Timespace Technology

K200

Digital Video Recorder
Instruction Manual

Designed and Manufactured in the UK

This Instruction Manual is constantly updated. To download the latest version please go to www.tspace.co.uk

K200 Configuration Utility V1.1.2
PCLink Suite V 7.0
Kstation V1.0.0.2

K200

Digital Video Recorder
Instruction Manual

CONTENTS

SAFETY

<u>**WARNING**</u>

To prevent permanent damage the battery in this unit MUST be fully recharged at least every 3 months, even if the product is not in use.

Designed for indoor use in the temperature range 0° to 45°C, 20% to 80% RH (non-condensing).

WARNING: Do not wet the product when cleaning.
WARNING: Do not open the K200 case - no user serviceable parts inside.

EC Declaration of Conformity   (CE)

We   Timespace Technology Ltd.
        Blackstone Rd
        Huntingdon
        PE29 6TT
        United Kingdom

declare that the

K200 Digital Video Recorder

Meets the intent of the European Council Directive 89/336/EEC referred to as the Electromagnetic Compatibility (EMC) Directive. The product conforms to the following standards which have been listed in the *Official Journal of the European Union.*

EMC
Emissions: EN61000-6-3(2001) EMC Generic Emission Standard for residential, commercial and light industrial. Referring to:

      a) EN55022(1998) Conducted, Class B
      b) EN55022(1998) Radiated, Class B

Immunity: EN61000-6-1(2001) EMC Generic Immunity Standard for residential, commercial and light industrial. Referring to:

      a) EN55024(1998) Information Technology Equipment – Immunity Characteristics
      b) IEC 61000-4-6(2003) RF Field
      c) EN60801-2(1993) Electrostatic Discharge
      d) IEC 61000-4-4 (2004) Fast Transient

....
Dr ROBERT HEYLEN
TECHNICAL DIRECTOR - 25th May 2006

BATTERY LIFE

This product uses Lithium Polymer batteries. These batteries have a high capacity, but require regular charging to maintain this capacity.

If the unit is left uncharged for significant periods of time it is possible for the battery to self-discharge to a level that can permanently damage the battery and significantly reduce the capacity.

We recommend ensuring that the unit is charged at least once every three months to prevent this, even if not in regular use.

The expected life time of this kind of battery when used correctly is 300+ re-charge cycles, or two to three years (whichever occurs sooner) before capacity starts to reduce significantly (below 80% of original capacity). It is normal for the capacity to reduce as the battery gets older, and the user should expect to have the battery replaced once capacity has dropped below an acceptable level for recording duration.

Amperex Technology Limited
新能源科技有限公司
3503, Wharf Cable TV Tower, 9 Hoi Shing Road, Tsuen Wan, N.T., HongKong
香港新界荃湾海盛路9号有线电视大楼35楼3号单位
Tel: 852-2498-0908 Fax:852-2498-1101 http://www.ATLbattery.com

Certification

No.: 040206A

We, Amperex Technology Limited, hereby certify that below product is confirmed in accordance with the Manual of Tests and Criteria of the UN Recommendations on the Transport of Dangerous Goods, Part 3, and sub-section 38.3.

1. Product• •Lithium-ion Polymer battery cell only
2. Customer Model: **425085 (PN: 601175)**   ATL Model: 425085
3. Customer: UBI
4. Test results of the UN Recommendations on the Transport of Dangerous Goods

International Aviation Association Test Standard		Test results	Remarks
No	Test item		
T1	Altitude simulation	OK	
T2	Thermal test	OK	
T3	Vibration	OK	
T4	Shock	OK	
T5	External short circuit	OK	
T6	Impact	OK	
T7	Overcharge	--	For Battery Pack only
T8	Forced discharge	OK	

5. Rated

Item	Specification	Remarks
Nominal voltage	3.7V	
Nominal capacity	1600mAh	
Aggregated lithium content Or aggregated lithium Equivalent content	0.48g	Cells<1g (primary), 1.5g(ion) Batteries<2g (primary), 8g(ion)

SL Huang
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ENVIRONMENTAL

Temperature

The K200 is designed for indoor use in the temperature range 0° to 45°C, 20% to 80% RH (non-condensing).

Shock and Vibration

Although the K200 is constructed from a robust extrusion every care should be taken to avoid extremes of shock and vibration.

SYSTEM OVERVIEW

Warnings

To prevent permanent damage the battery in this unit MUST be fully recharged at least every 3 months, even if the product is not in use.

