Installation Guide
Uniplex Series 1 & 2

DM

Important Safeguards

Read Instructions - All the safety and operating instructions should be read before the unit is operated.

Retain instructions - The safety and operating instructions should be retained for future reference.

Heed warnings - All warnings on the unit and in the operating instructions should be adhered to.

Follow instructions - All operating and user instructions should be followed.

Cleaning - Unplug the unit from the outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

Attachments - Do not use attachments not recommended by the product manufacturer as they may cause hazards.

Water and Moisture - Do not use this unit near water - for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, near a swimming pool, in an unprotected outdoor installation, or any area which is classified as a wet location.

Accessories - Do not place this unit on an unstable stand, tripod, bracket, or mount. The unit may fall ,causing serious injury to a person and serious damage to the unit. Use only with a stand, tripod, bracket or mount recommended by the manufacturer, or sold with the product. Any mounting of the unit should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.
An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

Ventilation - Openings in the enclosure are provided for ventilation and to ensure reliable operation of the unit and to protect it from overheating. These openings must not be blocked or covered. This unit should not be placed in a built-in installation unless proper ventilation is provided.

Power Sources - This unit should be operated only from the type of power source indicated on the manufacturer's label. If you are not sure of the type of the power supply you plan to use consult your appliance dealer or local power company. For units intended to operate from battery power, or other sources, refer to operating instructions.

Grounding or Polarization - This unit may be equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.

Alternately this unit may be equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding- type plug.

Power-Cord Protection - Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

Overloading - Do not overload outlets and extension cords as this can result in a fire or electric shock.

Object and Liquid Entry - Never push objects of any kind into this unit through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the unit.

Servicing - Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage of other hazards. Refer all servicing to qualified service personnel.

Damage Requiring Service - Unplug the unit from the outlet and refer servicing to qualified service personnel under the following conditions:
(a)   When the power-supply cord or plug is damaged.
(b)   If liquid has been spilled, or objects have fallen into the unit.
(c)   If the unit has been exposed to rain or water.
(d)   If the unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to its normal operation.
(e)   If the unit has been dropped or the cabinet has been damaged.
(f)   When the unit exhibits a distinct change in performance this indicates a need for service.

Replacement Parts - When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer. A replacement lithium battery is available from Dedicated Micros Ltd.

Safety Check - Upon completion of any service or repairs to this unit, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.

Coax Grounding - If an outside cable system is connected to the unit, be sure the cable system is grounded, U.S.A. models only. Section 810 of the National Electrical Code. ANS/NFPA No. 70 1981, provides information with respect to proper grounding of the mount/supporting structure, the grounding of the coax a discharge unit, the size of grounding conductors location of discharge unit. The wires and the connection of ground wires.

UNPACKING - The shipping carton is the safest container in which the unit may be transported. Save it for possible future use.

WARNING - TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user of this equipment that there are dangerous voltages within the enclosure which may be of sufficient magnitude to constitute a risk of electric shock.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Regulatory Notes

CE Mark

This product is marked with the CE symbol and indicates compliance with the European Community EMC directive 89/336/EEC.

This mark indicates that this product meets the following technical standards.

EN 55022 1987 - "Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment".

BSEN 50082-1 - "Electromagnetic compatibility - Generic immunity standard Part 1: Residential, commercial and light industry".

IEC 801-2 1984, IEC 801-2 1991 - "Electromagnetic compatibility for industrial process measurement and control equipment Part 2: Electrostatic discharge requirements".

IEC 801-3 1984 -"Electromagnetic compatibility for industrial-process measurement and control equipment Part 3: Radiated electromagnetic field requirements".

IEC 801-4 1988 - "Electromagnetic compatibility for industrial-process measurement and control equipment Part 4: Electrical fast transient/burst requirements".

A "Declaration of Conformity" in accordance with the above standards has been made and is recorded at: Dedicated Micros Ltd., Swinton, Manchester, England.

Table of Contents

1   Introduction

1.1   Purpose of this manual

This manual explains in detail how to install, set up, and operate the Uniplex Series 1 and Series 2 video multiplexers. The basic theory of multiplexing is also explained. Wherever possible diagrams and tables have been used to clarify detail.

1.2   How to use this manual

Throughout the manual commands that are entered via the keyboard are printed in the following format:

<p align="center"># 661 , <CAM 2> , <CAM 3>, *</p>

Spaces and commas are ignored, text in **<Brackets>** indicates a single key press. In the example above, the keys **# 6 6 1** and camera select keys **2 & 3** would be pressed followed by the ***** key. There are commands that offer an option to enter a user parameter the format used throughout the manual is displayed as follows:

# 830		(default 000 - English)
	000	English
	000	French
	002	German
	003	Spanish
	004	Italian
	005	Chinese

1.3   Unpacking the multiplexer

The unit should be carefully unpacked and the packing materials retained. Check that all the contents on the following checklist are present:

- *   Multiplexer
- *   External power supply
- *   Power lead with moulded IEC connector
- *   Rack mount conversion kit
- *   User Guide
- *   Operator's Guide
- *   Installation Guide
- *   Software Upgrade advice

The multiplexer keyboard is packed separately:

- *   Keyboard
- *   2m keyboard lead

1.4   Repacking the multiplexer

If the multiplexer is to be returned for repair or transported to another location the original packing must be used. The rack mount kit, if fitted, should be removed before transit.

The unit should first be wrapped in the polythene bag. The preformed end pieces are then placed at either side of the unit which can then be placed inside the cardboard box. The box should be firmly sealed using appropriate tape.

If the unit is to be returned for repair a valid returns number must be obtained from the Customer Services Department, refer to Returns Procedure for full details on returning a unit.

1.5   Documentation supplied with each Uniplex Series 1 and Series 2

User Guide

A basic guide to keyboard operation, display control and use of the Uniplex with a video recorder. The user guide contains the Program Log Record which is a step by step log entry chapter to create a permanent record of configuration details.

Operator's Guide

A simple fold out guide to the daily operation of the Uniplex.

Installation Guide

Installation, operation and configuration of the Uniplex.

Further copies of the above documentation can be ordered from the sales department.

2   Operation

The main function of the Uniplex Series 1 and Series 2 multiplexers is to record multiple cameras on a single video recorder. These images can then be retrieved and viewed as Full or Multi-screen displays on a video monitor. This method of sending images to tape is known as 'Time Division Multiplexing'.

There are three operating modes on the Uniplex units:
*   Live mode
*   Record mode
*   Playback mode

Live mode

Views live images directly from the 16 video inputs connected to the Uniplex, as Full screen or multiscreen displays allowing selected groups or all sixteen cameras to be viewed at one time.

The main monitor in Live mode displays camera titles and numbers, the baseline carries the time, date and time lapse mode.

Record mode

Sends time division multiplexed images from the selected video inputs to the video recorder.

When using commands *211, *611, *111 and *121, which sets or clears all cameras available from various functions, the commands operate even on the cameras that are not available. This state can be immediately rectified by pressing the live key which truncates the selection automatically to the maximum cameras available. Alternatively selecting the cameras that are not available on your system removes them from the above functions. This is confirmed by the extinguishing of the LED. During playback operation it is intended that the camera selections will operate even on those cameras that are not in the maximum available camera range. Therefore supporting playback tapes from other systems that have the more cameras connected.

Time division multiplexing

A standard video recorder captures twenty five frames, or images, per second and stores these one after another on the video tape. When played back these frames are displayed on a monitor and form a moving picture.

When the Uniplex records several cameras onto one tape each camera is recorded in turn one frame after another. If individual frames are examined upon playing the tape back, it will be seen that a different camera occupies each successive frame. This method of rapidly recording one camera after another is called 'Time Division Multiplexing'.

Each camera is recorded with it's own I.D. (Identification) number so that on playback the Uniplex can retrieve and coherently display the information previously recorded.

Non-synchronous camera recording

The Uniplex uses a 'Time Base Corrector' to send the camera images to the video tape at the correct rate. As the time base corrector compensates for unsynchronised cameras Uniplex can handle a variety of video sources, colour or monochrome (Note: Uniplex Series 1 is a monochrome unit only), and may be installed into an existing system without any modification to the cameras in use.

Time lapse video record

Typical Time Lapse VCRs can record between 3 and 480 hours of video on a single 3 hour tape. By reducing the number of frames sent to the video tape the time lapse recorder will achieve extended recording times. For example:

On a time lapse VCR set to record 12 hours of video onto a 3 hour video tape, the VCR records one video frame out of every four it receives. The VCR is then recording at a rate of about six frames per second. As the time lapse setting is increased the number of frames recorded per second is reduced.

To be compatible with time lapse recording the Uniplex must send images from the cameras at the same rate as the video recorder is recording them to tape. The time multiplex in the Uniplex counts in half frames or fields and the setting to control updating of the camera images is called the Field Delay. If the update of an image is every four frames the field delay would be twice the number of frames, i.e. Eight.

Field Delay = Delay between frames sent to the VCR in 50ths of a second.

Note: Video recorders that feature 'Long Play', 'Double Play' or 8 Hour recording on a four hour tape are **not** time lapse video recorders and the field delay should be set up as for a Standard VCR.

Playback mode

Uniplex decodes the images previously recorded on the VCR onto the operator main monitor. Depending on the type of recording these can be viewed as full or multi-screen displays.

2.1 Simplex & Duplex models

The Uniplex Series 1 and Series 2 are available as Simplex or Duplex units.

Simplex models

Simplex models have the capability to operate in one of the three operating modes, i.e. Live, Record or Playback.
* In Live mode the multiplexer will record what is being displayed on the main monitor.
* In Record mode the multiplexer sends full screen images to the VCR and allows cameras to be sequence displayed on the main monitor.
* Playback is dependent on the type of recording made. When playing back a tape created in record mode the Uniplex can display on the main monitor a single camera of a combination of cameras in a multiscreen.

Duplex models

Duplex models are capable of carrying out two of the operator modes simultaneously.

*   Live and record mode, display one or a combination of cameras while sending full screen images to the VCR.

*   Record and playback mode, this requires two VCRs. The multiplexer sends images to one of the VCRs, while the other VCR is playing back a previous recording.
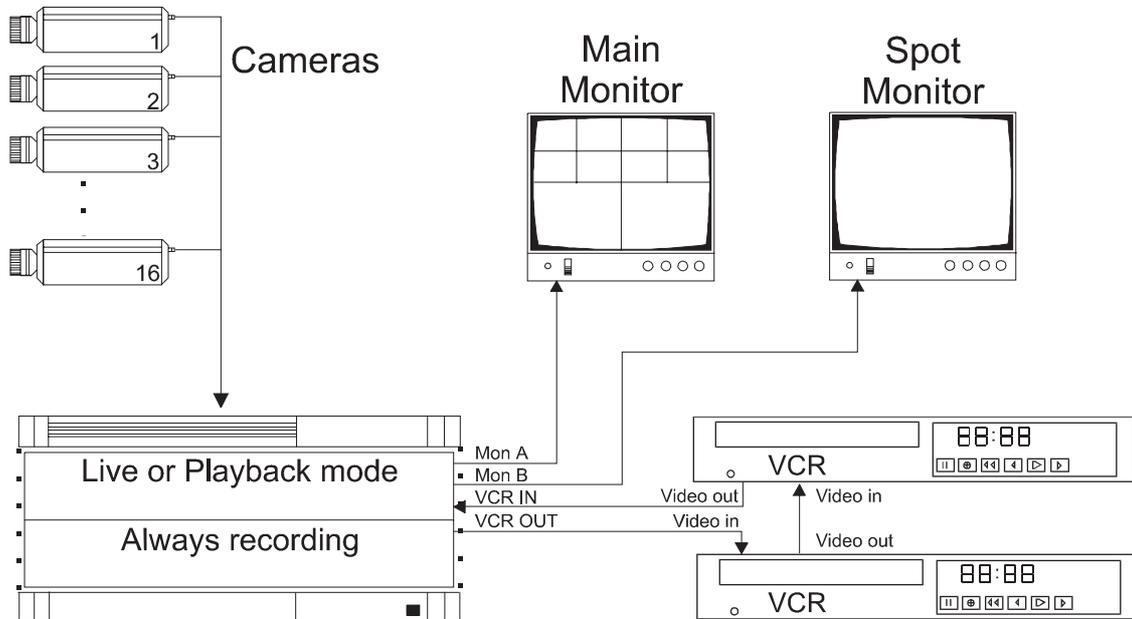
Fig 1. Operation of Duplex Units

2.2   Camera and screen control

The following is a brief outline of the screen options available on the Uniplex. A detailed description can be found in the Uniplex User Guide, and setup codes in the Screen Control chapter of this manual.

Full

Full screen display shows a selected camera full screen on the main monitor, or a sequence of selected cameras.

Multiscreen

There are five multi-screen displays available; 8 plus 2, 12 plus 1, 16 way, 4 plus 3 and 9 way. To display one of these options the multi-screen key is pressed until the required screen is displayed.

Picture in picture

There are eight picture in picture displays, these are selected by pressing the picture in picture key until the required screen is displayed. Again specific cameras can be displayed in chosen segments by highlighting the segment and pressing the corresponding camera key.

2.3   Screen segment control

The Uniplex offers the option to display a selected camera in a particular screen segment. This enhances the surveillance ability of the Uniplex as the operator can select specific cameras to be viewed in a multiscreen on the main monitor.

The arrow keys are used to move between segments, the camera number will be highlighted to indicate which segment is being controlled.

3   Features of the Uniplex Series 1 and Series 2

This chapter gives an outline of the features on the Uniplex Series 1 and Series 2 multiplexers.

It can be used in conjunction with the relevant chapters in this manual which detail all setup commands required to activate these features.

An Operators Guide has also been provided for ease of use, however Dedicated Micros recommend the operators read this section of the manual.

Features of the Uniplex multiplexers:

* Flexible communication network, c-bus (RS485) allows upto sixteen Uniplex Series 1 or Series 2 multiplexers to be controlled from a single Uniplex keyboard or a personal computer

* Six function keys that can be programmed to activate a string of pre-defined commands

* Movement detection can be programmed for each individual camera input and has a relay output that can be connected to external equipment

* Multi-unit video switching via the c-bus video switcher accessory

* Choice of coaxial, c-bus and DTMF telemetry control fitted as standard

* Joystick control option of variable speed pan/tilt/head and domes

* Compatible with Gateway, Dedicated Micros GUI software for PC control

* The unique e-support function enables servicing and commissioning to be carried out remotely from the multiplexer

3.1   c-bus network

The Uniplex Series 1, Series 2 and DX Pro multiplexers use a flexible communication network c-bus (RS485), which allows upto sixteen multiplexers to be controlled from upto sixteen operator keyboards. Other Dedicated Micros accessory products are available offering new features and reduced installation overhead through connection to the c-bus network
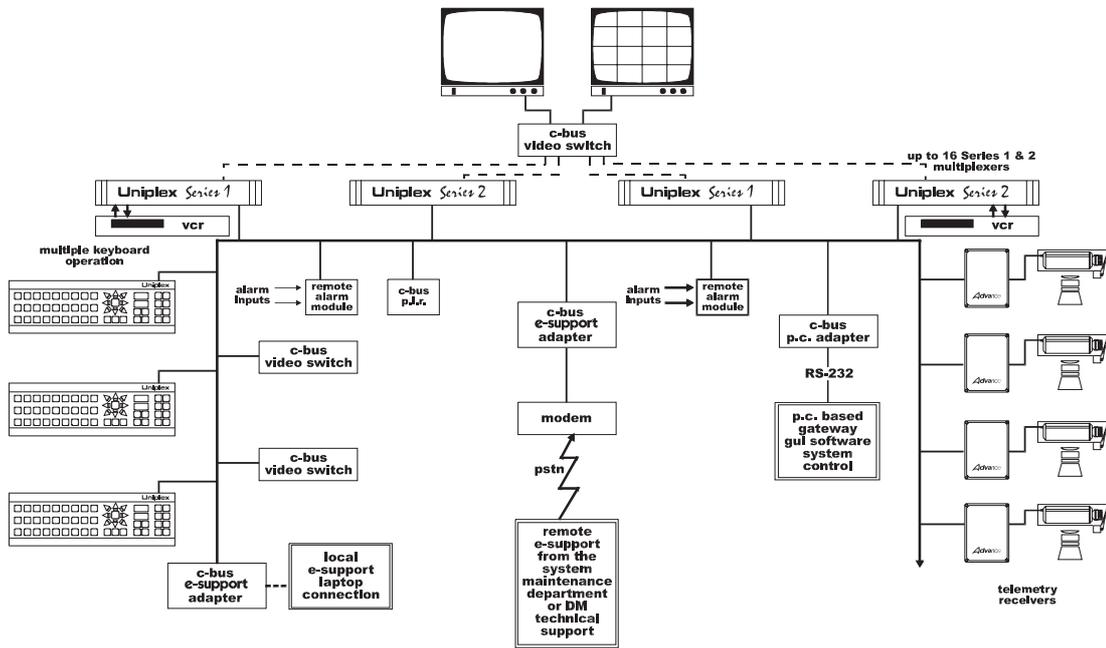
Fig 2. Typical System Layout

Each unit connected to the c-bus network is given it's own unique address. This allows the network to identify the unit, analyse the information sent and ensure the action it conveys reaches the correct Uniplex multiplexer.

3.2   Function keys

The Uniplex has six function keys that can be programmed to carry out a string of commands. These commands are stored in the units memory, and when the corresponding function key is pressed the unit will automatically carry out the pre-programmed commands.

The Uniplex can be programmed so the operator has control of the function keys when the keyboard security has been locked. This allows the operator to carry out specific functions without requiring 'free' access of the unit, e.g. a function key is programmed to change the time lapse mode from 24 hours to 72 hours for weekend recording.

Note: It is necessary that the operators is aware of the function key programs so that keys are not activated incorrectly.

3.3   Movement

Each camera input can be individually programmed to have Movement detection activated.

The Movement option gives a visual indication in Live mode on the main monitor display, by surrounding the active area with a movement box, therefore bringing it to the immediate attention of the operator.

In Record mode, Movement determines the type of recording made. The Uniplex can be programmed to record cameras with movement only or interleave record cameras with movement.

A relay output can also be set to trigger when movement is detected. The relay is programmed to be a normally open or normally closing contact, and can be connected to external equipment to give a physical indication to the operator.

3.4   Multiport control (MPC)

Multi-unit control is initiated from the operator keyboard and transmitted over the c-bus network. It allows upto 16 Uniplex multiplexers (Series 1, Series 2 or DX Pro), to be controlled from either a single operator keyboard or upto sixteen remotely positioned operator keyboards.

Each operator can log onto any multiplexer configured in the system by selecting one of the 8 MPC keys, situated on the right of the keyboard. Each key has a toggling action to activate switching between all sixteen multiplexers, i.e. Key 1 when initially pressed the keyboard logs onto multiplexer 1, pressed again it acts as a toggle switch and logs the keyboard onto multiplexer 9. The LED illuminates to indicates which multiplexer the keyboard is controlling.

