidental implementation of this feature, a warning prompt and special code is required before the action can be started.

Move through the menus to the Assignment Menu and Accept the 'Clean Start?' function. The following prompt will appear:

Clean Start? Enter code?

If you wish to proceed, the following sequence of keys should be pressed:

When the final key is pressed, the following message will appear for approximately three seconds:

All data will be lost! Continue?

Pressing the Accept key after the above message appears will instigate the clean start process. Depending on the amount of data stored, this could take some time.

2.0 The System Setup Menu

The System Setup Menu allows you to tell the Quantec Controller specific details about how the system will work.

2.1 Setting 'Time Outs' for Call Divert and Call Accept Arrangements

This option allows you to tell Quantec the time that should elapse before a call is diverted from one Group of Displays to another, or an unanswered 'accepted' call returns to Displays. On selecting the 'Set Time Outs' prompt, the following window will appear:

Divert: 1 mins Accept: 1 mins

Use the scroll and Accept keys to enter the appropriate Time Out figure. The range for each function is 1 to 8 minutes in steps of 1 minute. Any changes will be saved automatically.

2.2 Setting the Access Level 2 Code

This option allows you to change the four digit access code for Access Level 2 (this can be any combination of the 1, 2 and 3 keys). On selecting the 'Set AL2 Code' prompt, the following window will appear:

Access Level 2 Code:

Enter the new code as required. When the fourth key has been pressed, the Controller automatically registers the code and returns you to the System Setup Menu.

2.3 Setting the Access Level 3 Code

This option allows you to change the four digit access code for Access Level 3 (this can be any combination of the 1, 2 and 3 keys). On selecting the 'Set AL3 Code' prompt, the following window will appear:

Access Level 3 Code:

Enter the new code as required. When the fourth key has been pressed, the Controller automatically registers the code and returns you to the System Setup Menu.

2.4 Setting the Attack Reset Code

For systems utilising Quantec's infrared attack call level, this option allows the four digit Attack Reset code to be entered or changed (this can be any combination of the scroll up, scroll down and Accept keys). On selecting the 'Set Attack Reset' prompt, the following window will appear:

Set Attack Reset Code:

Enter the new code as required. When the fourth key has been pressed the Controller automatically registers the new code and returns you to the System Setup Menu.

2.5 Setting the Call Reset Code

This option allows Quantec's four digit 'Call Reset' code to be entered or changed (this can be any combination of the scroll up, scroll down and Accept keys). On selecting the 'Set Call Reset' prompt, the following window will appear:

Set Call Reset Code:

Enter the new code as required. When the fourth key has been pressed the Controller automatically registers the code and returns you to the System Setup Menu.

2.6 Setting Up the Datalogging Function

This option allows Quantec's Datalogging function to be set up. Select the 'Setup Logger' prompt and use the scroll and Accept keys to choose one of the following options:

Logging OFF	this disables the logging function so no events are logged or can be printed.
Logging Man Only	this enables the logger to print when manually selected to do so.
Logging Man/Auto Output on: 010	this enables the logger to print automatically after 10, 20, 30, 40, 50, 60, 70, 80, 90 or 100 events.

Note: If 'Man Only' is selected and the log record is not printed, the datalogger's memory will fill to capacity. When this occurs a warning message will appear on the Controller and any new events will not be logged until the existing events have been printed.

IMPORTANT: When 'Surveyor' mode is active (refer to section 2.14) logging settings cannot be altered.

2.7 Setting Up Emergency Call Routes

This option allows you to set the system up so that EMERGENCY calls are sent to all Display Groups (Globally), regardless of how the Group Area routing arrangements have been set up.

On selecting the 'Emergency G/L' prompt, it is possible to scroll through the following two options:

Emergency Calls Sent: Locally	Emergency Calls Sent: Globally

When you have selected the required option, press Accept.

2.8 Setting Up Attack Call Routes

This option allows you to set the system up so infrared Attack calls are sent to all Display Groups (Globally) regardless of how the Group Area routing arrangements have been set up. On selecting the 'Attack G/L' prompt, it is possible to scroll through the following two options:

Attack Calls Sent: Locally	Attack Calls Sent: Globally

When you have selected the required option, press Accept to return to the System Setup Menu.

2.9 Setting Up the Paging Options

Refer to Appendix 5 (Quantec Paging Functionality) for further details.

If radio paging equipment is connected to the Controller's RS232 paging terminal, this menu must be selected to enable it to operate. On selecting the 'Paging' prompt, it is possible to scroll through the following options:

Setting up Pager Modes:

Pager Mode	On selecting the 'Pager Mode' prompt, it is possible to scroll through the following two options:
Set Paging Mode: Radio	accepting this allows connection to a pager transmitter.
Set Paging Mode: DECT	accepting this allows connection to a DECT system.

Setting up Pager Levels:

Pager Level	On selecting the 'Pager Level' prompt, it is possible to scroll through the following options:
Pager DISABLED	accepting this disables all paging functions (no calls of any type will be sent to pagers).
Pager ENABLED on ATTACK only	accepting this enables paging on ATTACK calls only.
Pager ENABLED on EMERG & Higher	accepting this enables paging on EMERGENCY and ATTACK calls only.
Pager ENABLED on CALL & Higher	accepting this enables ALL levels of call (except PRESENCE).
Pager ENABLED on ASSIST & Higher	accepting this enables paging on ASSIST, EMERGENCY and ATTACK calls only. Note: ASSIST = HELP REQUIRED.
Pager ENABLED on PRESENCE & Higher	accepting this enables ALL levels of call.
Pager ENABLED on RESET & Higher	accepting this enables paging on RESET and ALL levels of call.

It should be noted that different levels of calls are not prioritised by pagers. For example, if a STANDARD call is triggered followed by an EMERGENCY call, the EMERGENCY call will not be displayed until the STANDARD call has been accepted and the next message called up. Calls will however still be prioritised in the usual manner at QT608C Displays, i.e. highest priority calls first.

Setting up DECT Protocol:

DECT Protocol	On selecting the 'DECT Protocol' prompt, it is possible to scroll through the following two options:
DECT Protocol Mode: MEP	accepting this selects DECT MEP protocol.
DECT Protocol Mode: ESPA	accepting this selects DECT ESPA protocol.

IMPORTANT NOTE: For setting up detailed Paging and DECT functions use the in-built Help file supplied with the QT707 upload/download software.

2.10 Setting Up the Auto Night Mode Function

This function allows Quantec's automatic night mode function to be enabled or disabled and for preset entry and exit times to be programmed into the Controller. On selecting the 'Auto Night Mode' prompt, one of the following options will appear:

Auto Night Mode Enabled? : NO	Auto Night Mode Enabled? : YES

Use the scroll keys to select the required option and press Accept. Accepting YES enables the auto night mode function and allows you to enter the time you want the system to automatically enter night mode:

Entry time 07:30 pm

Use the scroll and Accept keys to select the relevant hour, minute and am or pm. When the am/pm field has been accepted the Controller prompts you to select an exit time at which the system will automatically return to day mode:

Exit time 07:00 am

Use the scroll and Accept keys to select the relevant hour, minute and am or pm. When the am/pm field has been accepted the Controller automatically returns you to the System Setup Menu.