The maximum rating for a camera connected to the K200 is 2W. Connecting a higher power camera will result in permanent damage to the K200.

Ensure camera voltage setting in Advanced Menu is the same as the voltage of the camera actually being used; for example: if the menu voltage is set to 12V and a 5V camera is connected, the camera can be destroyed.

Overview

The K200 is a stand-alone digital video recorder only requiring the addition of a suitable camera and/or microphones to record both video and audio.

The K200 is powered by an internal lithium-polymer battery and stores recordings on flash memory. The battery and flash memory are supplied installed inside the K200.

The K200 is connected to a PC via the supplied USB2 cable. This simultaneously charges the K200 and allows access to stored recordings and configuration of the K200.

Recording with the K200

Simply attach a suitable camera and/or microphone(s) to the K200 'Input' connector which is detailed in the Connections and Controls section of this manual.

Recording is activated either by moving the K200 toggle switch to the 'On' position or by using an external trigger (as detailed in the Connections and Controls section of this manual).

When the K200 is recording the 'Record' LED will be lit. The amount of memory used is displayed by the '25, 50, 75 and 100%' LED indicators.

Reviewing recorded footage

The K200 toggle switch must first be moved to the 'Off – USB2' position. The supplied USB2 cable can then be used to connect the K200 to a PC with PCLink Suite software installed.

Recorded files can then be viewed and archived using PCLink200 software. Please refer to the PCLink200 section of this manual for further details.

Configuring the K200

The K200 toggle switch must first be moved to the 'Off – USB2' position. The supplied USB2 cable can then be used to connect the K200 to a PC.

Once connected the K200 contents window should automatically appear on the Windows Desktop. If it does not, double click 'My Computer' or use Windows Explorer to locate a new Removable Disk. Double clicking the new Removable Disk icon will open the K200 contents window.

This window displays the contents of the K200 including any recorded .xba files and the K200 Configuration Utility.

In order to set up the K200 double click on the K200 Configuration Utility. This will then start in a new window. The K200 Configuration Utility is covered in more detail in the Configuring the K200 section of this manual.

CONNECTIONS AND CONTROLS

Input / Output Connectors

The K200 has two connectors one for USB2 and control and the other for camera and microphone inputs.

A USB2 cable is supplied with the K200 allowing it to be connected to a USB2 port on a PC. This is used to charge the K200 battery and also to allow configuration of the K200 and access to any stored recording files.

The input connector is supplied with the K200, but appropriate cable connections will have to be made in order to attach cameras and/or microphones.

The pin assignments for each of the connectors are shown in the following diagram.
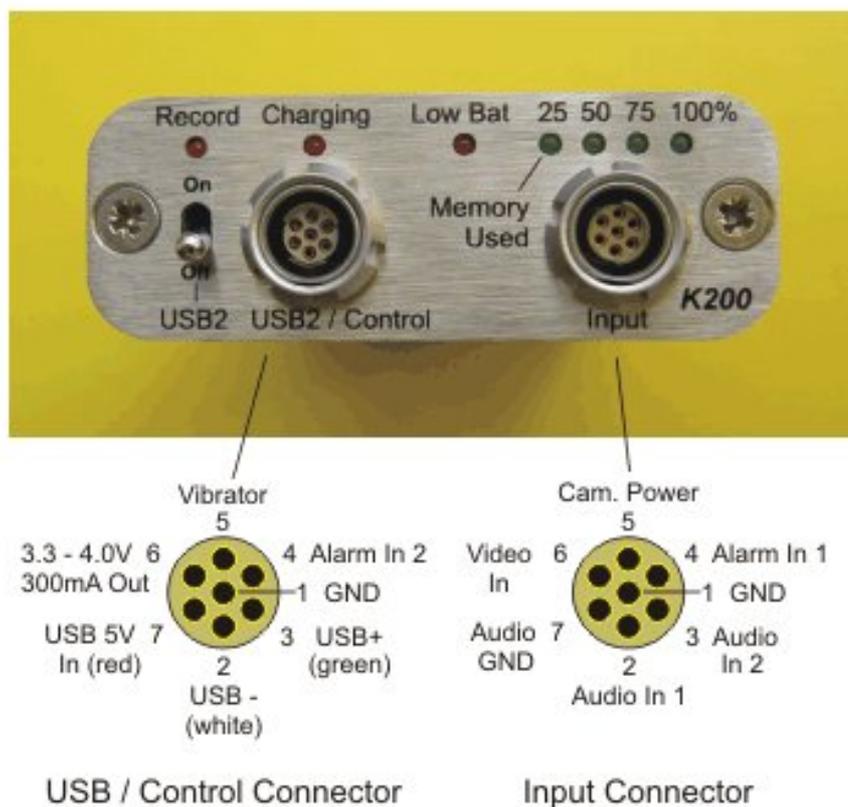
Record/USB2 Switch

The K200 toggle switch controls whether the K200 is recording (switch in the 'On' position) or whether it is connected to the PC (switch in the 'Off' position).