3.5   c-bus accessories

Video switcher
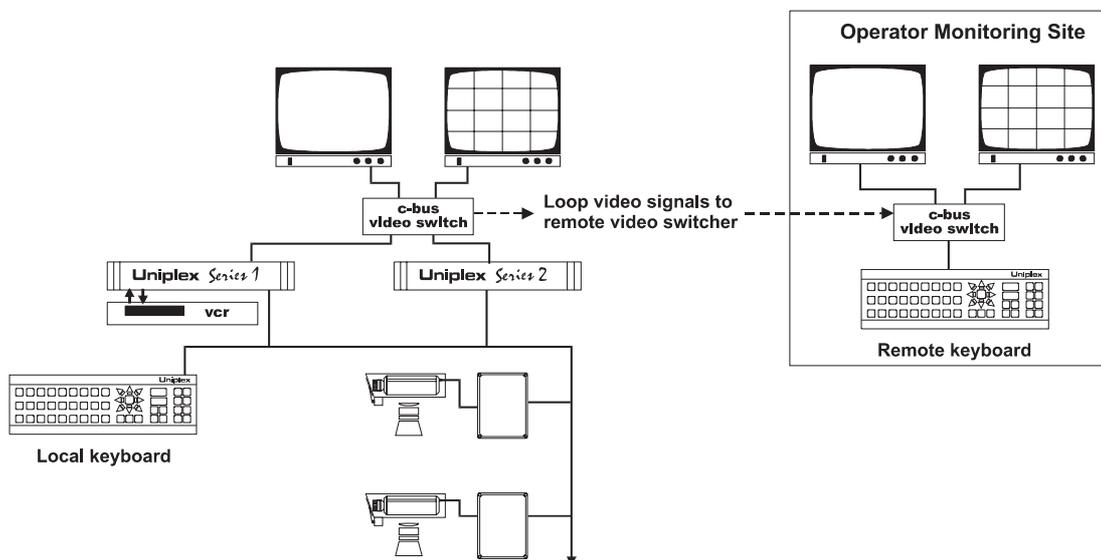
In multiple operator controlled systems it is beneficial to have a single main and/or spot monitor, so the entire system can be viewed, at each manned site. This can be achieved by using the c-bus Video Switcher.

Upto sixteen video switchers can be connected in one system configuration. Each of the switchers is directly associated to the keyboard at the manned site and follows the operator commands, i.e. MPC key for multiplex 2, FULL, CAM 1.

As each video switcher mimics it's operator keyboard it must therefore be set to the same address. If the keyboard is set to address 032 then the Video Switcher associated must also be set to address 032, for jumper link positions on the c-bus Video Switcher refer to the product manual.

Alarm module

c-bus alarm modules send remote alarm signaling, from around a protected site, to the Uniplex surveillance system. Each module can accept upto sixteen separate external alarms.

Each Uniplex multiplexer is programmed to carry out pre-determined functions when an alarm is received. All sixteen alarms can be connected to either, one or a number of alarm modules depending on where the alarms are situated around the site.

Before the Uniplex accepts alarms from the c-bus alarm module each input must be programmed for; contact status (normally open/closed), the type of alarm and the address of the alarm module.

To further enhance the alarm function of the Uniplex all alarm programming can be carried out using the e-support system of the Uniplex either locally or remotely via PSTN.

For setting the c-bus address of the alarm module refer to Chapter 4 Setting c-bus Address and the relevant c-bus Alarm Module manual.

PIR Alarm Module

For installations requiring a single alarm activation the c-bus PIR can be used. The PIR module is automatically identified by the c-bus network when the code # 590 001 - set alarm input to PIR, is entered on the respective Uniplex.

The c-bus address of the PIR start from 144 onwards, these are addressed using an internal jumper link. As the PIR is directly associated with an alarm input, when setting the alarm type and address on the Uniplex, this address must be reflected on the internal jumper link. Refer to the relevant Product Documentation for information on setting the links.

Telemetry
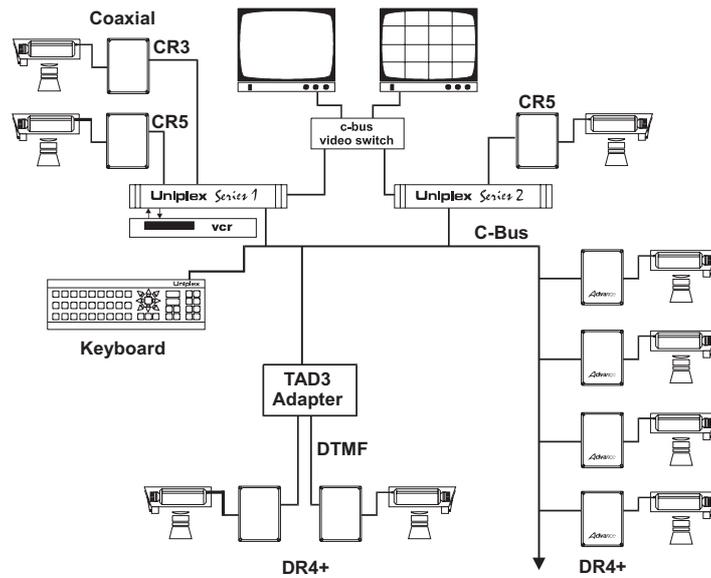
The Uniplex system can be configured to control various telemetry units; coaxial FSK signaling is Compatible with Dedicated Micros CR 3, CR 4 A.C. Receivers and the variable speed CR 5.

The DR 4 + Receiver can also be controlled either via the c-bus network or through the c-bus DTMF Adapter using drop wire, this is especially useful in noisy environments.

Once configured the Uniplex requires programming as to the type of receiver connected to a particular camera. This is setup by using the code #891 xxx, where xxx are the telemetry options available on the Uniplex.

Note: For option # 891 002 CAT Pelco, this offers direct coaxial control of Pelco receivers, for information on these receivers contact Pelco.

As already described each unit connected to the c-bus network must be setup with it's own unique address. Therefore, if telemetry is being controlled via the c-bus each telemetry receiver must have it's internal jumper link set to reflect the camera input, i.e. Input 1 to Input 16.

For information on Dedicated Micros receivers refer to the relevant product manual.

It is possible to use an optional joystick to control the telemetry receiver, this must be calibrated before use. Refer to Chapter 4 Setting c-bus Addresses for calibration details.

PC control

The Uniplex can be fully controlled by a personal computer. Dedicated Micros graphical user interface software, Gateway, installed on the PC will gives complete control of all Uniplex features.

The personal computer is connected to the c-bus network through the Dedicated Micros PC c-bus accessory. This provides forward compatibility through the PC serial port onto the c-bus network.

The PC Adapter provides a unique c-bus address in a similar way to the operator keyboard as detailed above. A c-bus video switcher tagged to the same address can then follow any Uniplex selection from Gateway with the appropriate video switcher response.

As shown the personal computer connects to the c-bus PC adapter via a 25 way D-type to 9 Way D-type connectors, the following diagram illustrates the pin connection for the manufacture of this cable.
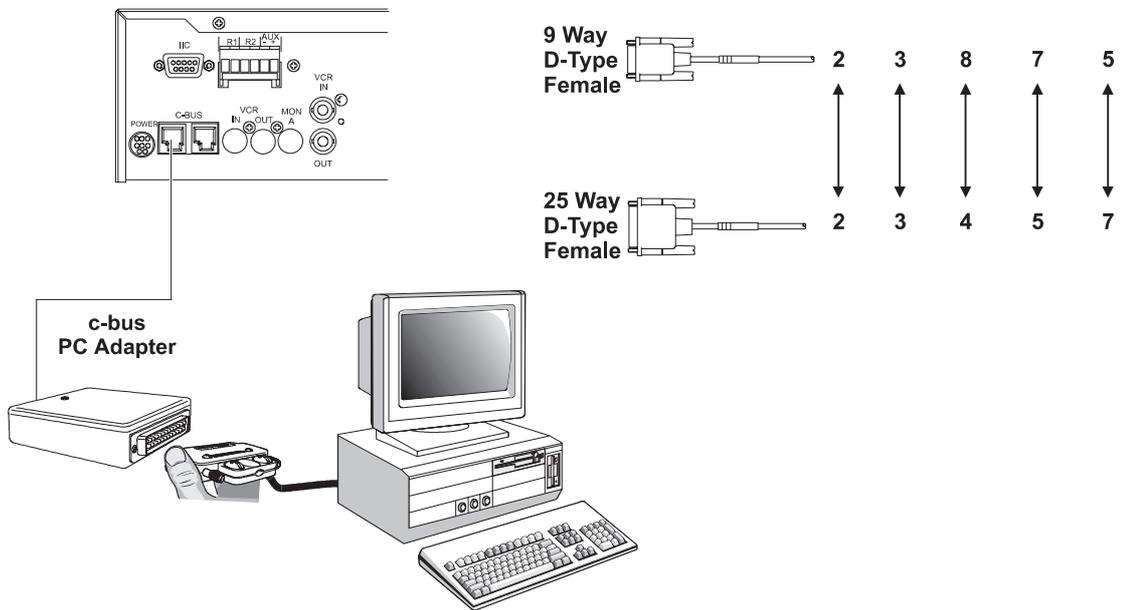
e-support

This unique feature is provided by connecting the e-support adapter between the modem and the c-bus network as shown in diagram.

Remote configuration services can then be directed towards any of the connected multiplexers, from either the Dedicated Micros Technical Service helpline or any Installation company equipped for e-support.

Local connection between an Engineers PC running the e-support package can also be configured by substituting the modem for a null modem cable. This will connect the e-support adapter to the PC.

When connecting the PC locally a 'null modem' cable will be required, refer to the illustration shown for pin connections.
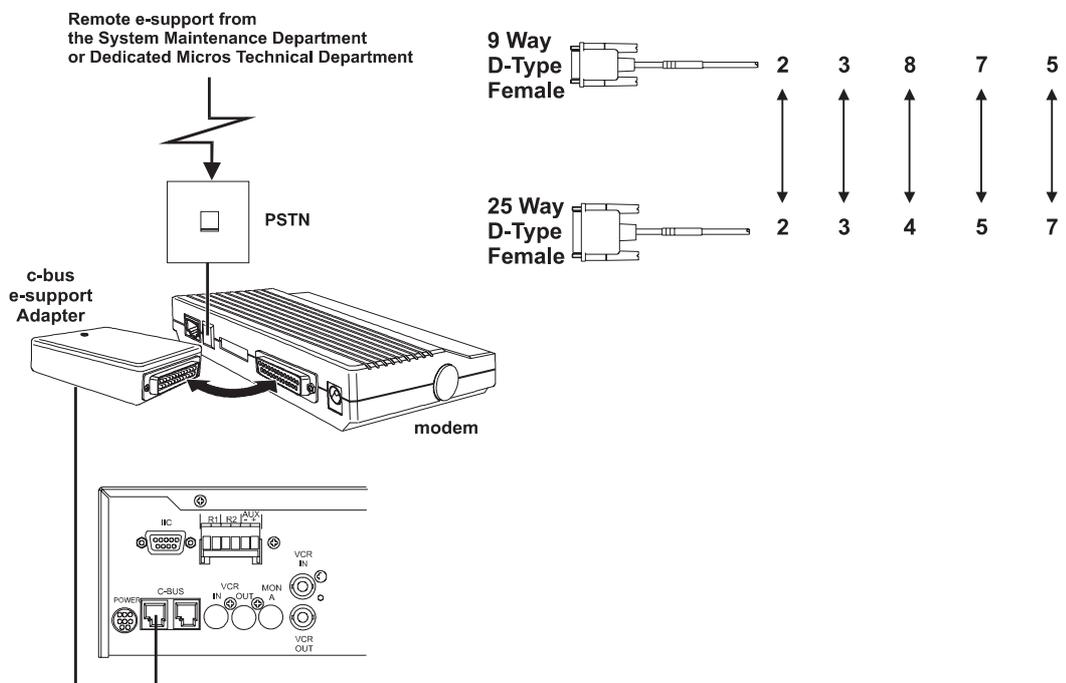
4   Setting c-bus Addresses

4.1   Setting the Uniplex address

The Uniplex multiplexers automatically detect other Uniplex units on the same bus and set their addresses accordingly each time they are powered up. However, as multiplexers may be added or taken out of the system in the future it is recommended that all multiplexers and accessories, connected in the system, be set to a default address which will be held in the units memory and remain unchanged even after a power reset.

To set the address carry out the following:

1.   Log onto the relevant Uniplex and enter the code: # 842

2.   This gives the option of changing the address within the parameters of 001 to 016

3.   Enter the new address

The Uniplex now has a new address on the c-bus network, ensure that no two units on the c-bus network have been set to the same address.

4.2   Setting the Uniplex keyboard address

The keyboard addresses are set from 032 to 047. This allows upto sixteen keyboard to be connected in any one system. If more than one keyboard is being employed each must be individually programmed with it's own unique address, therefore the first keyboard must be set to address 032, the second to address 033 and so on.

To setup the keyboard carry out the following steps:

1.   Remove the power from the keyboard, if the keyboard is sited local to the multiplexer remove the c-bus connector. If the keyboard is remote remove the external power supply.

2.   Press and hold the Address Set key (CAM 9)

3.   Power up the keyboard

4.   Press the relevant Address Select Key, once the address has been selected release the Set Address key (CAM 9), e.g. FULL=032, 4 WAY=033....CAM 8=047

5.   Check the Address Set LED flashes to indicate the setup has worked

Note: Ensure no two keyboards are set for the same address.
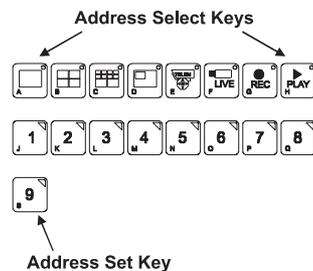
4.3 Setting c-bus alarm module address

As detailed in the diagram below if one alarm module is connected to the system the multiplexer will automatically identify the module when the alarm type is set to 'ALARM'. The default address for the module will be set at 096, and alarm 1 set as contact 001, alarm 16 as contact 016.

If more than one alarm module is connected to the c-bus network, any of the modules can be programmed to trigger any alarm input on any of the Uniplex multiplexers. Therefore each module must be programmed for it's respective multiplexer and it's own unique address.

It is recommended that in such systems an alarm plan is designed for alarm inputs 1 to 16 on each of the multiplexers. The alarms can then be set in table form to simplify the programming of the address and contact numbers.
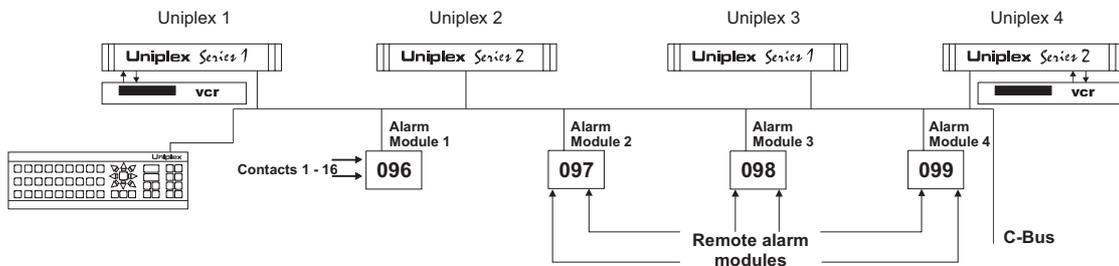
Setting the Uniplex number 1 as follows:

Alarm Inputs	Alarm Module Address	Contact No.
1	96 (Module 1)	001
2	97 (Module 2)	001
3	98 (Module 3)	001
4	99 (Module 4)	001

In this system the first alarm contact on each of the four alarm modules will trigger the alarm operation on Uniplex 1 alarm inputs 1 to 4.

To accomplish this the following codes must be programmed on Uniplex 1.

590 <CAM 1> 000   Selects 'ALARM' and the default address of 96, alarm module 1, contact 001 is automatically set to Uniplex 1, alarm input 1

#590 <CAM2> 002	This sets the input to 'OTHER', i.e. Other than the default address 096
# 591 <CAM 2> 097	Set the address for the alarm module associated with alarm 2 to 097
# 592 <CAM 2> 001	Sets contact 001 on the second alarm module as the input trigger for Uniplex alarm input 2

All other alarm inputs are set in same way .

4.4   Setting the telemetry receiver address

The Uniplex Series 1 and 2 are compatible with a number of telemetry receivers, these are setup through the code # 891 xxx. Once a telemetry receiver has been selected for each individual camera input, i.e. # 891 <CAM KEY> xxx, the telemetry receiver must be set to reflect the video input it is associated. This is achieved by setting the internal jumper link to reflect the camera input number. Refer to the relevant Product Documentation for details on the link settings.

Joystick calibration

When using the optional joystick to control telemetry it will be necessary to calibrate the joystick before use. This sets the minimum and maximum positions of the joystick. The following details the procedure for calibration

STEP	INSTRUCTION	REMARK
1.	Remove power from the keyboard	If the keyboard is situated locally remove the c-bus lead, if situated remotely remove the Power supply lead
2.	Connect the joystick to the 15 way D-type on the rear of the keyboard	
3.	Press and retain the 'Joystick Calibration Key'	This is the 'HOLD' key
4.	Power up the keyboard while still pressing the 'Joystick Calibration Key'	One of the 'Joystick Calibration LED's' will illuminate of flash, refer to illustration below
5.	Release the 'Joystick Calibration Key'	The 'HOLD' key
6.	Rotate the joystick around it's most extreme positions	

7.	Release the joystick and allow it to return to it's centre position	This records the minimum and maximum positions of each axis on the joystick
NOTE:	The recording area is indicated by the state of the 'Joystick Calibration LED's'. If the LED is fully illuminated and does not flash, the joystick is in the recording area and the minimum and maximum position are being stored for each axis. If the LED is flashing it indicates the joystick has been moved away from it's centre position but has not reached the recording area yet.	
8.	Check the 'Joystick Calibration LED's' are all extinguished	If any LED's are illuminated this indicates the direction of any trimming that may be required
9.	Using the joystick trimming controls adjust as necessary, checking the LEDs during this process	Adjusting the trims can effect the minimum and maximum positions, therefore these will need to be reset
10.	Once the adjustments have been made move the joystick around it's most extreme positions.	This will set the new minimum and maximum points after trimming
11.	Release the joystick and allow it to return to it's centre position	Note: It may be necessary to adjust the trims again
12.	Check the LED's and adjust if necessary	Once the minimum and maximum positions have been recorded and the centre set, these need to be stored
13.	To store the calibration values press the 'Joystick Calibration Key'	The 'HOLD' key
IMPORTANT:	If any key other than the 'Joystick Calibration Key' is pressed, the settings will not be stored and the values of the joystick will return to default.	

Joystick Calibration LED's

Joystick Calibration Key

5 **Installation**

Uniplex multiplexers link onto the c-bus network through the MMJ connectors (refer to Fig 3)on the rear panel of the multiplexer. The two MMJ connectors provide a loop in and loop out connection to the c-bus.

Camera, video and monitor connections are via BNC connectors.

An IIC connector is provided for connection of non multi port control keyboards, offering compatibility with previous Uniplex Series 1 and Series 2 keyboards in a 'stand alone' multiplexer configuration.

The multiplexer is supplied as a desktop unit which can be readily rack mounted using the rack mount kit supplied with each machine.

When used with the 19 inch rack mount kit the Uniplex is 2U in height.