Notes:

1. If the Auto Night Mode function is disabled it is still possible to manually switch night mode on/off at Access Level 2.
2. When HTM08-03 mode is active, Auto Night Mode is disabled.

2.11 Monitoring a Network Device

This function allows any ID address to be polled from the Controller. When polling the address, the relevant device's confidence LED will flash, or in the case of an addressable sounder, its beeper will sound at the STANDARD call rate.

First, select the 'Monitor Point' prompt from the System Setup Menu. A window similar to the one below will appear:

Device 002 CLPT State=1 OK

Use the scroll keys to select the device ID number you wish to monitor (do not press Accept as this will perform a network reset).
If the state field = '1 OK' : the device has been found by the Controller and its confidence LED will be lit, or in the case of an addressable overdoor light or sounder, its beeper will be sounding at the STANDARD call rate.
If the state field = '0 OK' : the device has been found by the Controller but it does not have a confidence LED or sounder that can be switched on, i.e. the device is probably a Display.
If the state field is replaced by a message reading "No Response": the Controller cannot find a device with the ID number you have selected.

Pressing Escape or Accept at any time will perform a network reset and return you to the System Setup Menu.

2.12 Determining the Location of Devices which are Doubly Addressed

Any doubly addressed devices on the system are automatically flagged on the right hand side of the Controller's display, i.e:

DISABLED WC (2) Double Addressed

The bracketed number (in this example '2') is the ID number of the doubly addressed device (if there are more than one set of doubly addressed devices these will be flagged too).
To ascertain the exact location of the doubly addressed devices, select the 'Double Address' option from the System Setup Menu. A window similar to the one below will appear:

Device 002 CLPT State=1 OK

All devices with the ID address shown will be polled from the Controller and their confidence LEDs will flash, or in the case of addressable overdoor lights and sounders, their beepers will sound at the STANDARD call rate.

Pressing the scroll keys will move you onto the next set of doubly addressed devices (if there are any) and their confidence LEDs and sounders will activate instead.

Pressing Accept performs a network reset and returns you to the System Setup Menu.

2.13 Setting Up HTM08-03 Mode

This function allows Quantec's HTM08-03 function to be enabled or disabled. On selecting the 'HTM08-03 Mode' prompt, one of the following options will appear:

Set HTM08-03 Mode: Enabled	Set HTM08-03 Mode: Disabled

Use the scroll keys to select the required option and press Accept. When Enabled, the Controller adheres to certain aspects of the HTM08-03 standard and the following changes occur:

1. Auto Night Mode is disabled.
2. Day/Night Mode cannot be entered using the Controller's front panel menus. Instead, you must use a single remote Day/Night Mode Switch (a QT611 multi-purpose programmable device configured as a Day/Night Mode Switch).
3. The Controller's internal sounder is disabled for call type signalling.

2.14 Setting Up Surveyor Mode

This function allows Quantec's Surveyor Mode function to be enabled or disabled. On selecting the 'Surveyor Mode' prompt, the following two options are available:

Set Surveyor Mode: Enabled	Set Surveyor Mode: Disabled

This mode is used in conjunction with Quantec's 'Surveyor' Data Management Software package. When enabled, the Controller's logging output is set to "output on every event" and cannot be changed and the "printer fault" message on the panel is suppressed when the PC is turned off or disconnected from the panel.

2.15 Display IDs

On selecting the 'Display IDs' prompt, the following two options are available:

Display IDs IDs: Enabled	Display IDs IDs: Disabled

This function, if set to ‘Enabled’, sends Caller ID details to the Quantec Displays when a call is presented on the system with the information available. If disabled, this information is not presented on the Quantec Displays. This function may be required for security reasons. Caller ID information is still presented on the log, if enabled.

2.16 Auto Reset

This function is used on a system with just a pager connected and no Displays, or addressable overdoor lights / addressable sounders. Calls are paged but automatically reset after the assigned time.

On selecting the 'Auto Reset' prompt, the following options are available:

Auto Reset Mode	Auto Reset Time

Auto Reset can be either Enabled or Disabled. The Auto Reset Time can be changed between 10 to 60 seconds (at 10 sec intervals).

2.17 CF in Day Mode

On selecting the 'CF in Day Mode' prompt, the following two options are available:

CF in Day Mode Mode: Enabled	CF in Day Mode Mode: Disabled

Call Follow (CF) Day functionality can be enabled / disabled using this menu option.

CF sounder in a call point, which is in the PRESENCE state, is sounded when the panel is in Day mode. The call has to be present on a call point in the same call point Area.

When the panel is in Night mode, any call on the system is sounded on a call point (in PRESENCE state), in otherwords globally.

3.0 The Program Menu

3.1 Display Device

To aid the location of network devices for diagnostic purposes, it is possible to change the function of the Controller's LCD display to show the calling device ID number instead of the place name. Move through the menus to the Program Menu and Accept the 'Display Device' prompt. The following prompt will appear:

Display Device Waiting for Call

When a calling device is activated the ID number of that device will be shown on the display. (Please note, any other displays on the system will continue to show the location of the calling device as normal.) On exiting this function the network resets itself in order to remove any missed calls from the Controller.

3.2 Print All

Selecting this function sends a list of all site-specific data to a printer (if connected).

3.3 Print Devices

Selecting this function sends a list of all network devices to a printer (if connected).

3.4 Print Groups

Selecting this function sends a list of all Groups (Quantec Displays) to a printer (if connected).

3.5 Print Zones

Selecting this function sends a list of all Zones (Quantec addressable overdoor lights / sounders) to a printer (if connected).

4.0 The Secure User Menu

4.1 Set Day/Night

This function allows the routing of calls to be changed from the programmed day mode (primary) configuration to the night mode (nite) configuration, or vice versa. Enter Access Level 2 or Access Level 3 and Accept the 'Set Day/Night' prompt. One of the following two prompts will appear:

Set Day/Night Mode is : Day

Set Day/Night Mode is : Night

Use the scroll keys to select the required option and press Accept.

4.2 Output Log

Note: Refer to Appendix 2 for the Log Report format.
This function is not applicable if Quantec's 'Surveyor' mode is active.

This function allows information stored in the Controller's datalogger to be outputted to a standard Quantec RS232 printer (if connected). To execute, enter Access Level 2 or Access Level 3 and Accept the 'Output Log' prompt. When printing is complete, the Controller will return to the previous menu. Please note, this function will only work if the Controller's datalogger has been programmed to print manually (refer to section 2.6) and a printer is properly connected to its RS232 printing port.