LED Indicators

The K200 has a number of LED's to indicate certain conditions.

Record – Indicates that the K200 is currently recording.
Charging – Indicates that the K200 battery is currently being charged. When this LED goes out whilst still connected to the PC the K200 is fully charged.
Low Bat – Indicates that the K200 battery is low and will need charging soon to avoid a cessation of recording.
Memory Used – Gives an indication as to how much of the K200 memory is full of recording, LED's will light at 25, 50, 75 and 100% full.

The K200 LED's can be software disabled by selecting 'LEDs Disabled' in the Advanced Menu of the K200 Configuration Utility. If this is selected then none of the K200 LED's will light at any time which may be of use in covert applications.

Vibrator Output Diagram
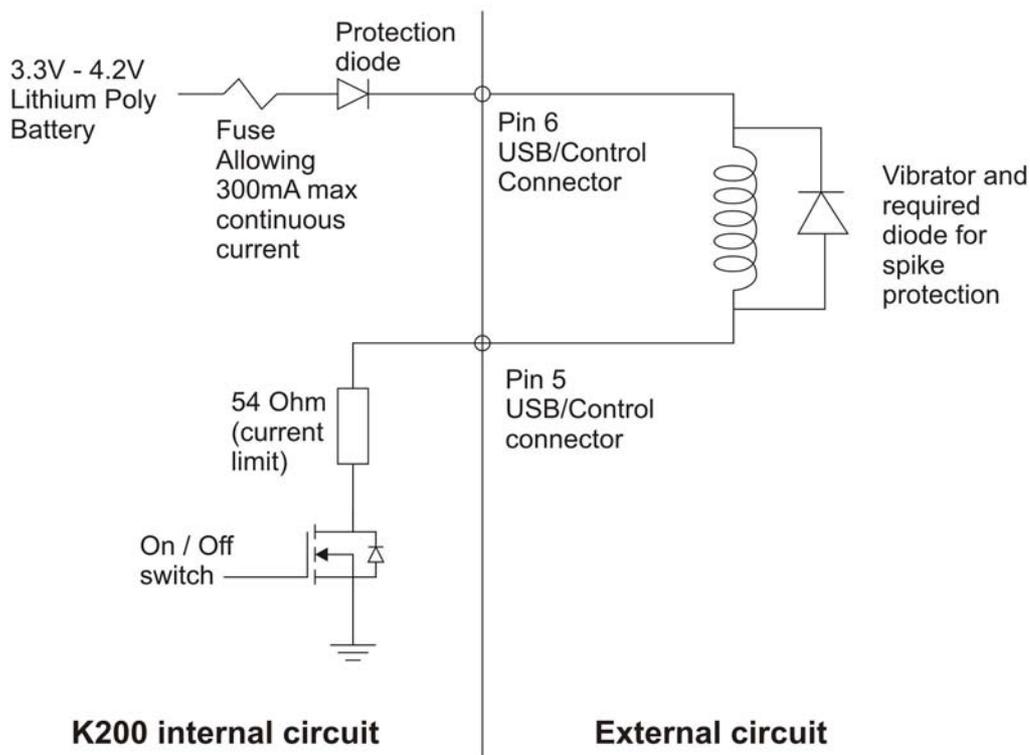
K200 Camera Wiring Recommendations

Introduction

The K200 is supplied with a Fischer plug + 4.7mm collet, for connecting your choice of camera to the K200 unit. This plug mates with the Input connector of the K200 and is the only plug suitable for use. This document provides some hints for preparing this connector.

Caution

A high level of wiring and soldering skill is required to successfully connect to the plug supplied. The contacts are very small and therefore there it is easy to short connections together, possibly damaging your K200. Please ensure you have sufficient skills before attempting this task.