5.1 **Rear panel connections**
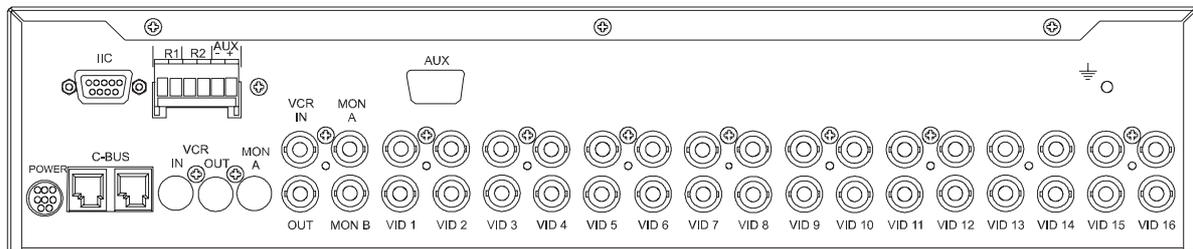
Fig 3. Rear Panel Layout

5.2 **Power inputs**

The Uniplex is powered via an external 240V-12V power supply which plugs into the rear panel using an eight pin mini Din connector.

Mains frequency can be either 50 or 60 cycles.

5.3   Loop through video (camera) Inputs

Video, or camera, inputs are via BNC sockets. These are duplicated as loop through sockets to allow linking the cameras that feed the multiplexer through to other equipment.

**LOOP THROUGH TO
EXTERNAL EQUIPMENT**
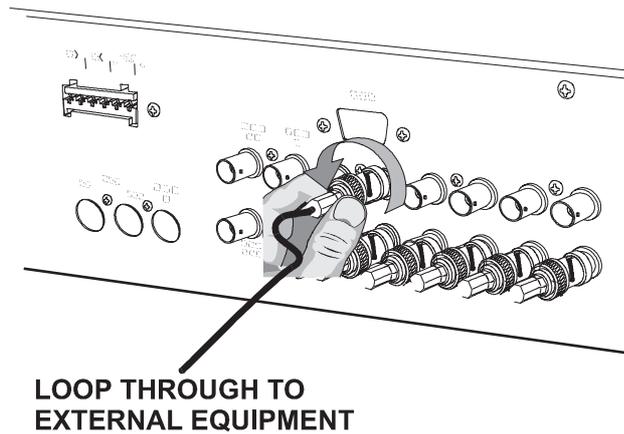
Fig 4. Looping Inputs

Camera termination is software selectable on each individual camera input, refer to Setup. Once all cameras are connected to the Uniplex they require setting up for either colour or monochrome cameras and the number of cameras on the system.
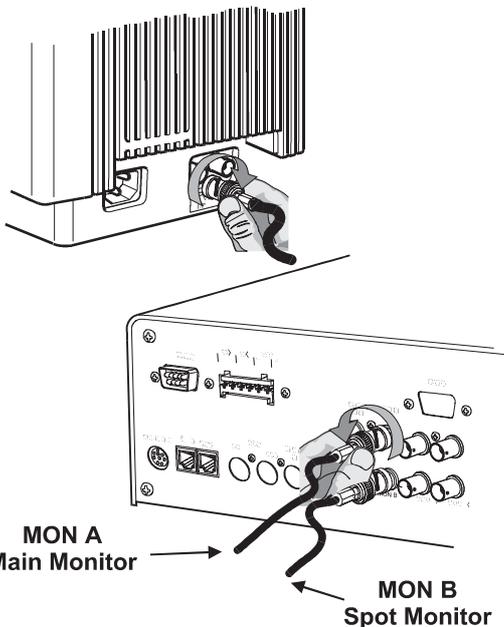
5.4   Monitor outputs

The Main Monitor is connected to MON A and the Spot Monitor is connected to MON B.

Monitors should be terminated at 75 ohms. Most monitors have a switch at the rear that should be set to 'LOW', 'ON' or '75ohm' as opposed to the 'Hi Z' or 'OFF' position.

Note: The Uniplex Series 2 Simplex multiplexer does not have S-VHS monitor facilities.

S-VHS features are supported through the provision of S-VHS connectors for the Main monitor (MON A), VCR in and VCR out on Duplex models and S-VHS connectors for VCR IN and VCR OUT on Simplex models.

**MON A
Main Monitor**

**MON B
Spot Monitor**

Fig 5. Monitor Connections

5.5 Setting up the main monitor

The Main Monitor displays the digital output from the Uniplex. Cameras can be displayed as Full, Quad, Multiscreen or Picture in Picture on the main monitor.

It has been designed to display the digital picture centrally on a studio standard monitor with no overlap at the edges of the screen, if on initial power up the monitor cuts off part of the display the monitor is overscanning and requires realigning.

Most monitors have overall width and height controls located internally. This adjustment is simple but due to the high voltages present in monitor circuits this alignment should only be entrusted to qualified personnel.

Warning: Voltages at the rear of a monitor can be in the region of 25,000 volts and the greatest care must be taken when working on this type of equipment. Remember these voltages persist even after the monitor has been turned off.

5.6 Connecting the keyboard

The keyboard(s) connects to the main control unit(s) via the c-bus network. Connection in to and out of the keyboard is via MMJ connectors located on the rear right hand side of the keyboard. The supplied network keyboard lead also provides local power to the keyboard.

If however, the keyboard is sited remotely from the Uniplex an additional power supply (available from DM) will be required to power the keyboard. This plugs into the 8 pin mini Din on the rear of the keyboard.

The Uniplex also offers compatibility with the previous style Uniplex keyboard for direct control. These can be connected to IIC 9 pin Din connector on the rear panel. The code for selecting keyboard types is be programmed as part of the Setup procedure

Connection to previous style Uniplex keyboards

Connection to optional joystick for telemetry control

External Power Supply connection remote keyboards
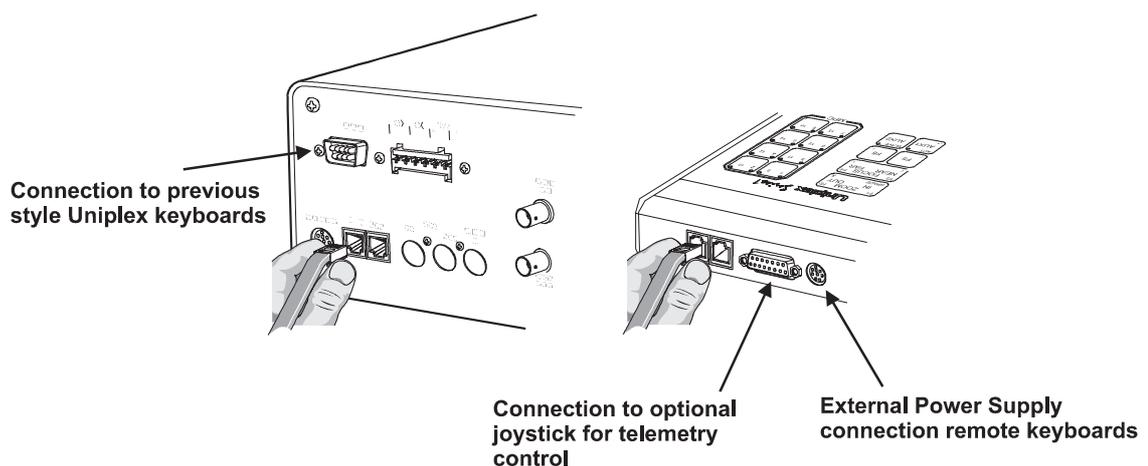
Fig 6. Connecting the Keyboard

5.7   Video recorder connection
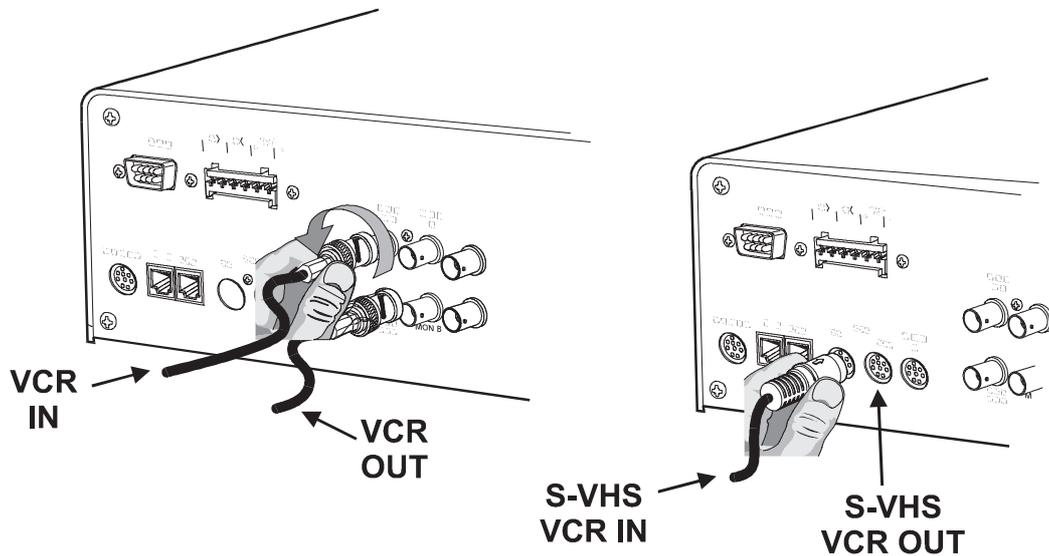
Fig 7. Video Recorder Connections

Connection to a video recorder is made by the VCR OUT and VCR IN connectors on the rear panel

* Multiplexer BNC connector 'VCR OUT' to recorder BNC connector 'Video In'
* Multiplexer BNC connector 'VCR IN' to recorder BNC connector 'Video Out'

For VCR connection when using S-VHS on the Uniplex Series 2 units only:

* Multiplexer S Video type connector 'VCR OUT' to recorder S Video type connector 'Video In'
* Multiplexer S Video type connector 'VCR IN' to recorder S Video type connector 'Video Out'

Termination of the VCR IN/OUT signals are programmed using the code # 804, refer to Setup, the default setting of the unit is termination on (000).

The Uniplex can be configured to accept and alarm from the VCR, this would be connected to AUX -/+ connector on the rear of the multiplexer.

6   Setting up the Uniplex

This section is to be used in conjunction with the Program Log Record, Chapter 9 of the User Guide, where a record can be made of the installation settings for future reference .

If the Uniplex is being used for the first time all the settings will have been reset at the factory. If the Uniplex is being reprogrammed it may be best to reset, or initialise, the Uniplex before running through any set up procedure.

6.1   Full system reset   * 999 * 999

The Uniplex can be fully reset by entering the code: *** 999 * 999**, for security reasons the code must be entered twice to effect a full system RESET.

This code resets the Uniplex completely. All camera titles will be lost as will any user parameters previously entered. The Time and Date are unaffected by this command.

After Initialisation the Uniplex is set up as follows:

Operational Mode	Live mode
Screen Mode	Full
Main Monitor	Camera 1
Spot Monitor	Camera 1
Sequences	All available cameras will sequence
Zoom	All cameras zoomed out, zoom centralised
Max No of cameras	16
Seq rate, Main & Spot	10 seconds
MSC key	Selects 8 + 2 screen
P-in-P	Top left of screen, single quadrant
Camera Titles	01:CAMERA 1, 02:CAMERA 2, etc..
Titles	Recorded to tape
Time and Date	Recorded to tape
Foreground title colour	White
Background for titles	Black
Help screens	On-screen help enabled
Record Mode	All cameras selected
Camera types on color systems	All colour, asynchronous
Camera types on black and white systems	All black and white, asynchronous
Interlace correction	On
Function keys	Cleared
Alarm strings	Cleared
Video recorder selected	Standard or double play VCR
Security Code	Zero
Movement cameras	Non selected
Movement grids	All selected
Movement scene type	Outdoor low sensitivity

Movement delay time	10 seconds
Camera/VCR input termination	On
c-bus Address	Auto sets on primary units

6.2   On-screen help commands   # 000 xxx

On-screen help

# 000		(default, help after * or #)
	000	On-screen help after * or #
	001	On-screen help after * or # plus 1 digit
	002	On-screen help after * or # plus 3 digits
	003	No on-screen help

Uniplex Series 1 and Series 2 is supported by a complete set of on-screen help menus. Normally the help menus will appear as soon as either the * or # keys are pressed. Experienced operators may wish to turn off this help facility or to select help only after a certain number of key presses.

6.3   Setting the time and date   # 020 , # 021

Uniplex operates on a twenty four hour clock and the time information must be entered as a four digit number.

The date is automatically advanced at midnight and is entered as a six or eight digit number giving the option of the year being displayed as two or four digits.

Note: **The Series 1 and 2 multiplexers are date and time compatible with the next millennium.**

Example: On the 31.12.1999, 23.59 the units, with the year display set to four digits, will 1 minute later update to 01.01.2000, or 01.01.00 for those set to a two digit format.

To set the time

Setting the time

# 020	H H	M M
	Hours	Minutes

Note:

           All four digits must be entered.

Examples: 9.05 am would be entered as   # 020 09 05
          10.35 pm would be entered as   # 020 22 35 (24 hr clock)

To set the date

Setting the Year Display Format

# 022		(default, 000)
	000	Select 4 digit format for year
	001	Select 2 digit format for year

Setting the date

# 021	D D	M M	YYYY
	Day	Month	Year

Note: All six or eight digits must be entered.

Examples: Two Digit Format for year

19th May 1997 would be entered as   # 021 19 05 97
4th August 1997 would be entered as   # 021 04 08 97

Four Digit Format for year

19th May 1997 would be entered as   # 021 19 05 1997
4th August 1997 would be entered as   # 021 04 08 1997

6.4   Select language `   # 830 xxx

As the Uniplex is a multi-language unit, it can be programmed to display screens in a number of languages. As standard the unit is set to display screens in English.

Set Language

# 830		(Default - English)
	000	English
	001	French
	002	German
	003	Spanish
	004	Italian
	005	Chinese

6.5   Set keyboard type   # 801 xxx

The Uniplex automatically identifies which keyboard is being used to control the system when connected via the c-bus network, however if a previous generation keyboard is used to control the Uniplex (connection is made to the IIC connector) the keyboard in use must be setup using the code:

Note: MPC control is not available on previous generation keyboards

Select Keyboard Type

# 801		(default 002)
	001 002	Series 1 keyboard (standard) Series 1/Series 2 (Telemetry) keyboard

6.6   Auto Detect Cameras   * 800

Cameras connected to the multiplexer can be automatically detect in two ways; if a camera is connected to the multiplexer and what type of camera (either colour or monochrome)

Enter the code * 800 and the multiplexer will scan each video input check for the two above aspects. Once the check has been completed the multiplexer will display the Auto camera select screen, this identifies:

*   Which inputs have cameras connected
*   Number of cameras connected
*   Number of colour cameras
*   Which cameras are colour and which are monochrome.

Note: If a camera is not detect on the multiplexer this is also reflected when identifying the camera type (i.e. colour or monochrome).

```
                    Auto camera select
                         * 800
                              1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
    CAMERAS DETECTED     = 12  0 0 0 0 0 0 0 0 0 0 0 0 - - - -

    COLOUR CAMS          = 10  0 - 0 0 0 0 0 0 0 0 0 - - - - -

    MAX CAMS CONFIGURE TO = 12
```

Key
Cameras Detected
'0' - Camera present
'-' - Camera not present

Colour Cameras
'0' - Colour camera
'-' - This is dependant if a camera has
        been detected.
        If a camera is detected = Monochrome camera
        If camera not detected = camera colour not detected

6.7   Set maximum number of cameras   # 800 xxx

The number of cameras connected to the multiplexer can easily be set by using the Auto Detect command * 800, however if more cameras are connected or the camera type is changed the maximum number of cameras or type will change. Instead of carrying out an auto detect the maximum number of cameras can be programmed using this command.

Maximum Number of Cameras

# 800		(default 016)
	001 to 016	Maximum number of cameras attached to Uniplex

Example: If five cameras are connected to the Uniplex the code would be # 800 005 or, if twelve cameras are in use: # 800 012.

Note: When this code has been set, no cameras of a higher number can be selected.

6.8   Terminating camera inputs   # 802 / # 803

As loop through is available on all camera inputs, each input must be individually set to high impedance for loop through connection to external equipment, e.g. Video matrix, monitors, etc. All inputs are set to 75 ohm termination on as default.

Note: When looping camera inputs through the Uniplex the external piece of equipment connected to the camera must be correctly terminated.

Set Termination for Camera Inputs

		Cameras														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Termination on	# 802																
Termination off	# 803																

Example: Video inputs VID 1 to VID 4 are looped through set as follows:

 # 802 <CAM 1>, <CAM 2>, <CAM 3>, <CAM 4>, *
As camera inputs are set to termination on as default all other cameras will not need programming, if for some reason this is not the case to set termination on carry out the following:
 # 803 <CAM key>, *

Note: It is important that any cameras changed from loop through to no loop through are selected to termination ON.

6.9   Select termination for VCR   **# 804 xxx**

Loop through is also available on the VCR connection. The input default is set to on, to program the Uniplex to termination OFF use the code:

Note: The command 001 selects both input and output signals to high impedance.

<div align="center">

Select Termination for VCR

</div>

# 804		(default 000)
	000	VCR input termination = ON
	001	VCR input termination = OFF

6.10   Select colour / monochrome cameras   **# 850 / # 851**

Note: This option is applicable to Series 2 multiplexers only.

The Uniplex Series 2 multiplexer can be connected to a mixture of colour and monochrome (black and white) cameras. As the colour type of the camera can automatically detected using the code * 800, this code would be used if any of the cameras already connected to the unit are changed, i.e. If a colour camera is changed to a monochrome camera, it would not be necessary to carryout an auto detect as only a single camera has been changed.

By default all cameras are set to colour, monochrome cameras must be defined with the following code:

<div align="center">

Colour / Monochrome Camera & VCR selection

</div>

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	VCR
Colour	**# 850**																	
B & W	**# 851**																	

<div align="center">

(Terminate entries with the * key)

</div>

Example: If cameras 3, 6 & 12 are black and white set these with the code:

<div align="center">

 # 851, <CAM 3>, <CAM 6>, <CAM 12>, *

</div>

If at a later date camera 12 is replaced with a colour camera use the code:

<div align="center">

 # 850, <CAM 12>, *

</div>

Note: It is most important that monochrome cameras are correctly defined, failure to do this will result in reduced mono picture quality.

6.11   Camera colour adjust   * 801

Once the camera colour type has been set the amount of colour on each of the colour cameras can be adjusted.

Select the camera to be adjusted to be displayed on the main monitor, enter the code:

**   * 801**

Using the left and right arrow keys will increase or reduce the amount of colour on the camera.

The range of colour can be adjusted from +8 to -8. Pressing the '0' key will return the colour level back to normal (+0).

Once the colour level has been adjusted to the desired level press the '*' key to end the adjustment. The following screen will be displayed on the main monitor to confirm the new colour level.