4.3 Set Date

This function allows the date to be programmed into the Controller. It is particularly important that the correct date is entered if Quantec's datalogging function is to be used. To execute, enter Access Level 2 or Access Level 3 and Accept the 'Set Date' prompt. Use the scroll and Accept keys to select the correct day, month and year. Pressing Accept after the year has been entered will return you to the previous menu.

4.4 Set Time

This function allows the time to be programmed into the Controller and is particularly important if Quantec's datalogging function is used. To execute, enter Access Level 2 or Access Level 3 and Accept the 'Set Time' prompt. Use the scroll and Accept keys to select the correct hour and minute. When the minute data has been accepted you will be returned to the previous menu.

4.5 Edit ID Texts

This function allows User/Caller ID names to be individually edited at the panel.
Note: After each User/Caller ID has been edited, the panel automatically updates this ID on the system.

To execute, enter Access Level 2 and Accept the 'Edit ID Texts' prompt. Use the scroll and accept keys to select and edit names. Edit the ID names in the same manner as previously described for custom texts (section 1.7).

4.6 Send ID Texts

This function globally sends User/Caller IDs from the panel. Note: Only use this option, if say, a Display has been changed. This process can take up to 2½ minutes to complete.

To execute, enter Access Level 2 and Accept the 'Send ID Texts' prompt.

4.7 Network Reset

This function allows the network voltage to be reduced to zero in order to reset all network devices. The Network is powered down for approximately 5 seconds. To execute, enter Access Level 2 or Access Level 3 and Accept the 'Network Reset' prompt.

APPENDICES

Appendix 1 - Miscellaneous

Index of Location Descriptions

40 pre-set names are provided as standard and are listed below. (An additional 45 custom names of 11 characters each can be programmed at Access Level 3.)

Annexe	Exit	Quiet Room
Area	FireExit	Reception
Bathroom	Flat	Room
Bedroom	Floor	Shower
Conservtry	Gents WC	Sluice
Corridor	Hairdresser	Special
Dining Room	Kitchen	Staff Room
Disable WC	Ladies WC	Toilet
Display	Laundry	Treat Room
Door	Lift	TV Room
DoorBell	Lounge	Ward
Drugs Cab.	Meeting Rm	Zone
Entrance	OD Light	
ESMIUnit	Phone	

Set Ranges

Device Set Range: 2-255

Area Set Range: A-Z (26 Areas of call points, default = Area A)

Group Set Range: 1-32 (32 Groups of Displays, Group 1 default to Area A; Group 2 default to Area B, etc.)

Zone Set Range: 1-64 (64 Zones of addressable overdoor lights / sounders, no defaults)

Equations

Group Routing Table = 3 (primary, night and divert)

Zonal Routing Table = 2 (Areas and devices)

Max. No. of terms in each equation 8 (eight)

Time Outs

Time before divert: Adjustable in steps 1, 2, 3, 4, 5, 6, 7, 8 minutes (default 1 minute)

Accept Time Out Period: Adjustable in steps 1, 2, 3, 4, 5, 6, 7, 8 minutes (default 1 minute)

Communication to the Output Device

Type: Serial - RS232
Data Rate: 9600 Baud
Protocol: 8 Data Bits, 1 Stop Bit, No Parity

Display Parameters

State	Display Beeper Rate (Sec)	Volume	Backlight
NORMAL	Off	n/a	Off
UNASSIGNED/FAULT	0.5 On, 7.5 Off	Soft	Steady
PRESENCE	Off	n/a	Steady
STANDARD Call	0.5 On, 7.5 Off	Soft	Steady
HELP REQUIRED Call	2.0 On, 2.0 Off	Soft	Steady
EMERGENCY Call	0.5 On, 0.5 Off	Loud	As beep
ATTACK Call	0.1 On, 0.1 Off	Loud	As beep
MONITOR POINT	0.5 On, 0.5 Off, 0.5 On, 6.5 Off	Soft	Steady

Note: When there are concurrent Normal calls from Call Points and Monitor Points the Monitor Point Call Rate is used.

Call Point Parameters

State	Rate	Lamp State
NORMAL	Off	-
UNASSIGNED	0.5 On, 0.5 Off	Red / Green alternating
PRESENCE	2.0 On, 2.0 Off	Green
CALL	2.0 On, 2.0 Off	Red
ASSIST	0.5 On, 0.5 Off	Red
EMERGENCY	0.5 On, 0.5 Off	Red / Green alternating
ATTACK	0.1 On, 0.1 Off	Red / Green alternating

Addressable Overdoor Light Parameters

State	Beeper Rate/Volume	Lamp State
NORMAL	As Display	As Call Point
UNASSIGNED	As Display	As Call Point
PRESENCE	As Display	As Call Point
CALL	As Display	As Call Point
ASSIST	As Display	As Call Point
EMERGENCY	As Display	As Call Point
ATTACK	As Display	As Call Point

The periods above are subject to a tolerance of 10%.

Firmware Versions Required for New Features

The enhancements / programming functions listed on Page 4 are available from the 1 July 2010 and require the following installed firmware versions:

- Quantec Controller version 10A5
- Display version 3.2
- Display Interface version 3.5
- Call Point version 1A06
- Radio Receiver version 4.0
- Surveyor version V1M03
- PCTOOLS version 4.2.

Appendix 2 - The Datalogging Function

Log Record Format

The first line states the time that the log output was started. After that the records are extracted from the log, oldest first, and are downloaded to the output device in the following form: (a) date; (b) hour / minute; (c) location description; (d) type/level of call; (e) low battery signals (from infrared neck pendants and infrared staff attack transmitters).

Example of Records as Printed:

Log output on 1.10.02 at 11.05am

30/09	4:36pm	Dining Room	1 2 3 4		Call		
30/09	4:39pm	Ward	W A 2 3		Call		
30/09	4:40pm	Dining Room	1 2 3 4		Presence		
30/09	4:40pm	Toilet	G F 1 4		Call		
30/09	4:41pm	Dining Room	1 2 3 4	Reset			
30/09	4:42pm	Ward	W A 2 3		Call		
30/09	4:42pm	Toilet	G F 1 4		Presence		
30/09	4:43pm	Ward	W A 2 3			Assist	
30/09	4:44pm	Toilet	G F 1 4	Reset			
30/09	4:45pm	Ward	W A 2 3		Presence		
30/09	4:46pm	Ward	W A 2 3	Reset			
1/10	9:02am	Lounge	2				Attack
1/10	9:02am	Lounge	2	Reset			
1/10	10:15am	Bedroom	G F 4		Call		
1/10	10:15am	Bedroom	G F 4				Emergency
1/10	10:18am	Bedroom	G F 4		Presence		
1/10	10:18am	Bedroom	G F 4	Reset			

Fault Messages are Presented as Follows:

16/06	11:13pm	Log full!		
2/10	1.02pm	Display	1 F 2	Device 14 Faulty
23/04	3:30am	Mains supply failure!		
23/04	6:23am	Mains supply restored		

When the Output Log function is selected (refer to section 4.2), the contents of the datalogger are transmitted to the output device. When each record has been sent it is deleted from the datalogger and its place taken by a new event. When all the records have been deleted the datalogger is empty and the output session is completed.