Parts Supplied

The Fischer connector is supplied in 2 parts: The plug and the collet set. You need both parts to complete the task successfully. If you fail to fit the collet set, the pins will withdraw when the connector is inserted.
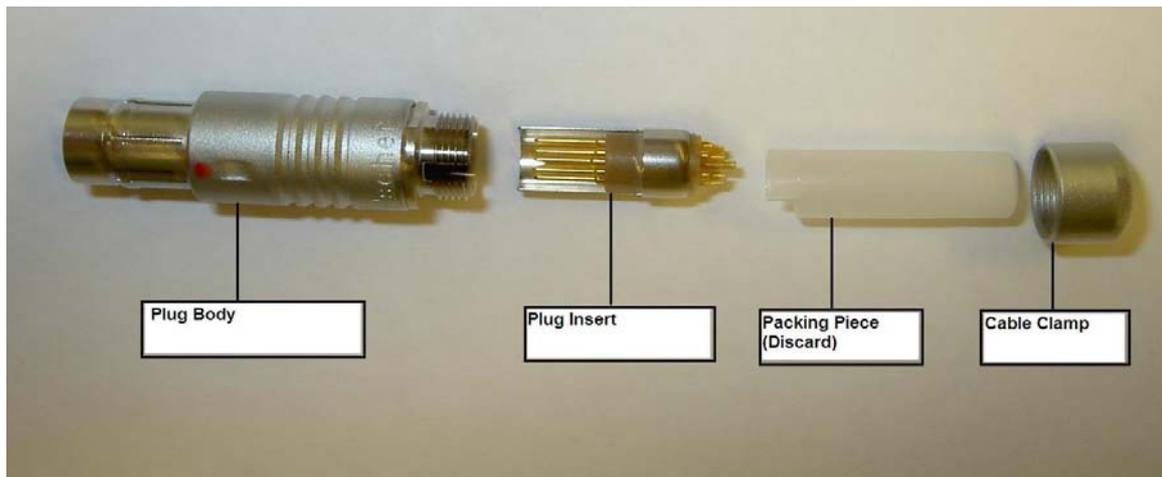
Fig 1.   Connector parts.
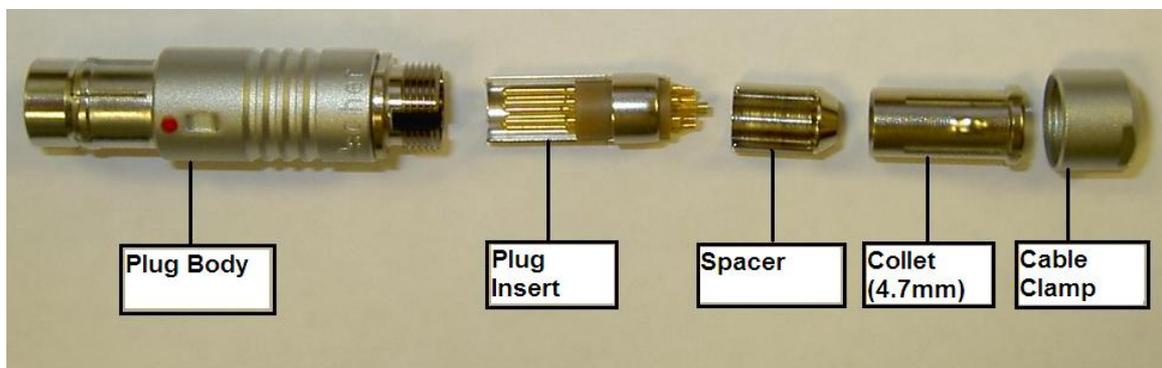
Fig 2.   Complete connector