Camera Colour Adjust

*** 801**

Use left and right keys to adjust colour.
Camera keys to select camera.
Press 0 to normalise colour
Press * to end

COLOUR LEVEL = +0
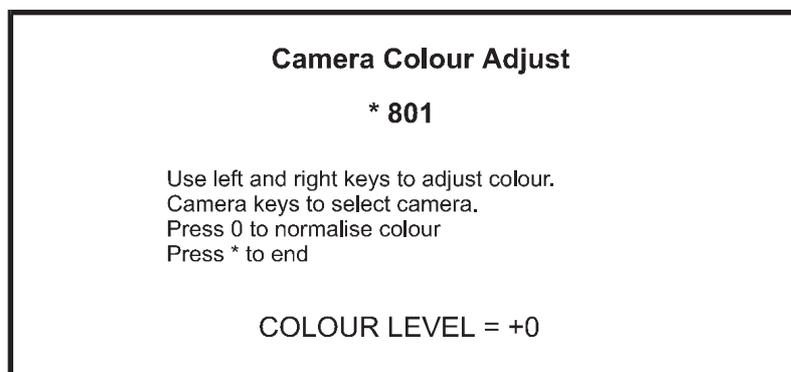
6.12   Enable black & white mode   # 880 xxx

The colour Uniplex Series 2 multiplexer can be set to run entirely as a monochrome machine.

Enable Black & White mode

# 880		(default - colour operation)
	000	Colour operation
	001	Black & White operation

6.13   Select telemetry type   # 891 xxx

Telemetry can be controlled using the Uniplex keyboard. Each PTZ camera input of the multiplexer must be individually programmed for the type of telemetry receiver fitted using the following code, enter the code and press the corresponding camera key then the type of receiver in use:

Set Telemetry Type

# 891	<CAM Key>	(default - 000)
	000	None
	001	CR3 / CR4 / CR5 / BBV
	002	CAT PELCO
	003	DR4+ / DTMF

6.14   Set address for c-bus channel   # 842

As previously outlined in the Operation chapter multiple Uniplex multiplexers running on the same c-bus auto-detect one another on power up and set unique c-bus addresses. It is necessary when installing systems that use any of the c-bus accessories to set a specific address for each Uniplex, this will guarantee that the multiplexers retain the unique address if any Uniplex is removed from the c-bus, or when the mains power is reset.

The Uniplex address is automatically set when connected to the c-bus in the range of 016 to 031, allowing upto sixteen Uniplex multiplexers to be connected in one system configuration.

The address of the Uniplex can be changed if necessary using the code # 842 xxx where xxx is the units address.

Set c-bus Address

# 842		
	001 to 016	Individual c-bus addresses for Uniplex units

6.15   Software release   * 000

To identify software release information the Uniplex should be in the Live mode.

Full details of the software release will be displayed on the base line of the main monitor. This information must be available when contacting the Dedicated Micros Technical Support Department.

7   VCR Control

This section details the setup commands required to complete the VCR setup parameters on the Uniplex multiplexer.Alarms can also be used to activate the VCR, refer to Chapter 14 Alarms and the Video Recorder

7.1   Select cameras to be recorded   * 210 , * 211

In the Record mode these commands include or exclude all available cameras from the record sequence. Uniplex is set to record all cameras as default.

        * 210   **No cameras Recorded**
        * 211   **Record all cameras**

7.2   Domestic video recorders

Uniplex is configured to operate with all standard VCRs that work in normal or double play time (sometimes called 8 hour machines). As these machines do not have time and date generators the option to record this information to tape, **# 340 001** should be selected.

7.3   Time lapse video recorders

All time lapse video recorders have varying time lapse modes and the speed at which these VCRs capture fields and frames varies not only from manufacturer to manufacturer but also within a product range. Uniplex can be configured to work with any time lapse VCR and has the characteristics of all common VCRs stored in its memory.

7.4   Select VCR type (time-lapse)   # 200 xxx

The Uniplex can be automatically set up to work with most VCR time lapse recorders. The table below only shows a number of VCR's that can be setup for use with the Uniplex, this list can be used in conjunction with the Compatible VCR Table - Appendix A.

# 200		
	000	Standard or double play VCR
	001	Asutsa TLVCR 251
	002	Asutsa TLVCR 964
	003	Burle 3931X - field mode
	008	Gyyr 1600X - field mode
	009	Gyyr 1600X - frame
	010	Gyyr 2051X
	011	Gyyr TLC 1400
	012	Gyyr TLC 1800X
	013	Hitachi VTL30 - field mode
	014	Hitachi VTL30 - frame mode
	059	Vista VCR 27HR

7.5   Select time lapse mode for VCR   * 201 —/— * 208

The commands *** 201** to *** 208** sequentially select the time lapse mode that the VCR is running in. The table below indicates the time lapse mode in hours for the some of the popular video recorders on the market. For a more comprehensive list refer to Compatible VCR Table - Appendix A

Time Lapse Video Recorder	*201	*202	*203	*204	*205	*206	*207	*208
Asutsa TLVCR 2521	3hrs	24hrs	48hrs	72hrs	120hrs	168hrs	240hrs	480hrs
Burle 39361X/3910X	3hrs	12hrs	24hrs	48hrs	72hrs	120hrs	168hrs	240hrs
Gyyr 2051X	2hrs	12hrs	18hrs	24hrs	48hrs	72hrs	120hrs	240hrs
Hitachi VTL2000	3hrs	12hrs	24hrs	48hrs	72hrs	120hrs	168hrs	240hrs
Ikegami TVR625 - field mode	3hrs	6hrs	24hrs	72hrs	120hrs	240hrs	480hrs	960hrs
JVC 9060A	3hrs	6hrs	24hrs	72hrs	120hrs	240hrs	480hrs	960hrs
Mitsubishi 480E	21hrs	36hrs	72hrs	144hrs	240hrs	480hrs		
Panasonic 8050/8051	3hrs	12hrs	24hrs	48hrs	72hrs	120hrs	144hrs	240hrs
Philips TL-720R	3hrs	24hrs	48hrs	72hrs	168hrs	336hrs	720hrs	720hrs
Sanyo TLS 1000P/1001P	3hrs	18hrs	36hrs	72hrs	108hrs	144hrs	180hrs	252hrs
Sony SVT5000	3hrs	12hrs	24hrs	48hrs	72hrs	96hrs	120hrs	168hrs
Vicon VCR401/410/424	3hrs	12hrs	24hrs	48hrs	72hrs	120hrs	168hrs	240hrs
Vista 27HR	3hrs	12hrs	24hrs					

7.6   Select field delay

Note: If a standard or double play VCR is in use or time-lapse video recorder has been selected using the code # 200 xxx there is no need to proceed with this section.

Time lapse VCRs that are not listed can be configured easily provided the field delay for each time lapse mode is known.

In order for the Uniplex to record to tape a series of camera pictures, one after another, the speed at which the Time Lapse VCR is sending frames to the video tape must be known. If a Time Lapse VCR is sending one frame out of every four to the video tape (12 hour mode) then there is a delay of four twenty-fifths of a second between frames.

The Uniplex is now required to update to a new camera every 4 video frames. The time multiplexer in the Uniplex counts in half frames or fields and the setting to control updating of the camera pictures is called the field delay.

In the case of updating the picture every four frames the field delay would be twice the number of frames, i.e. Eight.

Field Delay = Delay between frames sent to the VCR in 50th of a second.

By correctly setting the field delay the Uniplex can update camera pictures at speeds to match all time lapse VCR modes.

The following table displays the relationship between the keyboard command that calls the field delay and displays the time lapse mode of the VCR on the main monitor display.

Time lapse setting selected from keyboard	Field delay for VCR time lapse mode	On screen display to show time lapse mode in use
* 201 * 202 * 203 * 204 * 205 * 206 * 207 * 208	# 201 xxx # 202 xxx # 203 xxx # 204 xxx # 205 xxx # 206 xxx # 207 xxx # 208 xxx	# 211 xxx # 212 xxx # 213 xxx # 214 xxx # 215 xxx # 216 xxx # 217 xxx # 218 xxx
	xxx = head step speed expressed as number of field delays	xxx = time lapse mode displayed in hours on baseline of monitor

Note: Head step speed in milli-seconds = number of field delays x 20.

7.7   S-VHS Decoding   # 240 xxx

Important: S-VHS recording and playback is only available on Uniplex Series 2 multiplexers.

When using the S-VHS facility of decoding the following code allows pre-recorded S-VHS tapes to be played back on a S-VHS recorder through the Uniplex.

# 240		(Default - 000)
	000 001 002	Composite S-VHS Auto Detect

Note: Uniplex offers VCR playback to be reviewed from within a LIVE multiscreen through selection of the VCR key. In these instances the Picture signal will be taken from the composite VCR signal irrespective of the above settings.

8   Screen Control

Operator control over multiscreen options is fully explained in the User Guide, this section explains how to setup various screen options, setting the camera sequence speed and includes advice on the set up of function keys.

8.1   Selecting multiscreen display   * 131 -/- * 135

As an alternative to toggling through the multiscreen key, the following commands will directly select the multiscreen displays.
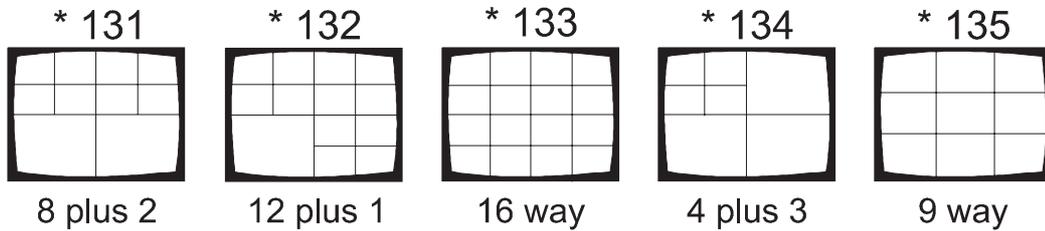
Fig 8. Directly Select Multiscreen displays

Any camera input can be selected to be displayed in any of the segments.These commands can also be used from within a function key or an alarm string.

8.2   Select individual screen segment   # 100 xxx

As an alternative to manually selecting the segment edit use through the arrow keys, cameras can be directly positioned using the following command.

The required multiscreen should be displayed when setting the segments. Enter the code # 100 along with the three digit code that represents the screen segment to be edited. Once selected a new camera or a sequence of cameras can be selected to be displayed in the segment.
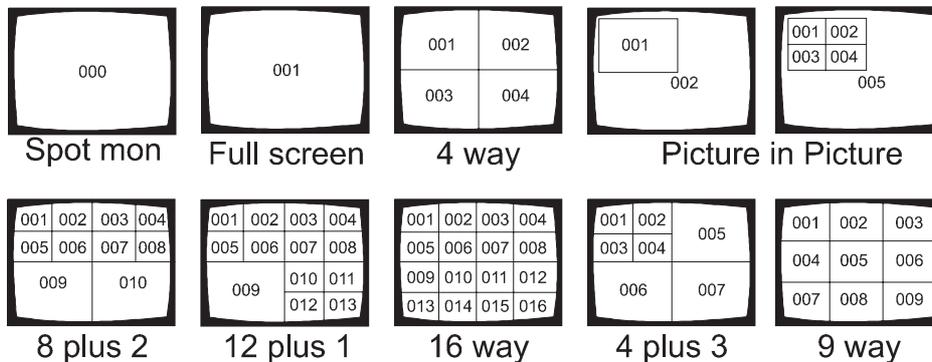
Fig 9. Screen & Segment Numbering

8.3   Select camera in 4 way and multiscreen modes   * 100

This command is used in conjunction with either the quad or other multiscreen displays. With the relevant screen option displayed on the main monitor, this instruction will select a camera for each of the displayed screen segment in turn, starting from the top left segment of the screen and progressing from left to right down the screen.

<div align="center">

* 100, CAM key, CAM key, - / -, CAM key

(CAM key = camera select keys 1 to 16)

</div>

After keying in the * **100 the** screen cursor will highlight the camera number in the top left hand screen segment. The camera required to occupy that segment should now be selected by pressing the corresponding camera key. That camera will appear in the segment and the screen cursor will pass to the next position. When all screen segments have been allocated a camera, the command automatically terminates and the screen cursor returns to the lower left hand screen segment.

8.4   Primary multiscreen selected by MSC key   # 130 xxx

There are 8 multiscreen displays that are accessed by multiple presses of the MSC key. The following codes can be used to set which of the multiscreens is displayed first.

The primary screen default is 8 + 2, if however you wanted a 16 way enter the code # 130 003, and press the MSC key the main monitor will show a 16 way split screen.

<div align="center">

Set Primary Screen Display Selected by MSC Key

</div>

# 130		(default 8 + 2 screen)
	001	8 + 2
	002	12 + 1
	003	16 way
	004	4 + 3
	005	9 way

8.5 Select picture-in-picture * 141 / * 148

Any of the picture-in-picture screens can be directly selected using the following codes:
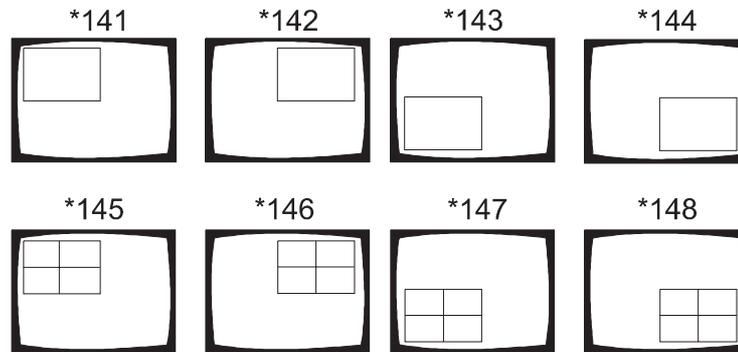
Fig 10. Directly Select Picture-in-Picture Display

8.6 Primary picture-in-picture display # 140 xxx

The picture-in-picture key on the Uniplex, when first pressed, will select a display consisting of a full screen with a quarter sized picture in the top left hand part of the screen. By pressing the key again the next picture-in-picture screen will be displayed. The key can be used to cycle through all eight picture-in-picture screens.

The primary screen display that the picture-in-picture key selects can be changed to suit the operator.

Select Primary Picture-in-picture Display

# 140		(default single top left insert)
	001	Single top left insert
	002	Single top right insert
	003	Single bottom left insert
	004	Single bottom right insert
	005	Four top left inserts
	006	Four top right insert
	007	Four bottom left insert
	008	Four bottom right insert

Example: **# 140 004** sets the multiscreen key to display a full screen with a quarter sized picture in the bottom right hand corner, the first time the key is pressed.

8.7   Include / Exclude cameras   * 110 / 1, * 120 / 1

Two commands have been provided to either include or to exclude all available cameras in a sequence. If a split screen is selected the sequence in the current screen segment will be used.

	Main monitor	Spot monitor
Remove all cameras from a sequence	*** 110**	*** 120**
Include all cameras in present sequence	*** 111**	*** 121**

8.8   Set Sequence rate for monitors   # 110, # 120 xxx

Both the main and spot monitors can be made to sequence through a number of cameras. The speed at which this sequencing takes place is individually set for each monitor. The default sequence rate for each monitor is five seconds.

Sequence delay (dwell time) on monitors

Monitor	code		
Main (1)	**# 110**		(default 5 seconds)
Spot (2)	**# 120**		(default 5 seconds)
		001 to 999	Dwell time on each camera in seconds

Example: **# 110 003** would set the sequence rate on the main monitor to 3 seconds
                 # 120 015 would set the sequence rate on the spot monitor to 15 seconds

8.9   Spot monitor display   # 350 xxx

Camera titles, time and date are displayed on the spot monitor and can have their display colour changed or be removed by using the following codes.

# 350		(default White)
	000	Disabled
	001	White
	002	Grey
	003	Black

8.10   Interlace correction in live and record modes   # 810 - # 814

Uniplex automatically removes any interlace jitter that may sometimes be seen in four way and multiscreen modes. This feature ensures that each camera updates on the same interlace field on each pass.

This removes any slight vertical jitter that is sometimes present when using asynchronous cameras.

In live mode interlace correction is normally enabled, ensuring all cameras displayed in quad or multiscreen mode are always updated from the same video field. Although this can sometimes result in a millisecond update delay while waiting to capture the correct field and store this image on screen, it eliminates any slight vertical movement of one image against another.

Interlace correction of the video input

Interlace correction of the video input on record mode captures the same field from all camera inputs. This ensures that playback of recorded cameras is free from vertical jitter in quad and multiscreen. Interlace correction can be disabled in record mode but only has effect when the VCR is recording in 3 hour (normal) speed.

On selection each option can be enabled or disabled.

Enable I/Lace Correction in Live Mode

# 810		(default 001 enabled)
	000	Disabled
	001	Enabled

Enable I/Lace Correction in Record Mode

# 811		(default 001 enabled)
	000	Disabled, interlaced output
	001	Enabled, interlaced output
	002	Disabled, non-interlaced output
	003	Enabled, non-interlaced output

Multi-screen Interlace Control

# 812		(default 001 enabled)
	000	Disabled
	001	Enabled

Full Screen Interlace Control

# 813		(default 001 enabled)
	000	Disabled
	001	Enabled

Note: Selecting Zoom screen interlace ON is beneficial when looking at still or slow moving objects, however can produce a slight smearing effect when viewing a fast moving object in zoom mode.

Zoom Screen Interlace Control

# 814		(default 000 Disabled)
	000	Disabled
	001	Enabled

9   Titles and Baseline

9.1   Camera titles

Each camera has a user defined twelve character title which is displayed on the camera picture. The Uniplex is supplied with a set of default titles that correspond to the camera in use. These are set to: CAMERA 01, CAMERA 02, through to CAMERA 16. These can be changed to any twelve character description. Spaces count as a character.

9.2   Creating or altering a camera title   # 300....

Ensure the camera whose title you want to change is currently displayed full screen on the main monitor.

Type in the camera title start code which is: **# 300**

Press the CAM key whose title you need to change, CAM 1 for camera 1 , CAM 2 for camera 2 etc.

The keyboard is now switched to generate the characters that appear in the lower left hand corner of each keypad. The HOLD key, marked CAPS, controls whether the letter keys generate capital or lower case letters on the camera title. The lamp above the HOLD key illuminates to indicate the keyboard is set to produce capital letters. The keyboard layout is as follows:
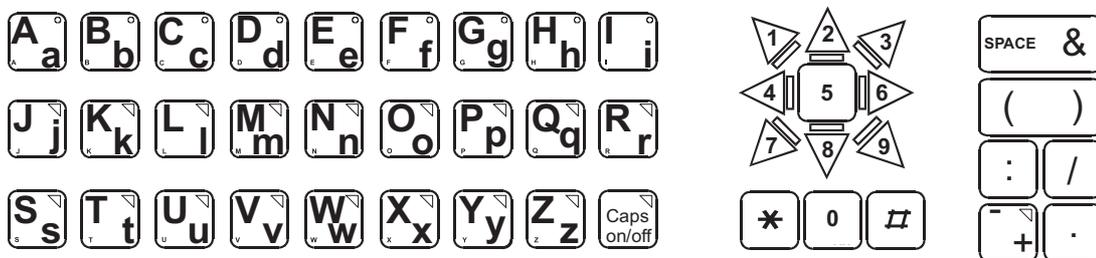
Fig 11. Key Designation for Camera Titling

To enter the camera title press the keys corresponding to the letters needed. The numeric keypad returns the numbers 0 to 9, the function, act & slave keys give special characters space & ( ) : / + - .

The title can be terminated using either the * or # keys or automatically when the maximum number of characters (twelve) is reached.