Failure to output the log: If the printer is not able to accept the data, or Automatic Output is disabled and there has been no Manual start command, the datalogger's memory will fill to capacity. When this occurs a warning message will appear on the Controller's Display and a record of the warning message will be entered onto the log in the last empty record. New events after this time are lost. This function continues until the log is output normally.

Appendix 3 - Anti-Static Handling Guidelines

Before handling PCBs, or any other static-sensitive components, please ensure that the following electro-static handling precautions are taken.

Operators should rid themselves of any personal electro-static charge by momentarily touching any of the earth studs in the Quantec Controller's metal back box with all circuit boards and connections correctly in place. This should be done immediately before handling the sensitive components. If not in the vicinity of the back box, any other sound connection to safety earth may be touched. Static sensitive items may now be handled with care.
Important: DO NOT touch the legs of any component and always handle PCBs by their sides.

PCBs should be stored in a clean, dry place which is free from vibration, dust and excessive heat. Retaining the PCBs in a suitable cardboard box will also guard them against mechanical damage.

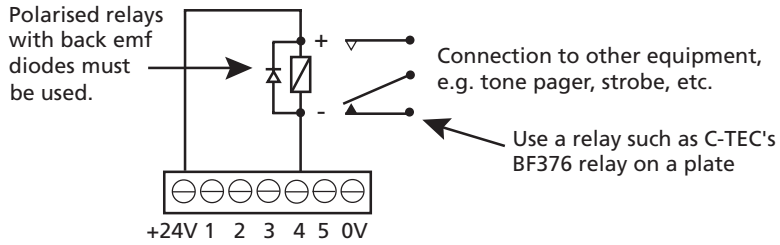
Appendix 4 - Auxiliary Outputs

Seven auxiliary outputs are provided at the Quantec Controller, as listed below:

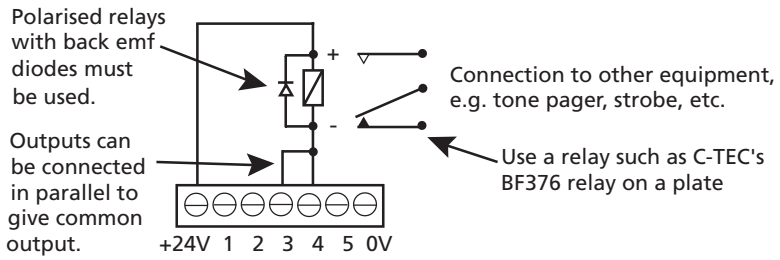
+24V	+24 V (protected by 100 mA resettable fuse)
OP1	Activated when any STANDARD call is active on the system. Maximum current = 25 mA
OP2	Activated when any HELP REQUIRED call is active on the system. Maximum current = 25 mA
OP3	Activated when any EMERGENCY call is active on the system. Maximum current = 25 mA
OP4	Activated when any ATTACK call is active on the system. Maximum current = 25 mA
OP5	Fault Output. Normal = ON, Fault = OFF. Maximum current = 25 mA
0V	0 V

The outputs can be used for driving peripheral equipment, as per the following examples:

Example 1 : Activating a relay when an ATTACK call is present on the system.



Example 2 : Activating a relay when an ATTACK or EMERGENCY call is present on the system.



Appendix 5 - Quantec Paging Functionality

The paging interface connection supports two different types of paging devices.
Firstly, Scope protocol compatible paging transmitters and secondly, DECT interface equipment supporting both MEP and ESPA communication protocol. The call level is the primary trigger as to whether a paging event should occur. This can be set from "Reset and above" to "Attack Only" or set to "Disabled" to turn off the paging functionality. The page can also be repeated, provided the call is still present on the system, this is set by altering the "Pager Repeat Interval" ranging from 1 to 59 minutes, or "Disabled" to only page once.

Scope

In Scope protocol the individual users' pager will have a range of 7 digit "capcodes" programmed to respond. By default, this is setup as "0020000" in the Quantec Controller. Using the QT707 upload/download software to configure the Controller, these capcodes can be assigned by call area, call type & day/night. For example, when a call is presented on the system from a call point in Area B and it is a Call, and it is Day, then the capcode assigned to Area B, Call & Day will be paged from the paging system. Also selectable is the pager alert tone, this can be set per call type and whether in Day or Night mode. The tone is specified as a letter between "A-D".

The message content takes the form of the Call Place Name & Suffix, Call Type & Caller Name. The Caller Name is only available if the call was made from a QT412 Radio Transmitter, or QT432 Pendant Transmitter when the Caller ID has been set. The Quantec Controller needs the CTS line connected to the pager. This line needs to be active, showing that the pager is ready to receive data, otherwise a pager fault is logged.

The data sent from the Quantec Controller to the paging transmitter is of the form:
"A Capcode, Tone Letter, Message, CRLF"

For example:
"A0020000BBedroom 35 Call Fred Smith CRLF"

DECT

On a DECT phone system, paging messages from the Quantec Controller can be presented on the users' handset by using a proprietary interface between the Quantec Controller and DECT system. This interface can support both MEP and ESPA paging communication protocols. The capcode is replaced by a "Team" number, this ranges from "00" to "99" and the alert tone is assigned as a number "1-8"

MEP

Before a message is sent to the interface, the Controller must confirm that the interface is ready to receive the message. The Controller follows this sequence of events:

Controller		**Interface**
Sends <ENQ>	→	Receives <ENQ>
Receives <ACK>	←	Sends <ACK>
Sends <Message>	→	Receives message

If the interface is disconnected or busy processing a previous message then an <ACK> is not received. The Quantec Controller retries 3 times, if unsuccessful then a DECT fault is logged. The Controller only looks for the <ACK> once it has sent the <ENQ>, it doesn't respond to any other data sent to it.
The <Message> embodies the paging message itself, alert tone and message checksum and is assembled as follows:

<SOH>P<STX>T<US>00<RS>M<US>Message<RS>B<US>1<RS>P<US>N<ETX>chksum
Team Tone

ESPA

Before a message is sent to the interface, the Controller must confirm that the interface is ready to receive the message. The Controller has a fixed ESPA device address of 1 and the Quantec Controller assumes it is communicating with an ESPA device with address 2. The Controller follows this sequence of events:

Controller		**Interface**
Sends 1<ENQ>2<ENQ>	→	Receives 1<ENQ> 2<ENQ>
Receives <ACK>	←	Sends <ACK>
Sends <Message>	→	Receives message