Assembly Sequence

1. Determine the diameter of the cable you are using. The maximum size for the connector is 4.7mm overall diameter. The maximum wire size to fit the solder buckets is 28AWG.
2. If the cable you are using is less than 4.3mm, you will need to either source an alternative collet, or build up the diameter of the cable by using heatshrink tubing. It is recommended that the adhesive-lined type is used if using heatshrink tubing as it provides greater cable strain relief. You should use a minimum of 30mm of heatshrink tubing.
3. Working from the end to be connected, slide the cable clamp onto the cable.
4. Slide the Collet onto the cable.
5. Strip the insulation from your cable exposing any screening present. You should strip back approximately 40mm but this will be trimmed back later.
6. Splay out any screening. Once the screening has been splayed out, slide the spacer over the wire cores.
7. Trim the cores to 15mm.
8. Strip the ends approximately 1mm and tin the exposed wires with a minimum amount of solder. If you use too much, you will struggle to fit the wires into the solder buckets of the insert.
9. Slide the spacer over the cores.
10. Solder the cores into the solder buckets of the insert. *This is Tricky!*. Start from pin 1 (the centre connector) and use a minimal amount of solder in order to minimise the risk of short circuits. A 'helping hands' tool is very useful here.
11. Wire the connector up as per the diagram below.
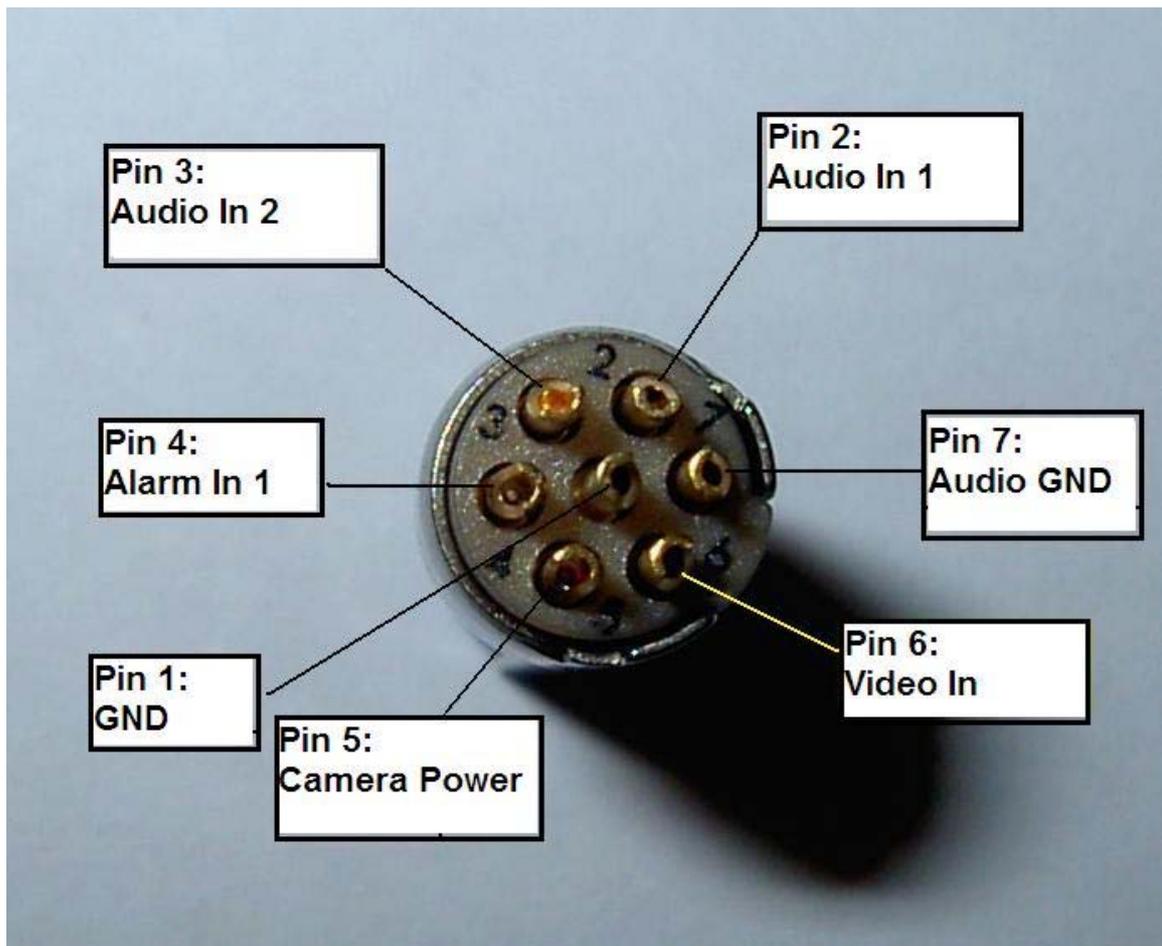
Fig 4.   Connections

12. Once all the connections have been made, trim back any unused cores as close to the stripped end as possible.
13. Slide the space up towards the insert. If you rotate the space around the cable, you will find that it 'keys' into the insert in one position only.
14. Slide the collet into the space, trapping the splayed out screen (if present) between the collet and the spacer. Trim the screen that protrudes from this gap.
15. Slide the plug body over the insert and onto the cable

NOTE
The insert will only go into the plug in one way. It is keyed to align with the keying in the body. Some pressure is needed once these align, but no more than gentle pressure is needed once it has aligned.