9.3   Camera number offset   # 330 xxx

In systems where more than one Uniplex is employed the camera numbers can be offset to continue a sequential numbering system above 16.

Camera Number Offset

# 330		(default 000)
	000 to 983	Number of cameras already used. This number is one less than the first camera connected to video input 1

Example: A system consisting of three Uniplex with 16 cameras on the first unit, 12 on the second and 9 on the third.

Uniplex A - no offset numbers set, cameras 01 to 16 on screen
Uniplex B - set offset code: # 330 016   cameras will be numbered 17 to 28
Uniplex C - set offset code: # 330 028   cameras will be numbered 29 to 37

9.4   Text background colour live mode   # 310 xxx

All on screen camera numbers and titles are displayed in live mode and encoded to tape in record mode, these are normally outlined in a black box. The color of this box is called the 'background colour' and can be selected as black or clear.

Text Background for Titles

# 310		(default black)
	000	Black
	002	Clear

9.5   Text foreground colour live mode   # 311 xxx

Screen titles are displayed in live mode and encoded to tape in record mode, initially appearing as white text letters. This is known as the text foreground colour and can be changed with the following code:

Text Foreground Colour

# 311		(default white)
	000	Black
	001	Red*
	002	Green*
	003	Yellow*
	004	Blue*
	005	Magenta*
	006	Cyan*
	007	White

* Only applicable to colour systems, will give various shades of grey on mono systems.

9.6   Text background colour record mode   # 322 xxx

Screen titles are displayed in live mode and encoded to tape in record mode. The background colour can be changed to the following to enhance the text displayed.

Text Background for Titles

# 322		(default black)
	000	Black
	002	Clear

9.7   Text foreground color record mode   # 323 xxx

Screen titles are displayed in live mode and encoded to tape in record mode, these initially appear as white text letters. This is known as the text foreground colour and can be changed with the following code:

Text Foreground Colour

# 323		(default white)
	000	Black
	001	Red*
	002	Green*
	003	Yellow*
	004	Blue*
	005	Magenta*
	006	Cyan*
	007	White

*Only applicable to colour systems, will give various shades of grey on mono systems.

9.8   VCR Titling control   # 320 xxx

Cameras titles can be directly recorded to the VCR when encoding to tape. These titles are recorded in the current text foreground colour and are double height.

Note: If camera titles are not recorded to tape, they can be added on playback.

VCR Titling Control

# 320		(default pre-VCR titling)
	000	No VCR titling, titles appear only on live mode displays
	001	Pre-VCR, all camera titles are recorded to tape
	002	Post-VCR, titles superimposed on played back video cameras

9.9   Recording time and date   # 340 xxx

Time and date information can be recorded direct onto the individual camera images when the Uniplex is in the record mode. The time lapse speed (if a time lapse VCR is in use) is also recorded.

VCR Time and Date Recording

# 340		(default 001)
	000	Time and date not recorded
	001	Time and date recorded

9.10   Recorded text   # 321 xxx

Titles and time & date are recorded to tape in the large (double) text format, this can be changed with the following code to single height text.

# 321		(default Enabled)
	000	Disabled
	001	Enabled

10   Movement

Movement detection can be used as a visual indication that there is movement in the camera view, it can also be programmed to improve the recording update times of any cameras where movement is present.

Relay output 2 can be programmed to activate when movement is detected, therefore giving the operator a physical notification that movement is present on a camera.

10.1   Select / deselect movement cameras   * 610 / * 611

When the Uniplex is reset all cameras have movement off. Cameras can be selected or deselected in any of the operating modes by pressing the ACT key. The cameras that are currently selected for movement will then have the lamps illuminated. Two commands have been provided to select or deselect all cameras:

> * 610   All cameras movement off

> * 611   All cameras movement on

10.2   Movement grid   # 670

Each camera has a grid area of movement sensitive cells which can be turned on or off. This grid measures 16 across by 8 down the screen.
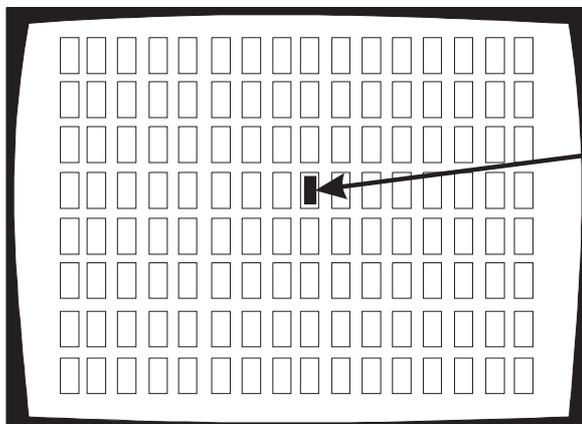
Move the cursor around screen using the arrow keys

Turn cells on and off with the # key

Exit using the * key

The grid is modified by entering the code **# 670**, press the **0** key to clear the help menu and the cells can now be selected by moving the cursor around the screen using the arrow keys. Individual cells can be turned on or off by pressing the **#** key. Cameras can be switched using the camera select keys, all grid cell settings will be memorised throughout. The set up can be exited by pressing the ***** key.

10.3   Movement scene types   # 661 —/— # 665

The overall sensitivity of individual cameras, to any form of movement, is simply set by choosing the type of scene that the camera looks at and setting the Uniplex accordingly.

Two types of scene, indoor and outdoor, and five levels of sensitivity, high through to low, are provided. By default all cameras are set to outdoor low sensitivity. Set any indoor cameras to indoor, low sensitivity. If it is found that a camera set to low sensitivity does not pick up movement well, set to high sensitivity and test again.

Note: The reference to high and low sensitivity refers only to the sensitivity of the movement   detection feature and should not be confused with camera image sensitivity.

Cameras all default to outdoor, low sensitivity

Scene		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Indoor, high sensitivity	# 661																
Indoor, low sensitivity	# 662																
Outdoor, high sensitivity	# 663																
Outdoor, low sensitivity	# 664																
Very low sensitivity	# 665																

(Terminate entries with the * key)

Example: Cameras 2,3,4,& 5 are indoor, camera 5 needs to be set to high sensitivity. Cameras 1,6,7,8 & 9 are outside, 7 & 8 cover only small areas and need to be set to high sensitivity. Camera 9 is pole mounted which needs to be set to very low sensitivity. The codes would be set up as follows:

   # 661, <CAM 5>, *

   # 662, <CAM 2>, <CAM 3>, <CAM 4>, *

   #663, <CAM 7>, <CAM 8>, *

   # 664, <CAM 1>, <CAM 6>, *

   # 665, <CAM 9>, *

10.4   Reset movement grid cells   # 671

This command enables all the movement grid cells on selected cameras. This is equivalent to resetting all cells and is achieved in the following manner:

 # 671, <CAM key>, <CAM key>, -/- <CAM key>, *

Example: To reset movement grid cells on camera 2, 3, and 6

 # 671, <CAM 2>, <CAM 3>, <CAM 6>, *

Tips on setting up the grid cells:

On outdoor scenes remove all cells covering trees, bushes and other objects that may sway in the wind.

Remove cells covering large areas of glass may reflect nuisance scenes.

Remove sections that contain movement that need not to be detected.

Cameras mounted on poles and towers may move considerably in the wind. Try to select areas that have no sharp lines. For instance, a car park could by selecting and road areas (mainly grey) but omitting white lines on the road.

10.5   Movement indication colour   # 680 xxx

The boxes that indicate movement on-screen in Live mode, for the Uniplex Series 2 multiplexer, are normally displayed in yellow. The colour can be changed, this may be of particular use in black and white only systems where white or black may be easier to see than the default colour yellow. This display will only show on screen in the Live mode, the display boxes are not recorded to tape.

# 680		(default white)
	000	Black
	001	Red*
	002	Green*
	003	Yellow*
	004	Blue*
	005	Magenta*
	006	Cyan*
	007	White

* Only applicable to the colour system

10.6   Movement delay time   # 690 xxx

Movement delay time is the time that a camera will remain 'active' after the last burst of movement was detected. This is set at the default time of five seconds.

# 690		(default - 5 seconds)
	001 to 255	Delay time in seconds

The reason for this delay time is as follows: consider an intruder who attempts to force a door that is in the field of view of a movement detecting camera. All is fine as we detect his movement and record the information to tape, but if he pauses to take his breath for several seconds we do not want to loose this valuable scene and so the delay allows the camera to still be considered active for a number of seconds after movement has ceased. We continue to view the 'break in' despite the intermittent nature of the intruder's movement.

10.7   Relay output on movement   # 560 xxx

Relay output 2 can be connected to external equipment to give a physical indication of movement. This relay configurable, therefore if activation on movement is required it must be selected as follows:

# 560		(default - 000)
	000	Controlled by *562/*572
	001	Loss of video detection
	002	Movement trigger

Selecting #560 002 will configure the relay to trigger when movement is detected.

Note: Once activated the relay will remain closed until reset through a * 571 command.

10.8   Movement in Live mode   # 651 xxx

Initiates movement detection in live mode for each individual camera. Visual indication of movement is with a box displayed around the active area.

Live Mode	# 651		(default disabled in Live mode)
		000	Disable movement
		001	Enable movement

Note: The visual indication of movement in live mode will not be displayed when using 9 way multiscreen.

10.9   Movement in Record mode   # 652 xxx

When there is no movement detected all the camera selected to be recorded will be sent to the video tape. Movement in record mode allows cameras that have movement in their field of view to be recorded to tape in different ways:

Movement only Encoding

Only the cameras with movement present will be recorded to tape. This feature should be used with care as cameras with no movement present will be ignored while the system is recording active cameras.

Note: Movement only recording, when enabled, is only operative in time lapse recording modes where the field delay is eight or more (i.e. 24 hour mode or longer).

Movement interleaving

Cameras with movement are recorded as priority, cameras with no movement are recorded less often.

Example: In an eight camera system with movement on cameras 3, 5, & 7 the order of recording would be as follows:

3, 5, 7, 1, **3, 5, 7**, 2, **3, 5, 7**, 4, **3, 5, 7**, 6, **3, 5, 7**, 8, **3, 5, 7**, 1 etc.

This method of movement interleaving always ensures that no matter how many cameras are active, cameras with no movement will still be recorded.

Record Mode	**# 652**		(default enable movement interleaving)
		000	Disable movement
		001	Enable movement interleaving
		002	Enable movement only recording

10.10   Movement record non-selected cameras   # 655 xxx

This allows cameras that are not currently selected in the record sequence to be recorded only when movement is present.

If the feature is disabled only the cameras that are selected to be recorded to tape can use movement.

Note: The ability to movement record cameras that are not part of the normal record sequence is only operative in time lapse recording modes where the field delay is eight fields or more.

# 655		(default disabled)
	000	Only cameras selected to be recorded can use movement
	001	Any cameras can be recorded if movement is present on the camera

10.11   Movement in Playback mode   # 653 xxx

Movement is not currently supported in playback mode. Provision has been left to allow use of this feature in a future software release. The code for this is listed and valid but will have no effect if set.

Playback Mode	# 653		(default disabled)
		000	Disable movement
		001	Not available

11   Alarm Operation

The multiplexer has integrated alarm facilities built in which allows external events to action specific activities on the Uniplex.

Alarms are introduced into the system through remote c-bus Alarm Modules, each of which is capable of receiving up to 16 externally triggered devices.

In order that each alarm message generated on the c-bus reaches the appropriate Uniplex multiplexer each module is provided with a user definable link option to set its unique c-bus address, this address must be set in the respective Uniplex multiplexer as detailed below.

Two alarm outputs are provided, the first for alarm program activation and the second has user definable trigger actions which can be configured to one of the following:

* Loss of video from any of the camera inputs

* Trigger on the detection of movement

* As per relay 1 part of an alarm program

11.1 Set alarm type # 590 xxx

Each alarm input must be setup as a specific input, there three options available.

* Alarm - The alarm is via a single or the first c-bus Alarm Module (Set to address 096 with no internal link)

* PIR - Set to a single alarm input and is via the c-bus PIR unit

* Other - If using more than one c-bus Alarm Module, each of the consecutive modules must be re-addressed.

Set Alarm Type

# 590		(Default - 000)
	000	Alarm
	001	PIR
	002	Other

To set the alarm input type enter the code: **# 590**

Select the corresponding camera key for the alarm input: **<CAM XX>**

Enter the code required: **000 to 002**

Important: Each individual alarm input <u>**must**</u> be setup.

Alarm

This programs the Uniplex alarm input to identify alarms sent from an Alarm Module at the default address 096 of the c-bus network.

PIR

If the system configuration only requires one alarm trigger per area, then the c-bus PIR Alarm Module offers this single alarm option.

When using a PIR module it must be addressed to the correspond alarm input of the Uniplex, i.e. Alarm 1 PIR set to link 1 refer to c-bus Alarm Module for link positions.

Other

This instructs the Uniplex that more than one alarm module is in use, or the alarm module is addressed other than 096. The corresponding alarm input is then set to OTHER and the correct address for the module entered following section 13.2.

11.2   Set alarm address   # 591 xxx

Systems employing a single alarm module address as 096 do not need to follow this section.

When employing multiple alarm modules each module needs a unique c-bus address setting. Once the alarm type has been set to 'OTHER' set the address for the alarm module associated to the relevant alarm inputs using the following code.

Select Alarm Address

# 591		(Default - 096)	
	096 - 112	Address for alarm module	

11.3   Select alarm number   # 592 xxx

Each Alarm Module has sixteen input contact numbers which default to correspond with the Uniplex alarm number, i.e. Alarm contact 001 on the Alarm Module corresponds to alarm 1 on the Uniplex.

If however an alternative wiring scheme has been used each alarm contact can be simply reallocated using the code:

# 592		(Default - 001)	
	001 to 016	Sixteen alarm inputs	

Example: Alarm contact 007 will activate Uniplex alarm 7, if however the alarm device is connected to alarm contact 015 on the alarm module this must be re-allocated as follows:

To renumber the alarm enter the code:	**# 592**
Select the necessary camera key:	**<CAM 7>**
Enter the corresponding number:	**015**

Future activation of the external device connected to contact 015 of the alarm module trigger the alarm input 7 on the Uniplex.

11.4 Set alarm inputs, normally open/closed # 580 , # 581

The inputs are triggered by connecting the alarm input to ground (normally open) or by disconnecting the contact from ground (normally closed). The action taken on each type of trigger (make or break) is defined by setting the input as normally open (alarm set by contact closure) or normally closed (alarm set by contact being broken).

Set alarm inputs normally open / closed

(Default norm. open)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Normally open	**# 580**																
Normally closed	**# 581**																

Use CAM keys corresponding to alarm input numbers

(Terminate entries with the * key)

Example: To set alarm inputs 2, 5 & 12 as normally closed:

 # 581, CAM key 2 , CAM key 5 , CAM key 12 , *

11.5 Alarm output relay 2 # 560 xxx

The second alarm output is user definable as to the particular function of Uniplex that activates it.

# 560		
	000	Controlled by *562/*572
	001	Loss of video
	002	Movement trigger

Relay 2 will on activation remain closed until canceled via a * 572 command which opens relay 2.

Relay output 2 can be activated as part of the advanced alarm function where:

* 562 Closes contact

* 572 Opens contact

11.6 Alarm relay output 1 * 561, * 571

The first alarm output is dedicated to alarm activation, programmed as part of the advanced alarm functions, where

* 561 Closes contact

* 571 Opens contact

11.7   Simple alarm set - Record mode   # 570 xxx

In a non-alarm condition all cameras are selected to record will be sent to the video tape. Selecting "alarm set in record mode" initiates alarmed cameras to be recorded to tape in one of the following ways:

* Record selected cameras - This ignores the alarm cameras and continues to send to tape the cameras selected to record.
* Record alarm cameras only - When an alarm(s) is triggered the corresponding camera(s) are recorded only to tape for the duration of the alarm, i.e. 5 second alarm duration - contacts remain open/closed for 5 seconds. When the alarm ceases the multiplexer will resume sending the cameras previously selected to record to the video tape.
* Interleave alarm cameras - This adds the alarmed cameras to the record sequence as priority cameras, therefore images from these cameras are recorded more frequently. If the record sequence includes camera 1 to 8 and alarms are triggered on inputs 6 and 7 the new record sequence will change to the following on alarm: 1, **6**, **7**, 2, **6**, **7**, 3, **6**, **7**, 4, **6**, **7**, 5, **6**, **7**, 8, **6**, **7**, 1, **6**, **7**, etc.

# 570		(Default - 000)
	000	Record selected cameras
	001	Record alarm cameras only
	002	Interleave alarm cameras

12   Alarms and the Video Recorder

When the multiplexer is recording cameras to the video recorder any incoming alarms are tagged onto tape **providing** the corresponding camera number to that alarm input is being recorded.

Example: In a five camera system only alarm inputs 1 to 5 will be tagged to tape. The alarm inputs 6 to 16 would not be recorded.

Features can also be controlled from tagged alarms on the video recorder when the Uniplex is in the Playback mode. This allows tape review along with monitoring any alarms that have occurred while the tape was recorded.

In systems where cameras are multiplexed along a single video link alarms will also be tagged across the link. This allows remote monitoring and action on alarm events both ends of a multiplex link. (Alarm inputs must have the corresponding camera number transmitted over the link.)

12.1   VCR alarm input   # 585 xxx

A direct input to control the switching between the current time lapse mode and the alarm time lapse mode is provided so that time lapse VCRs with alarm control can switch the time lapse mode of the Uniplex to match their operating speed.

This input can be normally open, normally closed or disabled completely.

VCR Alarm Input

# 585		(Default - 000)
	000	Input disabled, feature non operative
	001	Enabled, normally open contacts
	002	Enabled, normally closed contacts

This feature needs to be used with VCRs that, when triggered via their alarm input, switch from time lapse mode to normal speed recording for a fixed period of time.

12.2   VCR alarm outputs

Two alarm outputs are supported. Both outputs are light duty reed relay contacts and should not be considered suitable for switching heavy loads.

12.3   Alarm triggered time lapse VCR   * 220, * 221

Most time lapse video recorder have the ability to switch from recording in time lapse mode to recording at normal speed when a pair of contacts on the VCR are closed together. The Uniplex has a pair of contacts (first alarm output) which can be used to trigger the VCR from time lapse mode to normal speed.

When the VCR is in time lapse mode the Uniplex will be recording at the correct speed, previously selected by a code in the range * 201 to * 208. After the VCR has been switched to normal speed the Uniplex record speed must also be switched to normal speed (* 201).

To achieve the switch from time lapse to normal speed and back again two commands have been provided. These commands switch from the current time lapse mode (any code * 201 to * 208) to the active alarm time lapse mode and back again.