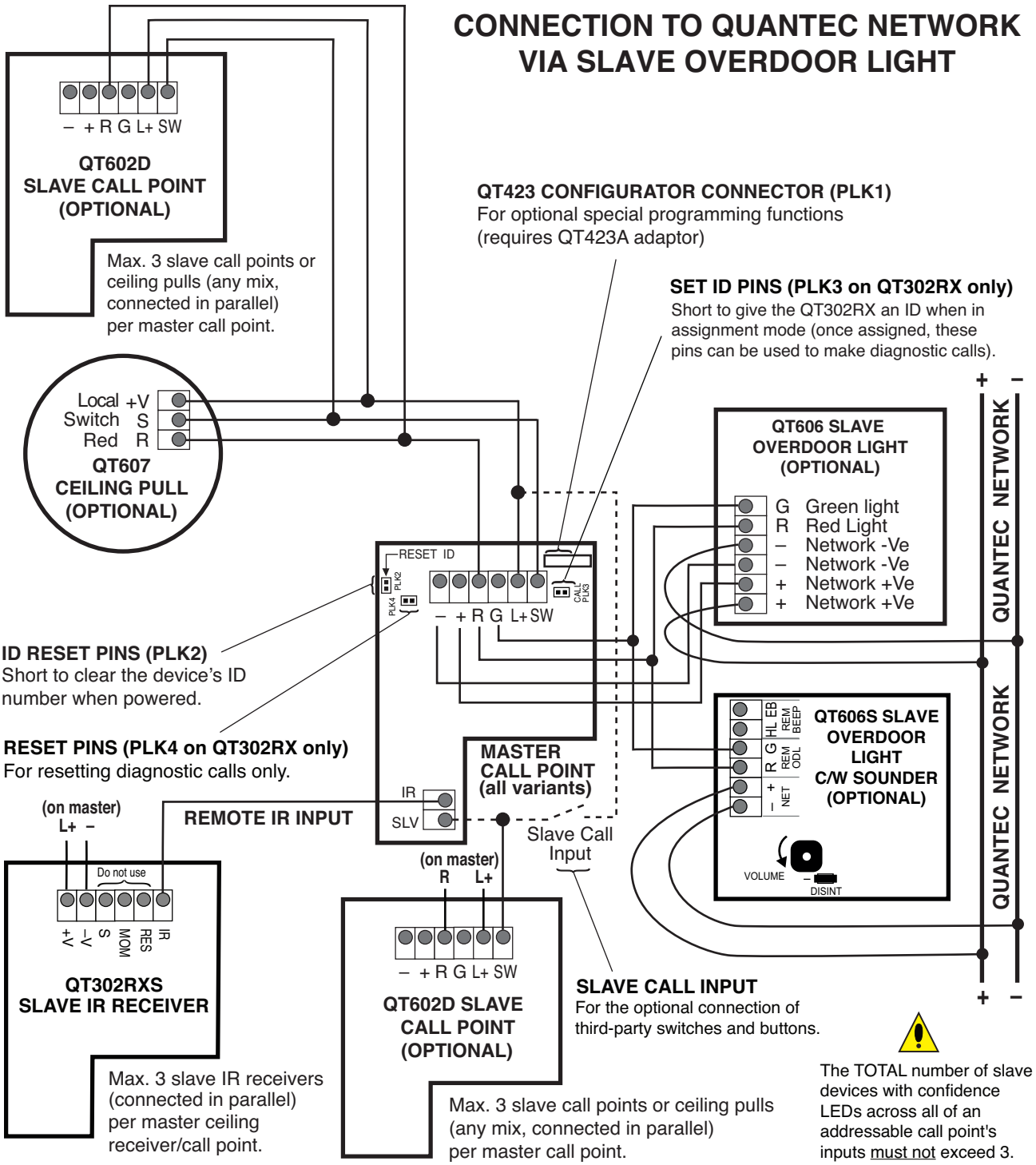
If the interface is disconnected or busy processing a previous message then an <ACK> is not received. The Quantec Controller retries 3 times, if unsuccessful then a DECT fault is logged. The Controller only looks for the <ACK> once it has sent the <ENQ>, it doesn't respond to any other data sent to it.
The <Message> embodies the paging message itself, alert tone and message checksum and is assembled as follows:

<SOH>1<STX>1<US>T00<RS>2<US>Message<RS>3<US>1<RS><ETX>chksum
Team Tone

Appendix 6 - Wiring for Addressable Call Points / Ceiling Receivers

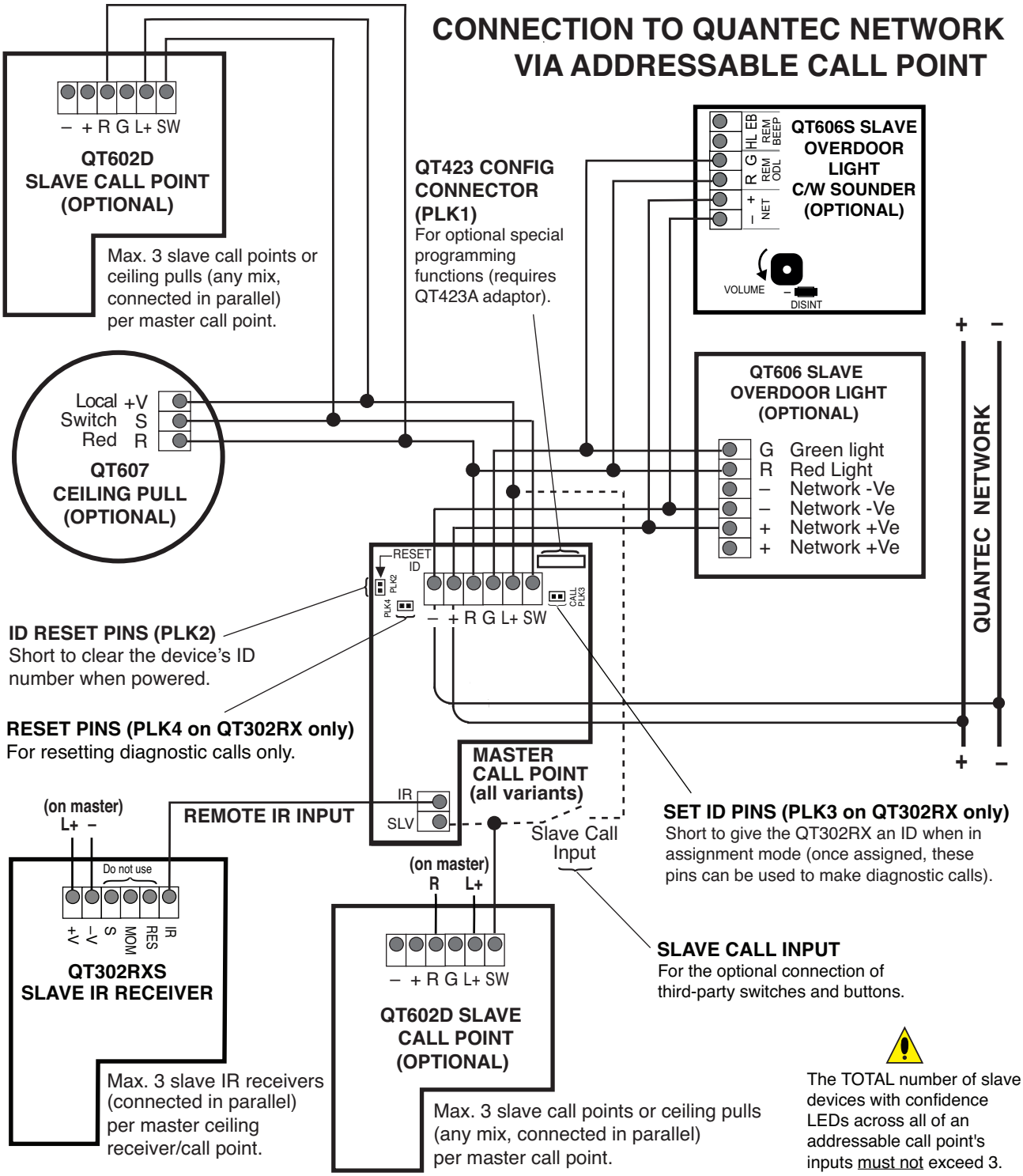
This appendix shows two example methods for wiring Quantec Addressable Call Points/Ceiling Receivers (all variants) with connections to typical slave ancillary devices. This incorporates the following devices:

QT602 Addressable Call Points; **QT602E** Addressable Call Points; **QT609** Addressable Call Points;
QT302RX Master IR Ceiling Receivers; **QT302RXS** Slave IR Ceiling Receivers;
QT606 Slave Overdoor Lights; **QT606S** Slave OD Lightds c/w Sounder;
QT607 Slave Ceiling Pulls;
QT602D Slave Call Points.



Important Note Regarding IR Devices:

Due to the high risk environments in which infrared devices are likely to be used, be sure to install them so the best possible reception is achieved. If in doubt, contact your supplier/the technical dept. for advice.



Appendix 7 - Pre-Commissioning Instructions

General Note

Quantec systems should be installed using Network Splitters. These pre-commissioning instructions are based on their use for the following reasons:

- They ensure voltage drop problems are substantially avoided.
- They blow a fuse and keep most of the system working if a network limb is shorted.
- They allow cable and equipment faults to be easily found and isolated.
- They allow the system to be connected a section at a time, avoiding problems with other trades initialising devices out of sequence.

Using other wiring schemes may work, but installation errors will be more difficult to detect and voltage drop may be a problem. Do not megger the wiring with ANY devices connected.

Pre-Commissioning

The installing contractor should carry out the following tests so that the commissioning engineer can get the system operating quickly. If these are not done, commissioning may be refused or extra charges made.

Things you will need:

Quantec Main instructions (this document) available from your Installer or C-TEC ❒ ; Individual instructions supplied with each device ❒ ; Terminal screwdriver ❒ ; 5 mm flat blade screwdriver ❒ ; 3 mm Allen key ❒ ; Side cutters ❒ ; Wire strippers ❒ ; Digital multimeter ❒ .

Things you will be expected to have done:

1. All spine wiring from the Quantec Controller to the network splitters should be in place, checked & certified correct.
2. All limb wiring from the network splitters to network devices should be in place, checked & certified correct.
3. The spine and limb cables should be left connected to the splitters.
4. All limb wiring should be labelled so you know which devices are connected to where. Use the Splitter Connection Chart (located at the back of this document).
5. All room wiring to ceiling pulls, overdoor lights and slave call points (if fitted) should be in place, checked & certified correct.

Checking the Spine Wiring

- Power up the Quantec Controller. A number of messages will flash quickly on the Controller's LCD display before the words 'QUANTEC' and the time in hours and minutes appear constantly (please note, the time shown may not be correct).
- Do not connect batteries. Look at the green power lights on the network splitters.
- If none are lit, check the spine voltage at the Quantec Controller – you should see a changing reading in the range of 16 to 17 volts DC. If the voltage is much lower, disconnect the spine and check the voltage again. If the reading jumps up, you have a wiring fault. If you fix this fault and the reading still remains low, you may have another wiring fault. If you suspect the Quantec Controller may be faulty, disconnect the spine wiring at the Controller and check the voltage at the Quantec Controller with no wires connected. If the voltage is okay (i.e. within the range 16 to 17 volts DC) you still have wiring faults.
- A short on the spine will not blow a fuse but nothing will work except the display on the Quantec Controller.
- If any one splitter is not lit, it is probably not connected or the wiring to it is shorted.
- Sort out any wiring problems and repeat the tests until all green lights are lit on the splitters.

Checking the Limb Wiring

- Go to a network splitter and connect one limb at a time, carrying out the following tests.
- If any fault lights are lit, check the fuses at that splitter. The limb connected to a blown fuse is probably short circuit. Fix the fault and replace the fuse (always fit 400 mA 20 mm quick blow fuses). Note that, if the limb wires are very long, it is possible that a short will not blow a fuse. However, the fault can be found by disconnecting limbs in turn (when the short circuit limb is disconnected the network should spring into life).

Checking the Devices

Call Points, Overdoor Lights, Ceiling Pulls, Slave Call Points and Tail Call Leads

- Press the call button on the call point. After a three second delay, the light should pulse rapidly through red, green & orange.
- If the light goes steady red, the call point is already programmed and will confuse the commissioning engineer. It should be reset by shorting the 'reset ID' pins inside with a shorting link. Make sure you do not short the pins to any point on the circuit board as this will damage the call point and can be factory detected so will not be covered by the warranty. Use a shorting link to short the pins. Do not use any other device.
- Overdoor lights connected to a call point will exactly follow the pulsing light on the call point (when the orange light shows on the call point, both red and green will be lit at the overdoor light).
- The red lights on any ceiling pull(s) and/or slave call point(s) will follow the red light on the call point.
- If everything is working okay, press the reset button on the call point twice to return to the passive state.
- Check the continuity of ceiling pulls, slave call points and tail call leads with a multimeter. (You cannot test the correct operation of these devices prior to commissioning.)
- Reset the system at the Quantec Controller after testing to ensure all devices are returned to the passive state.

Infrared Ceiling Receivers

- Press the call button inside the ceiling receiver (located on the right hand side of the PCB). After a three second delay, the receiver's LED should pulse rapidly through red, green & orange. If the light goes steady red, the ceiling receiver is already programmed and will confuse the commissioning engineer. Reset using the 'reset ID' pins (see above). If everything is working okay, press the reset button (located on the left hand side of the PCB) twice to return the receiver to the passive state.

Displays

- An unassigned display beeps intermittently, is backlit and shows the unassigned message: This means that the display has been installed correctly.

UNASSIGNED Accept to ASSIGN

- If the display shows the time, it is assigned and should be reset using the 'reset ID' pins (see above).
- The call and assist volume level can be adjusted using the control marked 'volume'. (ATTACK and EMERGENCY calls will always come through at full volume.)
- The display contrast can be adjusted using the control marked 'contrast'. If you turn it down too far the display will disappear.