16. When the insert is nearly fully home, rotate the collet around the cable so the small bump on the collet aligns with the slot in the body. Once these align, the insert and cable can be pushed fully home.
17. Push the collet up into the body as far as you can.
18. Tighten the cable clamp onto the body.

Your connector is now complete and ready for use.

Fischer Information

Fischer part no	Description
S102A056-130+	K200 input plug
S102A056-230+	K200 control plug
E32 102.1/2.1+A	2.1mm collet (1.5 – 2.1 cable)
E32 102.1/2.6+A	2.6mm collet (2.1 – 2.6 cable)
E32 102.1/3.1+A	3.1mm collet (2.6 – 3.1 cable)
E32 102.1/3.6+A	3.6mm collet (3.1 – 3.6 cable)
E32 102.1/4.1+A	4.1mm collet (3.6 – 4.1 cable)
E32 102.1/4.3+A	4.3mm collet (4.1 – 4.3 cable)
102.248 + A	4.7mm collet (4.3 – 4.7 cable)

Distributor list available on: www.fischerconnectors.com

CONFIGURING THE K200

The K200 is configured by connecting it to a PC via the supplied USB2 cable.

The 'Record' toggle switch must be in the 'Off – USB2' position.

The K200 contents window should then automatically appear on the Windows Desktop. If it does not, double click 'My Computer' or use Windows Explorer to locate a new Removable Disk. Double clicking the new Removable Disk icon will open the K200 contents window which is shown below.
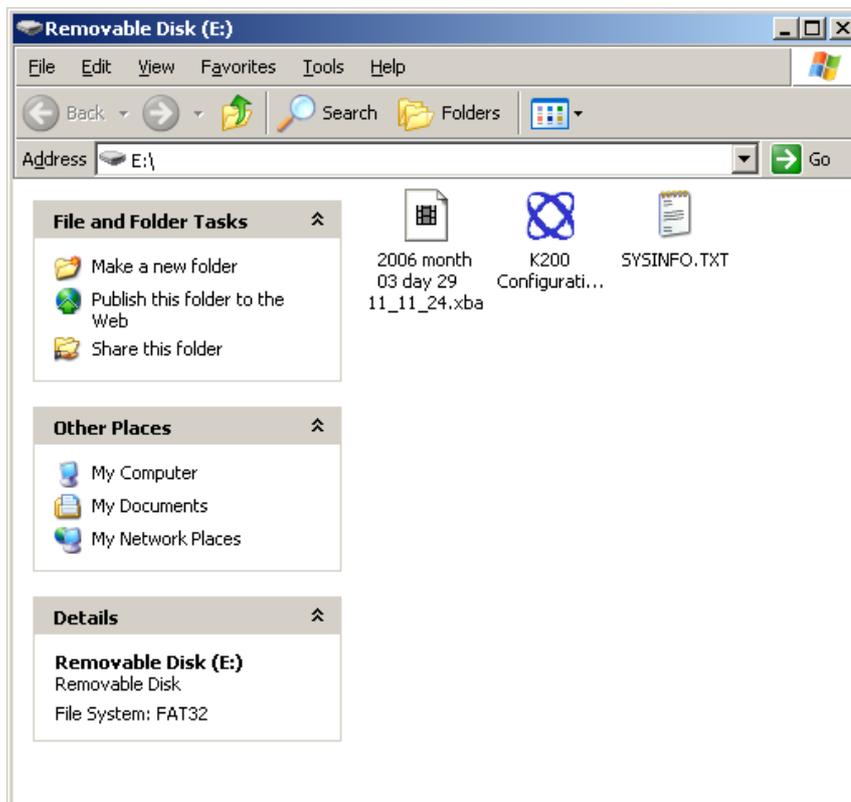
This window displays the contents of the K200 including any recorded .xba files and the K200 Configuration Utility.

In order to set up the K200 double click on the K200 Configuration Utility. This will then start in a new window.

K200 Configuration Utility

The K200 Configuration Utility allows the user to change any of the K200 settings and then save them in its internal flash memory. Please note that none of the changes will be saved until the 'Save Settings' button is pressed.