*** 220   Switch to active alarm time lapse mode**

*** 221   Switch to currently selected time lapse mode**

12.4   Program alarm time lapse mode   # 220 xxx

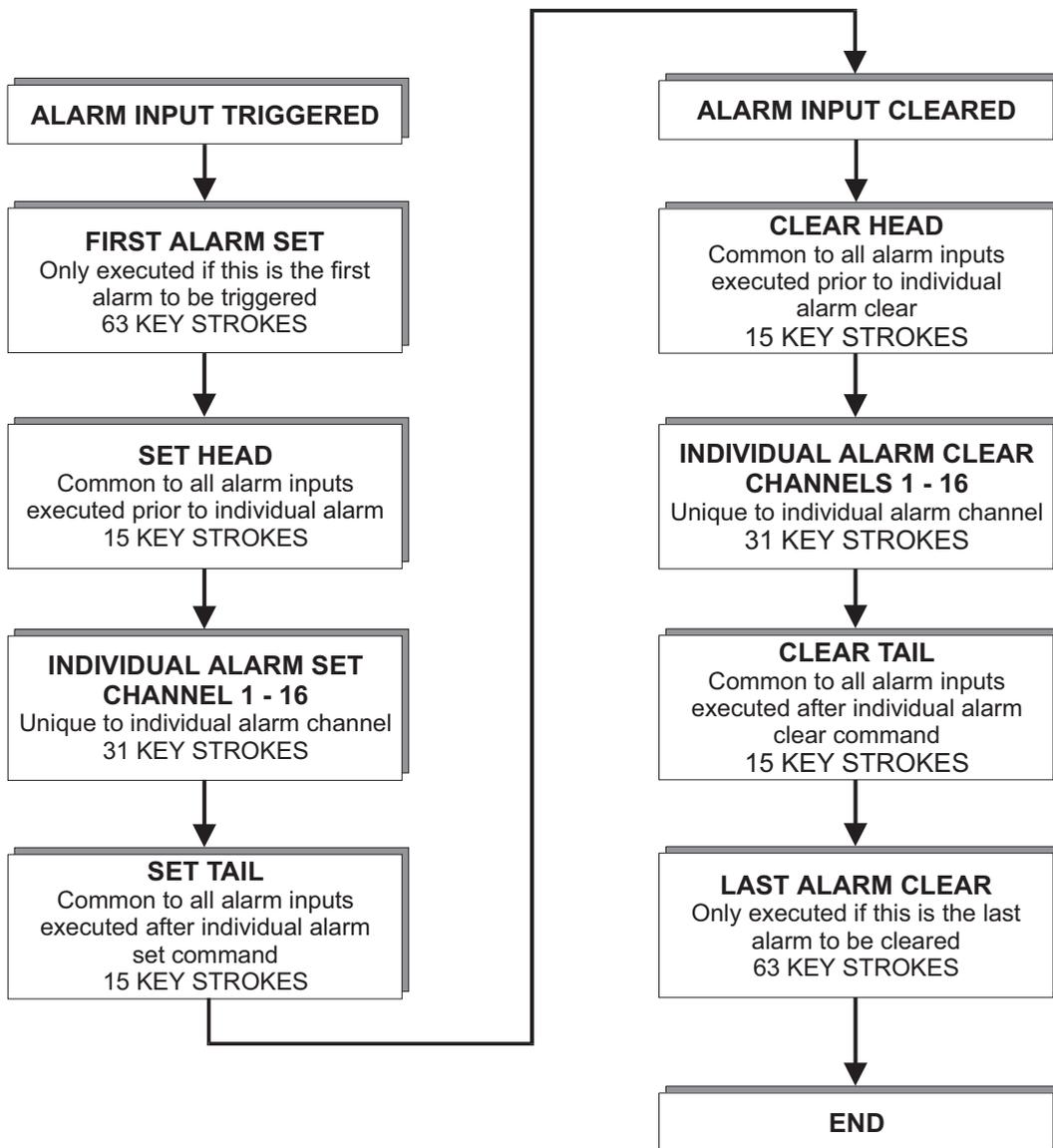The active alarm time lapse mode is selected using the following code:

# 220		(Default - non selected)
	001	* 201
	002	* 202
	003	* 203
	004	* 204
	005	* 205
	006	* 206
	007	* 207
	008	* 208

13   Advanced Alarm Programming

The following section should only be carried out be qualified Engineers.

13.1   Structure of alarm operation

The following path is the logical route taken when an alarm is triggered, and later cleared. The steps that the alarm carries out can be enabled or disabled and each step can be programmed by the user to have a different set of key instructions in all three operating modes.

ALARM INPUT TRIGGERED	**ALARM INPUT CLEARED**
FIRST ALARM SET Only executed if this is the first alarm to be triggered 63 KEY STROKES	**CLEAR HEAD** Common to all alarm inputs executed prior to individual alarm clear 15 KEY STROKES
SET HEAD Common to all alarm inputs executed prior to individual alarm 15 KEY STROKES	**INDIVIDUAL ALARM CLEAR CHANNELS 1 - 16** Unique to individual alarm channel 31 KEY STROKES
INDIVIDUAL ALARM SET CHANNEL 1 - 16 Unique to individual alarm channel 31 KEY STROKES	**CLEAR TAIL** Common to all alarm inputs executed after individual alarm clear command 15 KEY STROKES
SET TAIL Common to all alarm inputs executed after individual alarm set command 15 KEY STROKES	**LAST ALARM CLEAR** Only executed if this is the last alarm to be cleared 63 KEY STROKES
	END

13.2 Enable alarms # 601 - / - # 606

Alarm inputs

Prior to commencement of any alarm programming, the instruction to enable alarms must be set for each operating mode that require programs to be actioned.

In Live and Record mode this option will enable/disable all alarm inputs.

In Playback mode there are various options, alarms can be generated from the external inputs or can be played back from the VCR as taped alarms.

By default in playback mode only taped alarms from the VCR are recognised.

Enable / disable all alarm input channels

		000	Disable alarm event
		001	Enable alarm event
Live	**# 601**		(default - 001)
Record	**# 602**		(default - 001)

Playback	**# 603**		(default - 002)
		000	Disable external & VCR alarms
		001	Enable external alarms only
		002	Enable taped alarms from VCR
		003	Enable both external & VCR alarms

Alarm LED flash

This option can disable/enable the camera LED to act as an 'alarm LED'. Once enabled the corresponding camera LED will flash as each alarm is triggered.

Enable / disable alarm LED

		000	Disable alarm event
		001	Enable alarm event
Live	**# 604**		(default - 001)
Record	**# 605**		(default - 001)

Playback	**# 606**		(default - 003)
		000	Disable external & VCR alarms
		001	Enable external alarms only
		002	Enable taped alarms from VCR
		003	Enable both external & VCR alarms

13.3   First alarm set & last alarm clear

Prior to programming ensure the Live, Record or Playback first alarm function has been enabled:
621, # 622, # 623.

This first alarm set command is executed when the first alarm is received by the multiplexer. If any other alarms are received while the first alarm is still active the commands programmed will not be re-actioned.

The last alarm clear command is executed when the last alarm signal is cleared on the multiplexer.

Different programming actions can be set for each operating mode, these actions run accordance to which mode is selected.

# 5		<Key> , <key> , - / - , <key> , * *
		(Up to 63 keystrokes)
	21	First alarm set - Live mode
	31	Last alarm cleared - Live mode
	22	First alarm set - Record mode
	32	Last alarm cleared - Record mode
	23	First alarm set - Playback mode
	33	Last alarm cleared - Playback mode

Test example: Live mode

When an alarm is received it will trigger the multiplexer to; close relay 1, to initiate external warning of an alarm; cancel any current sequence; switch the monitor display to full screen.

521   First alarm set (Live mode)

* 561   Close Relay 1

SEQ   If sequence is set; stops sequences

FULL   Switch monitor to display full screen image

* *   End program

Typing in the above prepares the live video screen, by switching the multiplexer into full screen, ready for alarmed camera instructions (see 12.4 Set head for further details).

This will give the operator an immediate visual indication that alarms are active on the system.

Test example 2: Record mode

522   First alarm set (Record mode)

* 220   Switch to active alarm time lapse mode (usually 3HR/PAL)

* 210   Remove all cameras from record

* *   End program

Typing the above example prepare the recording multiplex signal by switching the multiplexer into the alarmed time lapse mode, ready to exclusive record alarmed camera (see section 12.4 Set head for further details).

13.4   Set and clear heads & tails

Prior to programming ensure the Live, Record and Playback 'Set Head' has been enabled for each of the alarm channels on the system through the #631, #632 and #633 commands.

Commands programmed as part of the 'Set Head' and 'Set Tail' procedures will be activated against each consecutive alarm received.

Commands programmed as part of the 'Clear Head' and 'Clear Tail' procedures will return the multiplexer to operating and screen mode it was in before an alarm was received.

# 5		<Key> , <key> , - / - , <key> , * *
		(Up to 15 keystrokes)
	41	Set head - Live mode
	42	Set head - Record mode
	43	Set head - Playback mode
	44	Set tail - Live mode
	45	Set tail - Record mode
	46	Set tail - Playback mode
	51	Clear head - Live mode
	52	Clear head - Record mode
	52	Clear head - Playback mode
	54	Clear tail - Live mode
	55	Clear tail - Record mode
	56	Clear tail - Playback mode

Test example: Live mode (continues from First alarm set example)

541   Set head (live mode)

* 500   Uses the alarm number to set the camera number i.e. Alarm 1 = Camera 1

* *   End program

This is the second part of the alarm program and can be used in conjunction with the First alarm set (Live mode) alarm program. Together it will display the alarmed camera full screen to main monitor, activate external device fitted across Relay 1 and cancel SEQuence if it had been set.

Test example 2: Record mode (continues from First alarm set example)

542   Set head (Record mode)

570 001   Records alarm camera only

* *   End program

This is the second part of the alarm program and can be used in conjunction with the First alarm set (Record mode) alarm program. Together it switch the unit into minimum time lapse mode for the duration of the alarm and exclusively record the alarmed camera.

13.5   Individual channel set and clear

Prior to programming ensure that the Live, Record and Playback 'Individual channels' have been enabled with the codes # 611, # 612, # 613.

The individual alarm channel set and clear strings are exclusive to the alarm channel they are linked to.

# 5		<Key> , <key> , - / - , <key> , * *
		(Up to 31 keystrokes)
	01	Individual channel set - Live mode
	11	Individual channel clear - Live mode
	02	Individual channel set - Record mode
	12	Individual channel clear - Record mode
	03	Individual channel set - Playback mode
	13	Individual channel clear - Playback mode

Test example: Live mode (continues from Set head example)

501   Individual channel set (Live mode)

<CAM KEY>   Select the camera key corresponding to the alarm number i.e. Alarm 01 = Camera 01.

TELEM   Selects telemetry control

CAM 1   Selects camera input 1

* 901   Send telemetry head to preset 01

This alarm program makes use of the telemetry capability of Dedicated Micros telemetry receivers (CR4/CR5/DR4+), adapting the alarm signal received by the multiplexer into a 'goto preset' command for the alarmed camera.

13.6   Select camera corresponding to alarm channel   * 500

This command when executed from within an alarm commands, has the effect of selecting the same camera number as the alarm input which triggered the alarm.

* 500 = select same camera as alarm input triggered

The preset programs make extensive use of this command and are good examples of how to incorporate this powerful feature into custom applications. As described it is important to program each alarm input to correspond to it's camera input.

Example: If alarm input 6 has been triggered and the code * 500 is contained in one of the alarm commands it would display a full screen image of CAM 6.

13.7   Delayed function

Uniplex has a delayed function that acts in a similar way to a function key.

In the same way that a function key's pre-defined commands are executed whenever it is pressed, the delayed function' pre-defined commands are executed a period of time after the instruction is given to carry it out.

The operator can select how long it will be before the delayed function is executed. This can be any length of time from 0 seconds (immediately) to 999 seconds later. Once the order to carry out the delayed function is issued the rest of the system continues operating as normal. Only after the preselected time has elapsed is the delayed function executed.

The delayed function can be aborted, or stopped, at any tie by issuing the abort command.

Note   The delay command is common to all modes and preset programs wipe previous delay program.

13.8   Defining the delayed function   # 420....

The delay function is programmed in the same way as a function key using the following code:

 # 420 , <key> , <key> , -/- , <key> , * , *

The delay function can hold up to 63 keystrokes in memory.

13.9   Starting the delay function   # 421 xxx

The delay function executes a preset time after the code # 421 xxx is issued. The three digit number following the code # 421 is the time, in seconds, before the delay function operates.

 # 421 XXX

Where XXX = 000 to 999 time in seconds

13.10   Aborting the delay function   * 421

The delay function countdown, once started, can be aborted by issuing the code:

* 421

13.11   Pause   * 430

The pause feature will delay any subsequent commands for one half second:

* 430

13.12   Examples using delay, abort and pause features

Define the delayed command to switch from multiscreen display to FULL screen display for one second and then to return to multiscreen display:

 # 420, FULL, * 430, * 430, MSC, * *

Issue the command to execute the delayed command in 15 seconds:

 # 421 015

Wait for fifteen seconds, the display should change from multiscreen to full screen for one second, then change back to multiscreen display.

Test the abort feature by entering the code **# 421 015** again but before the fifteen seconds has elapsed enter:

* 421

This will stop the delayed command.

14   Function Keys

14.1   Function keys

The Uniplex has six user defined Function Keys. These are situated to the right of the keyboard and are numbered F1 to F6. Each Function Key has been designed to memorise a number of keystrokes and to recall those keystrokes when pressed. A long sequence of keystrokes can therefore be replaced by a single Function Key.

The Function Keys can be used to directly select screen modes or access particular screen segments. Each function key can store up to 63 keystrokes.

14.2   Defining a function key   # 400....

The Function Key memory is programmed in the following way:

First enter the code to define a Function key   **# 400**

The Function key to be defined is pressed next   **F1 to F6**

This is then followed by a sequence of keystrokes   **<key> , <key>**

The procedure is ended by pressing the '*' key twice.   ***   ***

As the information is keyed in, each keystroke is displayed, in sequence, on the Base Line of the Main Monitor. This happens in the following manner:

The code #400 remains on the Base Line when the F key is being defined

The Key number is displayed next as: **F2=**

Each keystroke pressed is then displayed in turn.

On completion of the procedure (with *** ***) the baseline will return to normal display.

Important points when defining a function key

1)   A function key cannot define another function key, but a function key may contain another function key as part of the commands to execute.

2)   When selecting record mode use *** 211** to ensure all available cameras are recorded.

14.3   Force key on / off   * /

If either ACT, SEQ or HOLD are used as part of a function key program, this element can be switched on or off using the * and # commands, i.e. If the SEQ command is included in the function key program, selecting *SEQ will stop the sequence operation the next time the function key is pressed. Selecting #SEQ will re-start the sequence element of the program the next time the function key is selected.

<div align="center">

ACT   SEQ   HOLD

</div>

14.4   Function key examples

The following pages detail some commonly used function keys, and the codes to set them up. A blank page is included as a template that can be copied to use as a working page when setting up function keys.

Select 4 way screen with cameras 1-4

Function Key F1

# 400	F1	Program Function Key 1
LIVE		Select Live mode
4 way		Select 4 way screen
* 100		Select screen cameras
CAM 1		Camera 1
CAM 2		Camera 2
CAM 3		Camera 3
CAM 4		Camera 4
* *		End

Select 4 way screen with cameras 5-8

Function Key F2

# 400	F2	Program Function Key 2
LIVE		Select Live mode
4 way		Select 4 way screen
* 100		Select screen cameras
CAM 5		Camera 5
CAM 6		Camera 6
CAM 7		Camera 7
CAM 8		Camera 8
* *		End

Record all cameras and sequence main monitor

Function Key F3

# 400	F3	Program Function Key 3
* 202		Select time lapse mode 2
REC		Select record Mode
* 211		record (record) all cameras
FULL		Select control of main monitor
* SEQ		Set sequence running
* 111		Include all cameras in sequence
* *		End

Record cameras 1-4, sequence cameras 1-4

Function Key F4

# 400	F4	Program Function Key 4
* 204		Select time lapse mode 4
REC		Select record Mode
* 210		Remove all cameras from record
CAM 1,2,3,4		record cameras via select keys 1,2,3,4
FULL		Select control of main monitor (1)
* SEQ		Set sequence running
* 110		Remove all cameras from sequence
CAM 1,2,3,4		Sequence cameras via select keys 1,2,3,4
* *		End

Note: The above examples for programming function key F3 and F4 do not apply to Duplex models.

Playback from video recorder

Function Key F5

# 400	F5	Program Function Key 5
PLAY		Select Playback mode
MSC		Select Multiscreen display
* *		End

General reset key

Function Key F6

# 400	F6	Program Function Key 6
* 911	* 911	Reset sequences
* 912	* 912	Reset camera screen positions
* 913	* 913	Reset zooms
LIVE		Select LIVE mode
*	*	End

Cycle 2 x 4way screens

Function Key F6   Set up two 4 way screens which sequence
                                        displaying cameras 1 to 4 on the first
                                        screen and 5 to 8 on the second

# 400	**F6**	Program Function Key 6
LIVE		Display Live Mode
4 WAY		Select 4 way screen
# 100 001		Control top left screen segment
SEQ		Sequence current screen segment
*** 110**		Cancel all cameras from sequence
CAM 1		Include Camera 1 in sequence
CAM 5		Include Camera 5 in sequence
# 100 002		Control top right screen segment
SEQ		Sequence current screen segment
*** 110**		Cancel all cameras from sequence
CAM 2		Include Camera 2 in sequence
CAM 6		Include Camera 6 in sequence
# 100 003		Control bottom left screen segment
SEQ		Sequence current screen segment
*** 110**		Cancel all cameras from sequence
CAM 3		Include Camera 3 in sequence
CAM 7		Include Camera 7 in sequence
# 100 004		Control bottom right screen segment
SEQ		Sequence current screen segment
*** 110**		Cancel all cameras from sequence
CAM 4		Include Camera 4 in sequence
CAM 8		Include Camera 8 in sequence
*** ***		End

Function key template

Operation:

Function Key F		Description
# 400	**F**	Program Function Key No:

Function key template

Operation:

Function Key F		Description
# 400	**F**	Program Function Key No:

15   Keyboard Security

The multiplexer can be protected from operator misuse by locking out commands that the operator would normally not need to use. This process of locking out commands is called keyboard limitation.

All keyboard operations and commands have been grouped into security levels starting from level 0, highest priority, to level 5, lowest priority.

The security level at which the keyboard lock operates is selectable by the user.

Note   The MPC keys are not affected by the keyboard security, these are available at all times.

15.1   Setting up keyboard security level   # 710 xxx

For experienced Uniplex users a quick guide to keyboard security, which compresses all information needed onto a single page, is provided at the end of this chapter.

The main step in setting up keyboard security is to determine the most suitable security level for the operator of the Uniplex. A very 'safe' choice would be level 1 where the operator can change screens and select cameras but cannot alter operating modes.

At level 3 an operator can utilise nearly all of the features of Uniplex with the exception of programming functions and setting up alarms.

A keyboard can be completely locked out by selecting level 0, only the code to turn off keyboard limitation will be accepted.

A full breakdown of all security levels and the commands available at each level is given later in this chapter.

The following code selects the security level at which the keyboard lock will operate.

Keyboard Security Level

# 710		(default 005)
	005	Program and Security
	004	Operation and Alarms
	003	Initialise and VCR set up
	002	Set mode and sequence
	001	Select cameras, screens
	000	Lock keyboard

Note: If a security code is set, and the access level is 3 or less, then upon entry to the RECord mode the full lamp will be on and the user will have control over the cameras displayed on the main monitor.

15.2   Selecting a security code   # 700 xxx

The security code that will be used to 'unlock' or to turn off keyboard limitation is a three digit number selected by the supervisor.