Monitoring Points

- Turn the key to 'isolate'. The light will flash red and green. Turn back to 'on' and press 'reset' to clear the lights.
- Ensure the links are correctly fitted for their function (see the device instructions).

Addressable Sounders and Overdoor Lights

- Check that the network voltage of the system stands at 16-17 V by placing a multimeter across the input terminals of these devices. (You cannot test the correct operation of these devices prior to commissioning.)

General

- If any single device does not work, swap it with a device that does work elsewhere on the network. If the fault moves with the device, you probably have a faulty device. If the new device shows the same fault as the one you have moved, you probably have a wiring fault.

Finishing Pre-Commissioning

- When you have successfully completed all of the above checks, power the system down. Any limbs with faults still present should be disconnected and relevant information left for the commissioning engineer. Pre-commissioning is now complete.
  Note: Any limbs left with faults on may require extra visits by the commissioning engineer and extra cost may be incurred.

Things the Commissioning Engineer will Need

- A set of plans suitable for marking up.
- Information from the client about the naming of each room. If this is not available the commissioning engineer will set the system up as he thinks best and there may be a charge for altering the system at a later date should this be required.
- Information from the client about the routing of calls (Areas & Groups) – if possible.
- Quantec Main manual (this document) including programming sheets.
- Individual instruction supplied with each device.
- Pre-Commissioning Certificate signed by the installation contractor.

Pre-Commissioning Certificate

When the Installing Contractor has carried out the various test/checks highlighted in these Pre-Commissioning Instructions, this certificate should be completed, signed and left for the attention of Commissioning Engineer:

Checks carried out to the following:

	Tested and working correctly	Faults found and not corrected
Spine Wiring	❒	❒
Limb Wiring	❒	❒
Call Points	❒	❒
Overdoor Lights	❒	❒
Ceiling Pulls	❒	❒
Slave Call Points	❒	❒
Tail Call Leads	❒	❒
Infrared Ceiling Receivers	❒	❒
Displays	❒	❒
Monitoring Points	❒	❒
Addressable Overdoor Lights	❒	❒
Addressable Sounders	❒	❒
Cables clearly labelled?	❒ Yes	❒ No

SIGNED:_____ DATE: _____

CONTRACTORS NAME: _____

COMPANY: _____

ADDRESS: _____

TELEPHONE: _____ FAX: _____

DETAILS OF ANY FAULTS: _____

_____

_____

_____

_____

Appendix 8 - Technical Specification

POWER SUPPLY SPECIFICATION	
Mains supply	230 Va.c. 50/60 Hz. Max. current 350 mA
Internal Power Supply	27 Vd.c. (nominal)
Total output current limited to	3 A @ 230 Va.c.
Supply and battery charger monitored for failure	Yes
Batteries monitored for disconnection and failure	Yes
Batteries protected against deep discharge	Yes
Max. battery size and type	7 Ah. Use 2 x 12 V VRLA batteries (Part No. BC286/2)

AUXILIARY OUTPUTS	
Type	Open Collector
Max. switching current	25 mA
Max. switching voltage	30 Vd.c.
OP1	Activated when any STANDARD call is active on the system
OP2	Activated when any HELP REQUIRED (ASSIST) call is active on the system
OP3	Activated when any EMERGENCY call is active on the system
OP4	Activated when any ATTACK call is active on the system
OP5	Fault Output. Normal=ON, Fault=OFF.
+24 V Aux. power output	19.5 V minimum, 28 V maximum. Max. current 100 mA. Self-resetting fuse.

FUSES (to IEC - EN60127 Pt2)	
Mains fuse	1 x 1 A HRC ceramic (20 x 5 mm)
Battery fuse	1 x 3.15 A F (20 x 5 mm). This limits the current drawn from the battery.

PANEL INDICATORS AND CONTROLS	
Control and menu access buttons	Accept (A), Scroll Up, Scroll Down, Code Entry Buttons (1, 2, 3 & 4), Escape (E)
Liquid crystal display (LCD)	Two lines x 40 characters, backlit
LED indicator	Power Present (LED lit), No Power Present (LED extinguished)

PHYSICAL DIMENSIONS	
QT601-2 Quantec Controller	435 (W) x 270 (H) x 85 (D) mm (metal base, plastic lid)
Cutout required for flush mounting using AFP385 bezel	412 (W) x 255 (H) x 50 (D) mm
Flush mount depth	60 mm
Approx. weight (without batteries)	3.5 kg

NETWORK CABLING / SPECIFICATION	
Connection	QT601-2 Quantec Controller to QT603 network splitters
Spine cable	1.5 mm^2 or 2.5 mm^2 (e.g. twin and earth mains cable)
Max. cable length per spine using 1.5 mm^2	150 m
Max. cable length per spine using 2.5 mm^2	250 m
Max. cable length of all spines and limbs	750 m
Limb cable	Min 4-core strand security cable, twisted into one pair (to reduce voltage drop)
No. of limbs per splitter	6
Max. cable length per limb	60 m
Max. no of addressable devices per limb	15
Max. no of addressable devices per system	255
Network voltage	24 V (nominal)
Network max. current	3 A

PC/PRINTER/PAGING INTERFACE	
QT707S Surveyor PC/Printer connection tor	CONN1 provides RS232 connection using QT600S (or AFP600S) wall socket, connec-lead (supplied with QT707S kit)
QT707 Programming PC connection	PL3 provides connection using connector lead (supplied with QT707 software kit)
Pager connection	CONN2 provides RS232 connection using QT600S wall socket

OPERATING CONDITIONS

The components are selected to operate within their specification when the environmental conditions outside the enclosure comply with class 3k5 of IEC 721-3-3 : 1978. Temperature range: -5 to +40°C. Maximum relative humidity: 95%

PART NUMBERS - QUANTEC CONTROLLER, ENCLOSURES, PROGRAMMING SOFTWARE & INSTALLATION AIDS

QT601-2	Quantec Controller
AFP385	Flush bezel for Quantec Controller
BF359/3S	Stainless steel glazed enclosure for Quantec Controller, requires BF359/3CL or BF359/3SL lock kit
BF359/3CL	Cam lock kit for BF359/3S
BF359/3SL	Electromagnetic solenoid lock kit for BF359/3S
QT707	Quantec upload/download software (Windows 98/2000/XP/VISTA/7 compatible) c/w 4-way molex to 9-way RS232 'D' lead
SAF7070000	4-way molex to 9-way RS232 'D' female programming lead ONLY
BF232	RS232 to USB convertor (allows SAF7070000 to connect to a PC's USB connector)
QT707S	Surveyor Data Management Software, complete with wall socket & lead (Windows 98/2000/XP/VISTA/7 compatible)
QT423	Quantec configurator c/w lead, adaptor & software (Windows 98/2000/XP/VISTA/7 compatible). Used to program special functions on addressable call points, universal programming devices , hi-output sounders, IR/RF transmitters & pendants.
QT423A	Configurator adaptor (allows existing QT423 configurators to program call points)
QT603	Quantec network splitter
BC286/2	24 V 7 Ah VRLA battery pack (2 x 12 V including link wire)

QUANTEC FORMS

Quantec Device Assignment Table

DEVICE		Call Point AREA	Display GROUP	Addressable Overdoor Light ZONE	PLACE DESCRIPTION	
Number	Type				Name	Number

Quantec Device Assignment Table

DEVICE		Call Point AREA	Display GROUP	Addressable Overdoor Light ZONE	PLACE DESCRIPTION	
Number	Type				Name	Number

Quantec Device Assignment Table

DEVICE		Call Point AREA	Display GROUP	Addressable Overdoor Light ZONE	PLACE DESCRIPTION	
Number	Type				Name	Number

Quantec Group Routing Table (max. 8 Areas / Groups per equation)

GROUP	PRIMARY AREAS	NIGHT AREAS (BEEP)	DIVERT TO GROUPS

Quantec Zonal Routing Table (max. 8 Areas / Devices per equation)

ZONE	AREA EQUATION	DEVICE EQUATION

Quantec Network Splitter Connection Record Sheet

QUANTEC CONTROLLER

6 m

NETWORK SPLITTER No.	Limb	Device ID Numbers	Length
1	1	29	5
	2	6, 34-37	25
Location: South Wing. Above suspended ceiling near corridor doors.	3	30-33	25
	4	9, 28	15
	5	-	-
	6	-	-

15 m

NETWORK SPLITTER No.	Limb	Device ID Numbers	Length
2	1	11, 12, 14,16, 27, 3	35
	2	7, 10, 13,15, 17, 2	30
Location: Central Area. Reception area above suspended ceiling.	3	26, 8, 18,19-21	30
	4	4, 5, 22-25	30
	5	-	-
	6	-	-

An example of a Splitter Connection Record for the fictional nursing home (Page 5) is shown above

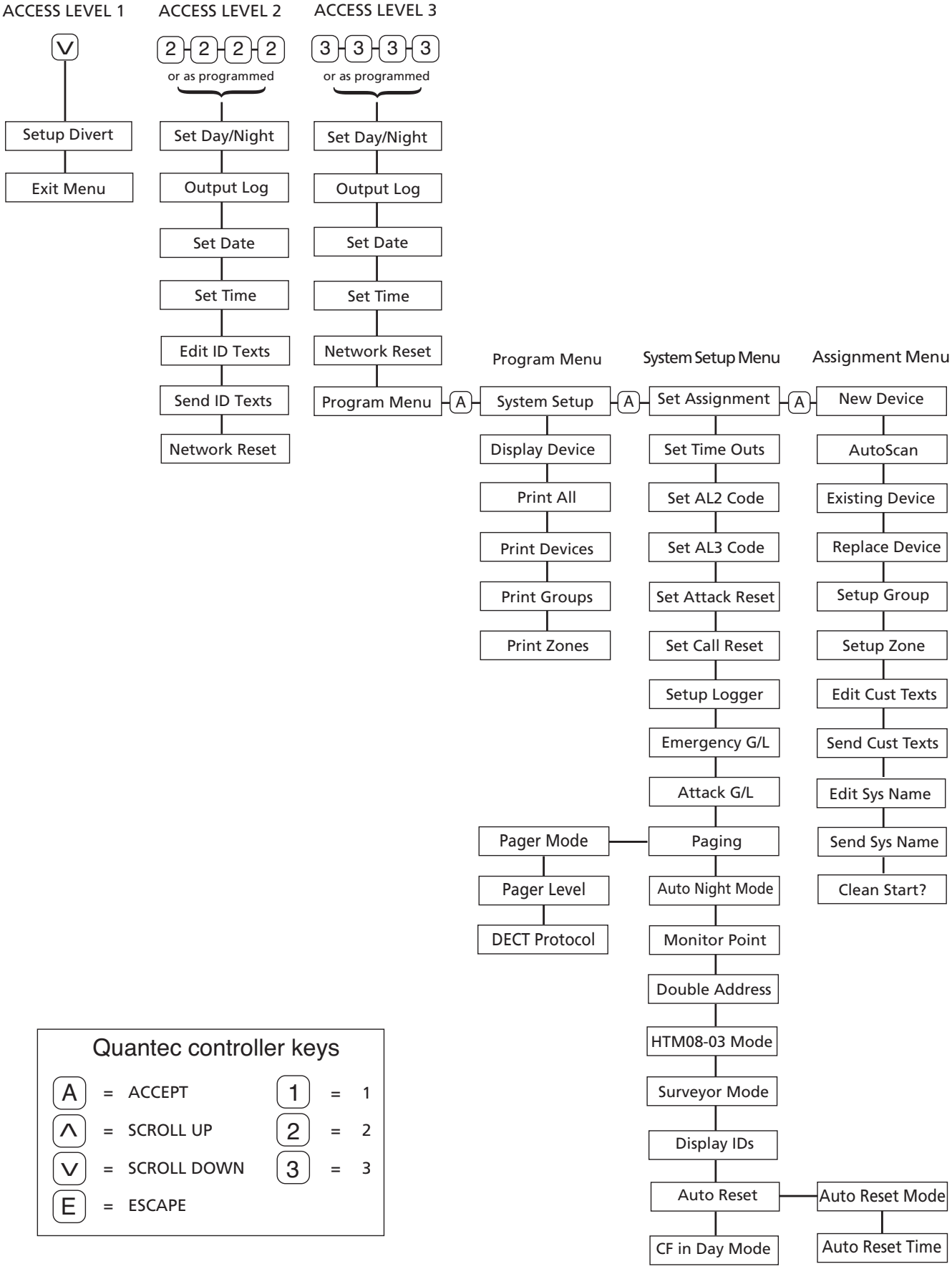
NETWORK SPLITTER No.	Limb	Device ID Numbers	Length
	1		
	2		
Location:	3		
	4		
	5		
	6		

NETWORK SPLITTER No.	Limb	Device ID Numbers	Length
	1		
	2		
Location:	3		
	4		
	5		
	6		

NETWORK SPLITTER No.	Limb	Device ID Numbers	Length
	1		
	2		
Location:	3		
	4		
	5		
	6		

NETWORK SPLITTER No.	Limb	Device ID Numbers	Length
	1		
	2		
Location:	3		
	4		
	5		
	6		

NETWORK SPLITTER No.	Limb	Device ID Numbers	Length
	1		
	2		
Location:	3		
	4		
	5		
	6		

NETWORK SPLITTER No.	Limb	Device ID Numbers	Length
	1		
	2		
Location:	3		
	4		
	5		
	6		

OVERVIEW OF ACCESS LEVELS