Any number from **001** to **999** may be used but the code **000** will disable security access limitation and the keyboard limitation commands will have no effect.

Security Code / Pin Number

# 700		(default 000, no security code set)
	000	Security Limitation Disabled
	001 to 999	Personal pin number

**** This code MUST be entered TWICE ****

Example: To set a security code of **123** enter:

 # 700 123   # 700 123

Note: Take care when setting these security features as there is no way to discover or override a lost security code.

15.3   Lock keyboard   * 701

This code locks the keyboard and prevents the operator using commands above the current security level.

Note: If the on-screen help menus are in use, commands that cannot be accessed at the current security level are displayed in purple. This is not applicable for black and white systems.

15.4   Unlock keyboard   * 700 xxx

* 700(three digit pin number)

This code unlocks the keyboard and allows the operator access to all Uniplex commands.

Example: If the security code is **123** unlock the keyboard with:

* 700 123

15.5   Function key security level   # 711 xxx

When a function key is programmed an operator will be able to use the commands that have not been restricted at the current function key security level. By default this security level is linked to the current keyboard security level.

For example setting the code to #711 001 will allow screen changing commands to be programmed in the function key, but will prohibit any mode changing commands i.e. LIVE, RECORD and PLAYBACK.

Security levels at which the Function Keys operate

# 711		(default 999)
	999	Link to keyboard security level
	000 - 005	Function key security level

Tips: If the function keys are linked to level 5 and the keyboard security is set to level 0 the function keys will be the only keys available to the operator.

15.6   Alarm command security level   # 712 xxx

When an alarm command is triggered the pre-defined commands generated will only be executed if they are allowed at the current alarm command security level. By default this security level is linked to the current keyboard security level.

Pre-defined commands at higher levels will be ignored.

This feature allows commands triggered by external events to be security limited.

Security levels at which the Alarms operate

# 712		(default 999)
	999	Link to keyboard security level
	000 - 005	Alarm command security level

Tips: If the alarm commands are linked to level 5 and the keyboard security is set to level 0 the operator will have no access to the Uniplex via the keyboard and the Uniplex will be controlled solely by the alarm inputs.

If the alarm commands are linked to level 0 and the keyboard security is set to level 5, all features of the Uniplex will be available to the operator while the alarm inputs will be completely disabled.

Note: When using alarms it is important to set this command correctly as if too low a level is selected the alarm string may be unable to carry out the specified instructions.

15.7   Structure of security levels

The security levels are structured in several levels of priority ranging from high level to low level.

Commands that alter the way Uniplex works, such as *** 999 * 999** which would fully reset the Uniplex, are high level commands. Everyday operation of the Uniplex such as changing screen displays and selecting cameras are all low level commands.

The supervisor of the Uniplex can select the highest level to which the operator has access.

If the supervisor were to set the security access level to 3 the operator would be able to gain access to all levels up to and including level 3 but would be unable to reach the higher levels 4 and 5.

15.8   Security levels in detail

The following is a list of all commands and settings grouped under the respective security levels.

Level 5 - Mostly 'Program'

Reset camera titles	* 930 * 930
Clear all function keys	* 940 * 940
Clear all alarm strings	* 950 * 950
Full System Reset	* 999 * 999
Define camera titles	# 300
Text background / foreground colours	# 310, # 311
VCR camera titling	# 320
Record time and date	# 340
Define Function keys	# 400
Define delayed command	# 420
Alarm set channels	# 501, # 502, # 503
Alarm clear channels	# 511, # 512, # 513
First alarm set	# 521, # 522, # 523
Last alarm cleared	# 531, # 532, # 533
Set head and tail	# 541 to # 546
Clear head and tail	# 551 to # 556
Set security code	# 700
Set security level	# 710
Function key & alarm security levels	# 711, # 712
Select colour/b&w cameras	# 850, # 851
Set asynchronous/synchronous cameras	# 860, # 861
Load stored program	# 870
Select colour/b&w operation	# 880

Level 4 - Mostly 'Operation'

Record camera select	REC plus CAM 1 to CAM 16
Movement camera select	ACT plus CAM 1 to CAM 16
Deselect/select cameras to be recorded	* 210, * 211
Deselect/select movement cameras	* 610, * 611
Reset alarm features	* 960 * 960
Reset Movement	* 961 * 961
Reset operational modes	* 980 * 980
Camera offset number	# 330
Define second set of alarm contacts	# 560
Alarm inputs normally open/closed	# 580, # 581, # 585
Enable/disable alarm features	# 601 to # 609
Alarm channel enable/disable	# 611 to # 616
Enable/disable 1st set, last clear	# 621 to # 626
Enable/disable head and tails	# 631 to # 636
Enable/disable Movement	# 651, # 652, # 653
Select movement scene type	# 661 to # 665
Movement grid / colour / delay enable	# 670, # 680, # 690
Maximum number of cameras in system	# 800
Interlace correction	# 810

Level 3 - Mostly 'Initialise'

Reset sequence selects	* 911 * 911
Reset camera selects	* 912 * 912
Reset zoom positions	* 913 * 913
Set primary multi-screen	# 130
Set primary picture-in-picture	# 140
Select time lapse VCR	# 200
Set VCR field delay	# 201 to # 208
Set VCR display in hours	# 211 to # 218
Select active alarm time-lapse mode	# 220

Level 2 - Mostly 'Set'

Select camera in sequence	SEQ plus CAM 1 to CAM 16
Set Operational Mode	LIVE, REC, PLAY
Remove/include all cameras in seq	* 110, * 111, * 120, * 121
Select time lapse mode	* 201 to * 208
Switch to active alarm time lapse	* 220
Return to current select time lapse	* 221
Open/close alarm contacts	* 561, * 562, * 571, * 572
Set sequence rates on monitors	# 011, # 012
Set Time and Date	# 020, # 021

Level 1 - Mostly 'Select'

Select camera / VCR	CAM 1 to CAM 16 & VCR
Select Screen Mode	FULL, 4WAY, MSC, PinP
Select Spot Monitor	SPOT
Select/control screen segment	Arrow keys in MSC / 4WAY / PinP
Sequence on / off	SEQ
Hold on/off	HOLD
Zoom, move zoomed area	ZOOM in FULL, use arrow keys
Report software version	* 000
Direct select cameras	* 100
Direct select multi-screens	* 131 to * 135
Direct select picture-in-picture	* 141 to * 148
Abort delay function	* 421
Pause Uniplex	* 430
Select camera via alarm input	* 500
Direct select Spot Monitor	# 100 000
Direct select screen segment	# 100 xxx
Start delayed function	# 421

Level 0 - Cannot be disabled

Keyboard Limitation Off	* 700
Keyboard Limitation On	* 701
Help screens	# 000

15.9   A quick guide to keyboard security

Choose and set a security level

 # 710

005
004
003
002
001
000

When a security level has been set only commands in the current and lower security levels can be used by the operator

Define a (secret) three digit pin number from 001 to 999 and enter that number with the following code:

# 700	**xxx**

This code must be entered twice

Note: If the number selected is 000 then the operator has access to all security levels

To lock keyboard, use the code:

* 701

The operator can now only use commands up to and including those in the current security level

To unlock the keyboard enter the code:

* 700	**xxx**

Where xxx = pin number or security code

Level 5 - Mostly 'Program'

Program/Initialise Function keys
Program/Initialise Alarm commands
Program/Initialise Camera Titles
Full system reset
Security codes / access levels

Level 4 - Mostly 'Operation'

Initialise operation modes
Initialise alarm
Select cameras to be recorded
Set maximum number of cameras
Set interlace correction
Alarm inputs normally open / closed
Enable / disable alarm features

Level 3 - Mostly 'Initialise'

Initialise sequence selects
Initialise camera selects
Initialise zoom positions
Time lapse speed in use
Set VCR parameters & VCR type

Level 2 - Mostly 'Set'

Set time and date
Set mode, Live, Record, Playback
Primary screen, MSC, PinP
Set sequence rate on monitors
Select cameras in sequence
Select VCR time lapse modes
Open / close alarm contacts

Level 1 - Mostly 'Select'

Select split screen display
Select P-in-P positions
Select screen segments
Select cameras and view VCR
Turn sequencing on & off
Use of Hold, Zoom, move zoomed area
Control of Spot monitor
Report Software version

Level 0 - Keyboard locked out

Release keyboard limitation
Select help screen level

---

16 Preset Programs

A series of user selectable preset programs are provided to enable the user to select the operation most suitable to their particular application.

Note: When using any of the preset programs it is necessary to enable the alarm functions, refer to the Advance Alarm chapter of this manual for details.

16.1 Live mode alarms 1 # 870 001

This is useful for systems that are manned where the main monitor will display a split screen until an alarm triggers full screen display. As the last alarm input triggered causes the corresponding camera to be displayed full screen the system tracks alarms until all alarms are cleared when a multiscreen display will then be selected.

Non alarm condition:

Multi-screen primary display
First alarm contacts open

Alarm condition:

Main monitor shows full screen camera corresponding to last alarm triggered.
First alarm contacts closed

# 521	First Alarm Set (Live mode)
* 561	Close first set of alarm contacts
# SEQ	Turn sequence off if set
FULL	When the first alarm is triggered, change screen display to FULL screen
* *	display.
# 531	Last Alarm Cleared (Live Mode)
* 571	Open first set of alarm contacts
MSC	When the last alarm is reset and no alarms are triggered, return to
* *	multiscreen display
# 541	Set Head (Live mode)
* 500	Using the alarm input number select the corresponding camera to be
* *	displayed on screen
# 544	Set Tail (Live mode)
* *	Erase any previous 'Set Tail' commands
# 551	Clear Head (Live mode)
* *	Erase any previous 'Clear Head' commands
# 554	Clear Tail (Live mode)
* *	Erase any previous 'Clear Tail' commands
# 420	Delayed Command
* *	Erase delayed command

16.2   Record alarms 1   # 870 002

This is commonly used in conjunction with a time lapse video recorder that can automatically be switched into real time, (normal speed), recording. All cameras will be recorded in time lapse mode and when an is received the VCR will switch to normal speed and only those cameras with alarms present will be recorded to tape.

Non alarm condition:

Record all cameras in current time-lapse mode

Alarm condition:

Record only cameras that have corresponding alarm inputs triggered
Switch to alarm time-lapse mode

Note: In order to change the output contacts when running a Record alarm program a Live alarm program must be run in conjunction (Refer to Advanced Alarm Manual for further information).

# 522	First Alarm Set (Record mode)
REC	Reselect Record mode, cancels FULL or TELEM if selected
* 220	Switch to active alarm time lapse mode (usually 3 hour)
* 210	Remove all cameras from present record sequence
# 532	Last Alarm Cleared (Record Mode)
* 221	Return to currently selected time lapse mode
* 211	Record all cameras to video tape
# 542	Set Head (Record Mode)
* 500	Using the alarm input number allow the corresponding camera to be
* *	recorded to tape
# 545	Set Tail (Record mode)
* *	Erase any previous 'Set Tail' commands
# 552	Clear Head (Record mode)
*500	Using the alarm input number remove the corresponding camera from the
* *	present record sequence
# 555	Clear Tail (Record mode)
* *	Erase any previous 'Clear Tail' commands
# 420	Define Delayed Command
* *	Erase delayed command

16.3   Playback alarms 1   # 870 003

This is used specifically to review tapes that have been Recorded when alarms may have been present on the system. As the alarm information is tagged onto the tape, alarms can be reviewed as they actually happened.

Non alarm condition:

Multi-screen primary display

Alarm condition:

Main monitor shows full screen camera corresponding to last alarm triggered.

# 523 FULL * *	First Alarm Set (Playback mode) When the first alarm is triggered, change screen display to FULL screen display
# 533 MSC * *	Last Alarm Cleared (Playback mode) When the last alarm is reset and no alarms are triggered, return main monitor to a multiscreen display
# 543 * 500 * *	Set Head (Playback mode) Using the alarm input number select the corresponding camera to be displayed on screen
# 546 * *	Set Tail (Playback mode) Erase any previous 'Set Tail' commands
# 553 * *	Clear Head (Playback mode) Erase any previous 'Clear Head' commands
# 556 * *	Clear Tail (Playback mode) Erase any previous 'Clear Tail' commands
# 420 * *	Define Delayed Command Erase delayed command

16.4   Live mode alarms 2   # 870 004

This works in a similar manner to Live mode alarms 1 but has a built in two second delay from the last alarm being cleared to the multiscreen display being selected.

Note: This program cannot be used in conjunction with other preset programs containing delay functions, such as # 870 005 Record alarms 2 and # 870 006 Playback alarms 2.

Non alarm condition:

Multi-screen primary display
First alarm contact open

Alarm condition:

Main monitor shows full screen camera corresponding to last alarm triggered.
Return to non alarm condition 2 seconds after last alarm cleared
First alarm contacts closed

# 521	First Alarm Set (Live mode)
* 421	When the first alarm is triggered, abort the delayed command (if set)
FULL	Change screen display to FULL screen display
* 561	Close first set of alarm contacts

Note: It is necessary to abort the delayed command at this point as it may have already been triggered by a previous alarm resetting.

# 531	Last Alarm Cleared (Live mode)
# 421 002	When the last alarm is reset and no alarms are triggered, execute the
* *	delayed command after two seconds
# 541	Set Head (Live mode)
* 500	Using the alarm input number select the corresponding camera to be
* *	displayed on screen
# 544	Set Tail (Live mode)
* *	Erase any previous 'Set Tail' commands
# 551	Clear Head (Live mode)
* *	Erase any previous 'Clear Head' commands
# 554	Clear Tail (Live mode)
* *	Erase any previous 'Clear Tail' commands
# 420	Defined Delayed Command
MSC	Select the primary multiscreen display after delay set by # 421 XXX
* 571	Open first set of alarm contacts
* *	

16.5 Record alarms 2 # 870 005

Similar to Record alarms 1 this will wait for 5 seconds after the last alarm cleared before returning to Record all cameras in time lapse mode.

Non alarm condition:

Record all cameras in current time-lapse mode

Alarm condition:

Record only cameras that have corresponding alarm inputs triggered
Switch to alarm time-lapse mode
Return to non alarm condition 5 seconds after last alarm cleared

This is commonly used in conjunction with a time lapse video recorder that can automatically be switched into real time, or normal speed, recording. All cameras will be recorded in time lapse mode but when any alarms occur the VCR will switch to normal speed and only those cameras with alarm inputs triggered will be recorded to tape.

# 522	First Alarm Set (Record mode)
* 421	When the first alarm is triggered, abort the delayed command (if set)
REC	Reselect Record mode, cancels FULL or TELEM if selected
* 220	Switch to active alarm time lapse mode (usually 3 hour)
*210	Remove all cameras from present record sequence
* *	

Note: It is necessary to abort the delayed command at this point as it may have already been triggered by a previous alarm resetting

# 532	Last Alarm Cleared (Record mode)
# 421 005	When the last alarm is reset and no alarms are triggered, execute the
* *	delayed command after five seconds

# 542	Set Head (Record mode)
* 500	Using the alarm input number allow the corresponding camera to be
* *	recorded to tape

# 545	Set Tail (Record mode)
* *	Erase any previous 'Set Tail' commands

#552	Clear Head (Record mode)
* 500	Using the alarm input number remove the corresponding camera from
* *	the present record sequence

# 555	Clear Tail (Record mode)
* *	Erase any previous 'Clear Tail' commands

# 420	Define Delayed Command
* 221	Return to currently selected time lapse mode
* 211	Encode all cameras to video tape
* *	

16.6   Playback alarms 2   # 870 006

Similar to Playback alarms 1 this will return to displaying the primary multiscreen display two seconds after the last alarm is cleared.

Non alarm condition:

Multi-screen primary display

Alarm condition:

Main monitor shows full screen camera corresponding to last alarm triggered.
Return to non alarm condition 2 seconds after last alarm cleared.

# 523	First Alarm Set (Playback mode)
* 421	When the first alarm is triggered, abort the delayed command (if set)
FULL	When the first alarm is triggered, change screen display to FULL screen
* *	display

Note:	It is necessary to abort the delayed command at this point as it may have already been triggered by a previous alarm resetting

# 533	Last Alarm Cleared Playback mode)
# 421 002	When the last alarm is reset and no alarms are triggered, execute the
* *	delayed command after two seconds

# 543	Set Head (Playback mode)
* 500	Using the alarm input number select the corresponding camera to be
* *	displayed on screen

# 546	Set Tail (Playback mode)
* *	Erase any previous 'Set Tail' commands

# 553	Clear Head (Playback mode)
* *	Erase any previous 'Clear Head' commands

# 556	Clear Tail (Playback mode)
* *	Erase any previous 'Clear Tail' commands

# 420	Define Delayed Command
MSC	Select the primary multiscreen display after delay set by # 421 XXX
* *	

16.7   Spot monitor as alarm display   # 870 007

This sets the spot monitor to switch automatically to the last alarm triggered. If no alarms are triggered the spot monitor will auto sequence the cameras connected to the system. This preset program operates in Live, Record and Playback modes and will remove any other preset alarm programme.

Non alarm condition:

Spot monitor sequences through all available cameras.

Alarm condition:

Spot monitor shows camera corresponding to last alarm input triggered.

# 521 * *	Erase any previous 'First Alarm Set' commands (Live mode)
# 522 * *	" " " " " " " (Record mode)
# 523 * *	" " " " " " " (Playback mode)

# 531	Last Alarm Cleared (Live mode)
# 100 000	Select spot monitor
SEQ	Sequence spot monitor
TELEM	Deselect spot monitor
* *	

532, # 100 000, SEQ, TELEM, * * - As above for Record mode
533, # 100 000, SEQ, TELEM, * * - As above for Playback mode

# 541	Set Head (Live mode)
# 100 000	Select spot monitor
* 500	Using the alarm input number select the corresponding camera to be displayed on the spot monitor
TELEM	Deselect spot monitor

542, # 100 000. * 500, TELEM, * * - As above for Record mode
543, # 100 000, * 500, TELEM, * * - As above for Playback mode

# 551 * *	Erase any previous 'Clear Head' commands (Live mode)
# 552 * *	" " " " " " (Record mode)
# 553 * *	" " " " " " (Playback mode)

# 544 * *	Erase any previous 'Set Tail' commands (Live mode)
# 545 * *	" " " " " " (Record mode)
# 546 * *	" " " " " " (Playback mode)

# 554 * *	Erase any previous 'Clear Tail' commands (Live mode)
# 555 * *	" " " " " " (Record mode)
# 556 * *	" " " " " " (Playback mode)

# 420 * *	Erase delayed command

17   Reset Commands

A series of reset commands have been made available to selectively clear, or initialise, the features of the multiplexer.

17.1   Reset sequences   * 911 * 911

Restores default sequence selects to all cameras:

Sequences	All camera sequences canceled
Sequence rates	5 seconds, main & spot monitors
Record	All cameras recorded

17.2   Camera selects   * 912 * 912

Restores default camera selects:

Full Screen	Displays camera 1
4 Way Split	Displays cameras 1,2,3 & 4
9 Way Split	Displays cameras 1 to 9
Multi-Screen	Displays cameras 1, up to 16
Picture-in-picture	Displays cameras 1 & 2 or 1,2,3,4 & 1
Spot Monitor	Displays camera 1
Screen segments	All 'holds' are canceled

17.3   Zoom positions   * 913 * 913

Resets all zoomed in cameras:

All cameras	Normal full screen display
Area to be zoomed	Centralised on all cameras

17.4   Camera titles   * 930 * 930

Resets all sixteen camera titles to match camera numbers:

Titles	01:CAMERA 01, 02:CAMERA 02, etc..

17.5   Function keys   * 940 * 940

Clears all the function keys.

17.6   Alarm input key sequences   * 950 * 950

Clears all the alarm input strings.

17.7   Alarm features   * 960 * 960

Restores standard alarm features:

Alarm inputs	Normally open operation
Alarm contact 1	Closed, operates on commands *562, *572
Alarm contact 2	Closed, operates as video loss indicator
Input alarms	All features enabled
VCR tape alarms	Lamp flash only enabled

> *Refer to the Advanced Alarm Manual for details.*

17.8   Movement   * 961 * 961

Restores default movement:

Indication colour	Yellow - applicable to colour systems only
Indication colour	White - applicable to black and white systems only
Cameras	All cameras off
Live mode	Off
Record mode	Movement interleaving set
Playback mode	Off
Movement grid	All cells enabled
Movement delay time	10 seconds

17.9   Operational modes   * 980 * 980

Restores default operating modes:

Operating Mode	Live mode
Screen Mode	Full
MSC key selects	8 + 2 screen
P-in-P key selects	Top left single insert

17.10   Full system reset   * 999 * 999

This code completely resets the multiplexer. All Caption Window titles will be lost as will any user parameters previously entered. The Time and Date are unaffected by this command.

> *Refer to set up, section 4, for a complete list.*

18   Technical Specification

The following is technical information of the Uniplex Series 1 and Series 2 multiplexers, any reference to colour and S-VHS is only applicable to the Uniplex Series 2.

Display modes

Multiplexer Record Duplex multiplexers:	Simultaneous time base corrected digital recording of all cameras to tape as full screen images whilst viewing live scenes or during playback mode. Record mode utilises Movement Detection to enhance the record update sequence.
Multiplex Playback:	Selection and playback of one or more cameras as a continuous scene in full-screen or any of the multiscreen options. A 2 to 1 zoom is also available to enlarge any area of the recorded image.

Framestore

S-video component type frame store on Uniplex Series 2 only

Colour recording method:	UV (R-Y), (B-Y)
Sample rate Colour: Sample rate Mono:	13.5 Mhz 16 Mhz
Sample per line CCIR:	832 Horizontal x 448 Vertical, 1024 levels of grey 10 bit luma
Sample per line PAL:	704 Horizontal x 512 Vertical, 256 levels of grey 8 bit luma
Total memory capacity Mono:	4 Mbits
Colour Storage format:	16.8 million colours implemented to CCIR 4:2:2 standard

Screen modes

Main:	Full screen digital x2 zoom facility with full movement of the magnified image within the field of view QUAD 4 + 3 8 + 2 9 Way 12 + 1 16 Way Eight variants of Picture-in-Picture Sequence Hold or freeze frame
Spot:	Independent analogue switcher output via TELEM key, spot or sequence

Video inputs

Camera inputs:	Sixteen (2 x BNC connectors per input channel) menu individually selected to 75 ohm termination. Loop through inputs.
CCIR/PAL:	625 lines, 50 fields per second

Video inputs/outputs

Mon A:	Main digital monitor, via BNC composite video connectors or on Uniplex Series 2 Duplex multiplexers S-Video 4 pin mini DIN
Mon B:	Independent Spot monitor outlet. Composite video via BNC connector
VCR out-Uniplex Series 1:	Multiplex encoded output, via BNC composite video connector
VCR out-Uniplex Series 2:	Multiplex encoded output, via BNC composite video connector or S-Video 4 pin mini DIN
VCR in-Uniplex Series 1:	via BNC composite video connector
VCR in-Uniplex Series 2:	via BNC composite video connector or S-Video 4 pin mini DIN

Telemetry control

All models facilitate telemetry control either up the coax (FSK Signalling) to CR3, CR4, CR5 receiver; via c-bus to DR4+ receiver or via Advance cti accessory via drop wire 10 (DTMF Signalling) also to DR4+ receiver.

c-bus termination

2 x MMJ connectors providing looping in/out c-bus "A & B" signalling. c-bus MMJ out also provides 12V d.c. output as local PSU for c-bus accessory devices.

Movement detection

Priority recording on camera movement

16 x 8 grid, individually selectable on all channels

Selectable sensitivity for variations in scene type

Option for relay2 output controlled by movement detection

Alarm inputs/outputs

Input:	Responds to 16 alarm inputs received via c-bus remote alarm modules or PIR's
	Alarm input from VCR connected to AUX -/+ (terminal block)
Output:	Two relay outputs R1 and R2

Temperature range

Operating range:	0 - 40°C

Power requirements

DC input supplied through external PSU (provided as standard)

Dimensions

Control unit: 98mm (H) (include feet) x 425mm (W) x 450mm (D)
                                 3.86" (H) (include feet) x 16.75" (W) x 17.73 (D)

Keyboard: 35mm (H) x 415mm (W) x 177mm (D)
                                 48.27" (H) x 16.35 (W) x 6.97" (D)

Weight

Main unit: 6 Kg
                                 13.23 lbs

Keyboard: 2 Kg
                                 4.41 lbs

19   Glossary

19.1   Abbreviations

A/D	Analogue to Digital
AUX	Auxiliary
BCD	Binary Coded Decimal
CCD	Charge Coupled Device
CCIR	Consultative Committee for International Radio
CPU	Central Processing Unit
CRT	Cathode Ray Tube
D/A	Digital to Analogue
FSK	Frequency Shift Key
HS	Horizontal Sync
HZ	Hertz (cycles per second).
IDC	Insulation Displacement Connector
I^{2}C	Inter IC (bus)
I/O	Input / Output
I/P	Input
LED	Light Emitting Diode
MPX	Multiplexer
O/P	Output
SVHS	Super Video Home System
TDG	Time and Date Generator
VCR	Video Cassette Recorder
VDU	Visual Display Unit
VHS	Video Home System
VS	Vertical Sync

19.2   Glossary of terms

Movement - Method of detecting movement within the field of view of a camera and using that information to improve camera update times.

Analogue (picture) - Electronic camera signal that has not been digitally processed.

Aspect Ratio - The ratio between the width and height of a television picture. The ratio for CCTV and normal Television is 4:3.

Base Line -The line at the bottom of the Main Monitor screen in a Uniplex which displays the time, date, and other information.

Betamax -Sony domestic video recorder format.

Blanking or Black Level - The difference in voltage between the video signal and the synchronisation signals.

Blanking period - Time when video information is not present. Consists of the porches (front and back) and the sync pulses. Blanking period between lines is 12 μs and between fields is 1.6 ms.

Cameo -One sixteenth of the area of a full screen.

c-bus - (RS485) A flexible network used for controlling Uniplex units and any alarms.

Contrast -Difference between the darkest and brightest parts of an image. Ideally the darkest part of an image should be black and the lightest part bright white with an even shade of greys between. The contrast control on the monitor can adjust this ratio and indeed extend it so that the image consists of mostly blacks and whites (high contrast) or mainly greys (low contrast).

Compressed Picture - A compressed picture is a full size picture that has been reduced in size while still displaying all of the original screen information.

Data -Computer or digital information.

Definition -The ability of a camera or monitor to resolve fine detail, measured in lines.

Digital -Information in on/off form.

Distortion -Degradation of a transmitted signal.

Field -A single scan of a TV screen. Note that there are two fields per frame.

Frame -A complete TV picture consisting of two fields. There are twenty five frames per second.

Framestore -An electronic digital memory that can store video camera pictures.

Genlock -An electronic circuit in a camera enabling it's video output to be synchronised to an external source.

Herringbone -Patterning caused by driving a colour modulated composite video signal into a monochrome (black & white) monitor.

Memory -Electronic circuitry capable of holding information.

Monitor -The screen on which a camera picture is displayed.

Multiplex -To transmit several signals on a single channel.

Multiplex Encoding - The technique of recording several video cameras sequentially onto a single video tape.

Pan -To move the camera horizontally (left or right).

Pixel -In a digital display a pixel is the smallest individual dot that can be separately illuminated.

Pulse Insertion - Technique of adding sync to video.

Quadrant -One quarter of the area of a full screen.

Random Interlace - A term describing a camera that has a free running horizontal sync as opposed to a 2:1 interlace type which has the sync locked and therefore has both fields in a frame locked accurately together.

Raster -The pattern of scanning lines making up a picture on the TV or monitor display.

Review -To examine a previously recorded video tape.

Saturation -The amount of colour information present in a picture.

Screen Segment - An area of screen displaying one camera picture. This may be Quadrant, Cameo or Full Screen sized.

Serial -Information transmitted one part after another down a single channel.

Split screen -A method of displaying two or more cameras simultaneously on one video screen.

Sync -The signals used by a video system for visual information to be displayed coherently.

Sync generator - A unit that generates field and line pulses to synchronise various video sources. See Genlock.

Tilt -To move the camera in the vertical axis (up or down)

Time Lapse -Used to describe a video recorder which records frames from the camera at intervals thereby greatly increasing the recording time of a length of a tape.

Time Multiplexing - The technique of recording several cameras onto a Time Lapse Video Recorder by sequentially sending camera pictures with a timed interval delay to match the Time Lapse mode selected on the recorder.

Video -Term for the signal output from a video camera.

Video Tape -Magnetic medium upon which video signals can be recorded.

X-Axis -Horizontal axis.

Y-Axis -Vertical axis.

Zoom -Feature enabling a camera to examine an area in closer detail.

20   Returns Procedure

In the event of difficulty

Multiplexer technology is reliable and faults are rare. Most user problems are concerned with installation and set up. If you are in difficulty first approach your dealer or distributor. Dedicated Micros operates a Technical Support Group where most technical problems can be solved over the telephone, however it is important that this manual has been followed before calling the Technical Support Group.

The following are the telephone numbers for all Dedicated Micros Technical Support Departments:

U.K.	Int +(44) 161 727 3241
Belgium	Int +(32) 1640 1228
U.S.A	Int +(703) 904 7738 or (800) UNIPLEX
Asia	Int (65) 741 0138
Australia	Int +(612) 482 1857

Note: This manual must be available when contacting Dedicated Micros as reference will be made to it.

If, for what ever reason, this is not possible, the unit can be returned directly to a Dedicated Micros Repairs Department. In this event please follow the returns procedure as detailed below to avoid any delay.

Photocopy the EQUIPMENT RETURN ADVICE. Contact the Customer Services Department to obtain a returns number.

The following information must be available to give to the Customer Services Department when requesting a returns number.
*   Model type
*   Serial number
*   Full Account/Invoice address or Return Address if different
*   Contact name
*   Fax number and Telephone number
*   Customer order number - for repair cost not exceeding £100
*   Full description of the fault
*   Previous returns number(s) (if applicable)

If the unit is rack mounted, the rack mount kit must be removed before the unit is packed. Wrap the unit in the original polythene bag. Fit preformed end pieces at either side of the unit.

If the unit is not returned in it's original packing, Dedicated Micros Repair Department will automatically re-box the unit, and there will be a charge of £11.75 inc. VAT.

Mark the return number, obtained from the Customer Services Department, clearly on the outside of the box. Return the unit to the address on the rear cover of this manual, a completed copy of the EQUIPMENT RETURN ADVICE must be sent with the unit.

If the unit crosses a national border, enter the Airway Bill number on the copy of the EQUIPMENT RETURN ADVICE and fax to dedicated Micros for the attention of the Despatch Department. This will avoid any delays in returning the unit after it has been repaired.

Notes:

Dedicated Micros tries to maintain a fast turnaround procedure for repairing equipment, incomplete or inaccurate documentation may result in delay.

If the unit is not under warranty a charge will be made for the repair.

If the unit has it's warranty void, due to misuse or damage, the Repairs Department will contact the account customer to advise the cost.

Upon examination of the unit if the repair cost is likely to exceed £100, the Repairs Department will contact the account customer for authorisation before work is undertaken.

Repairs not exceeding £100 will automatically be carried out and invoiced on the official order number stated by the account customer on the EQUIPMENT RETURN ADVICE.

EQUIPMENT RETURN ADVICE

Company Name:

Contact Name:

Invoice Address:

Tel. No.:

Fax No.:

Model/Type of Equipment Returned:	Serial No.:
Returns Number:	Official Order Number:

Master Airway Bill Number:

Previous Returns Number: (if applicable)

Details of Reported Fault:

Returns Address for Unit:

21   Appendix A

Compatible VCR table

The following table details all Video Records that have been programmed into the # 200 code of the Uniplex multiplexer.

If the VCR installed is not present in this table contact Dedicated Micros Technical Support Department for the setup procedure.

#200	Compatible VCR	Field delays and time lapse hours																
		#201	#211	#202	#212	#203	#213	#204	#214	#205	#215	#206	#216	#207	#217	#208	#218
000	Standard/LP																
001	Asutsa TLVCR 251	002	003	009	024	017	048	025	072	041	120	057	168	081	240	161	480
002	Asutsa TLVCR 964	002	003	005	012	009	024	017	048	025	072	041	120	057	168	081	240
003	Burle 3931X field	002	003	005	012	008	024	025	072	041	120	057	168	081	240	080	240
004	Burle 3931X frame	002	003	008	012	016	024	050	072	082	120	114	168	162	240	162	240
005	Burle 3910	002	003	005	012	009	024	017	048	025	072	041	120	057	168	081	240
006	Burle 3961X/3910X	002	003	005	012	009	024	017	048	025	072	041	120	057	168	081	240
007	Comutar CTR3024	002	003	005	014	009	024	017	048	025	072	041	120	061	180	081	240
008	Gyyr 1600X field	002	003	005	012	008	024	025	072	041	120	057	168	081	240	081	240
009	Gyyr 1600X frame	002	003	008	012	016	024	050	072	082	120	114	168	162	240	162	240
010	Gyyr 2051X	002	002	006	012	009	018	012	024	024	048	036	072	060	120	120	240
011	Gyyr TLC 1400	002	003	006	018	012	036	024	072	036	108	048	144	060	180	084	252
012	Gyyr TLC 1800X	002	003	005	012	009	024	017	048	025	072	041	120	057	168	081	240
013	Hitachi VTL30 field	002	003	005	012	008	024	025	072	041	120	057	168	081	240	081	240
014	Hitachi VTL30 frame	002	003	008	012	016	024	050	072	082	120	114	168	162	240	162	240
015	Hitachi VTL1000	002	003	005	012	009	024	017	048	025	072	041	120	057	168	081	240
016	Hitachi VTL2000	002	003	005	012	009	024	017	048	025	072	041	120	057	168	081	240
017	Hitachi VTL2500	002	003	005	012	009	024	017	048	025	072	041	120	057	168	081	240
018	Ikegami TVR 625 field	002	003	002	006	009	024	025	072	041	120	081	240	161	480	321	960
019	Ikegami TVR 625 frame	002	003	002	006	018	024	050	072	082	120	162	240	322	480	642	960
020	JVC BR9060 field	002	003	002	006	009	024	025	072	041	120	081	240	161	480	321	960
021	JVC BR9060 frame	002	003	002	006	018	024	050	072	082	120	162	240	322	480	642	960
022	JVC SRL900E/BR9020E	002	003	002	006	009	024	025	072	041	120	081	240	161	480	321	960
023	JVC BRS920E/925E	002	003	005	012	009	024	017	048	025	072	041	120	057	168	081	240
024	JVC SR-L901E	001	008	003	024												
025	Mitsubishi HS480	002	003	018	024	034	048	050	072	082	120	162	240	322	480	322	480
026	Mitsubishi HS480E	002	003	018	024	034	048	050	072	082	120	162	240	162	240	162	240
027	Mitsubishi MS3600	002	003	018	024	034	048	050	072	082	120	162	240	162	240	162	240
028	Mitsubishi BV1300E(B)	002	003	005	012	009	024	017	048	025	072	041	120	057	168	081	240
029	Mitsubishi 5600/5300	002	003	005	012	009	024	017	048	025	072	041	120	057	168	081	240
030	Mitsubishi HS5168E	002	003	005	012	009	024	017	048	025	072	041	120	057	168	081	240
031	Mitsubishi HS5424E	002	003	005	012	009	024										
032	Mitsubishi HS5440E	002	004	002	008	003	024	005	040								

#200	Compatible VCR	#201	#211	#202	#212	#203	#213	#204	#214	#205	#215	#206	#216	#207	#217	#208	#218
033	Mitsubishi AG-TL700	002	003	009	024	017	048	025	072	033	096	041	120	062	170	062	170
034	Panasonic 6010	002	003	014	018	026	036	050	072								
035	Panasonic 8050/8051	002	003	004	012	008	024	016	0448	024	072	040	120	048	144	080	240
036	Panasonic AG6730/6040E	002	003	009	024	017	048	025	072	029	084	041	120	061	180	081	240
037	Panasonic 6040/6720	002	003	005	014	009	024	017	048	025	072	041	120	061	180	081	240
038	Panasonic 6730	002	003	005	014	009	024	017	048	025	072	041	120	061	180	081	240
039	Panasonic 6024	002	003	005	012	009	024										
040	Panasonic AGTL 700	002	003	005	012	009	024	017	048	025	072	041	120	057	168	081	240
041	Panasonic 6124/6064	002	003	005	012	009	024	017	048	025	072	041	120	057	168	081	240
042	Philips TL-720HR	002	003	009	024	017	048	025	072	057	168	173	336	241	720	241	720
043	Sanyo TLS2000	002	003	004	012	008	024	016	048	024	072	040	120	048	144	080	240
044	Sanyo TLS1000P/1001P	002	003	006	018	012	036	024	072	036	108	048	144	060	180	084	252
045	Sanyo TLS500P/900P	002	003	005	012	009	024	017	048	025	072	041	120	057	168	081	240
046	Sanyo TLS924P/942P	002	003	005	012	009	024	017	048	025	072	041	120	057	168	081	240
047	Sanyo TLS1500P/2500P	002	003	005	012	009	024	017	048	025	072	041	120	057	168	081	240
048	Sony SVT3000	002	003	004	012	008	024	016	048	024	072	032	096	040	120	056	168
049	Sony SVT 5000	002	003	004	012	008	024	016	048	024	072	032	096	040	120	056	168
050	Sony SVT 5000P/S3000P	002	003	004	012	008	024	016	048	024	072	040	120	048	144	080	240
051	Sony Watchcorder	014	021	026	036	050	072	098	144	162	240	322	480	322	480	322	480
052	Sony SVT100P	002	003	005	012	009	024										
053	Sony SVT1000P	002	003	005	012	009	024	017	048	025	072						
054	Toshiba KB6200E	002	003	005	012	009	024	017	048	025	072	041	120	057	168	080	240
055	Vicon VCR400	002	003	018	024	034	048	050	072	114	168	162	240	322	480	322	480
056	Vicon VCR401/410/424	002	003	005	012	009	024	017	048	025	072	041	120	057	168	081	240
057	Vicon VCR402-P/405-P	002	003	005	012	009	024	017	048	025	072	041	120	057	168	081	240
058	Vista VCR 27HR	002	003	005	012	009	024										

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