When the K200 Configuration Utility starts the user will see the following window.
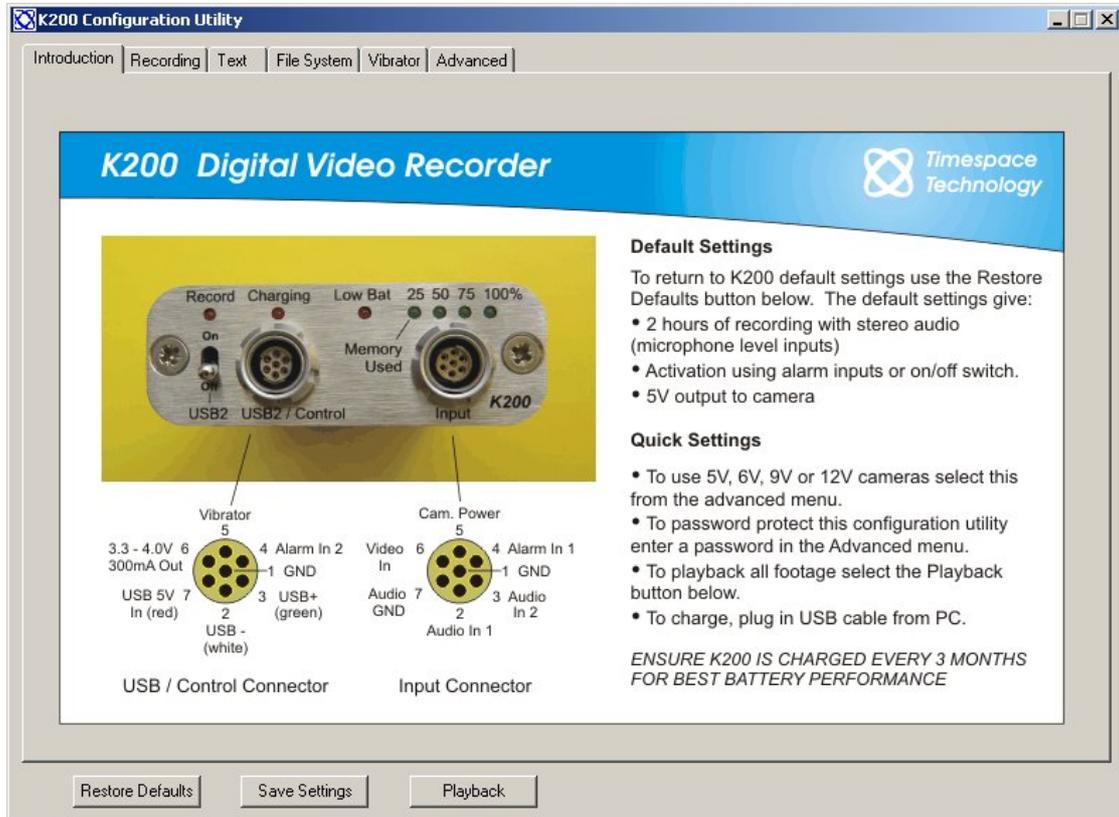
This is an introductory screen showing the K200 connectors and controls and the main default settings.

The configuration Utility is organised into a series of 5 menu pages (in addition to the Introduction page) which can be accessed via the tabs at the top of the utility window.

The three buttons at the bottom left of the window allow the user to restore the default K200 settings, save the new settings to the K200 internal memory or playback any .xba files currently stored on the K200 by launching PCLink200 reviewing and archiving software. These three buttons appear in the same location on every page of the utility.

The pages themselves are laid out so that the settings are on the left hand side of the utility and a section of help text is on the right hand side.

Recording

Recording can be started by moving the K200 toggle switch to the 'ON' position. Moving the switch to the 'Off – USB2' position will stop recording. Recording can also be controlled by external switches which are used to connect pins 4 and 1 on the 'Input' connector (Alarm In 1) or pins 4 and 1 on the 'USB2/Control' connector (Alarm In 2).

A timer is also included to start recording at a specified time (the K200 battery capacity will be used during hibernation until recording commences which will result, in less recording time than the maximum of 2 hours). As an example if the K200 has to wait the maximum time until recording of 24 hours only 50 – 60 minutes of recording will be made if the battery was initially fully charged.

If 'Timer at' has been selected as the trigger to start recording the K200 toggle switch should still be set to the On – Record' position once disconnected from the PC. If it is left in the 'Off - USB2' position the timer will not activate recording.
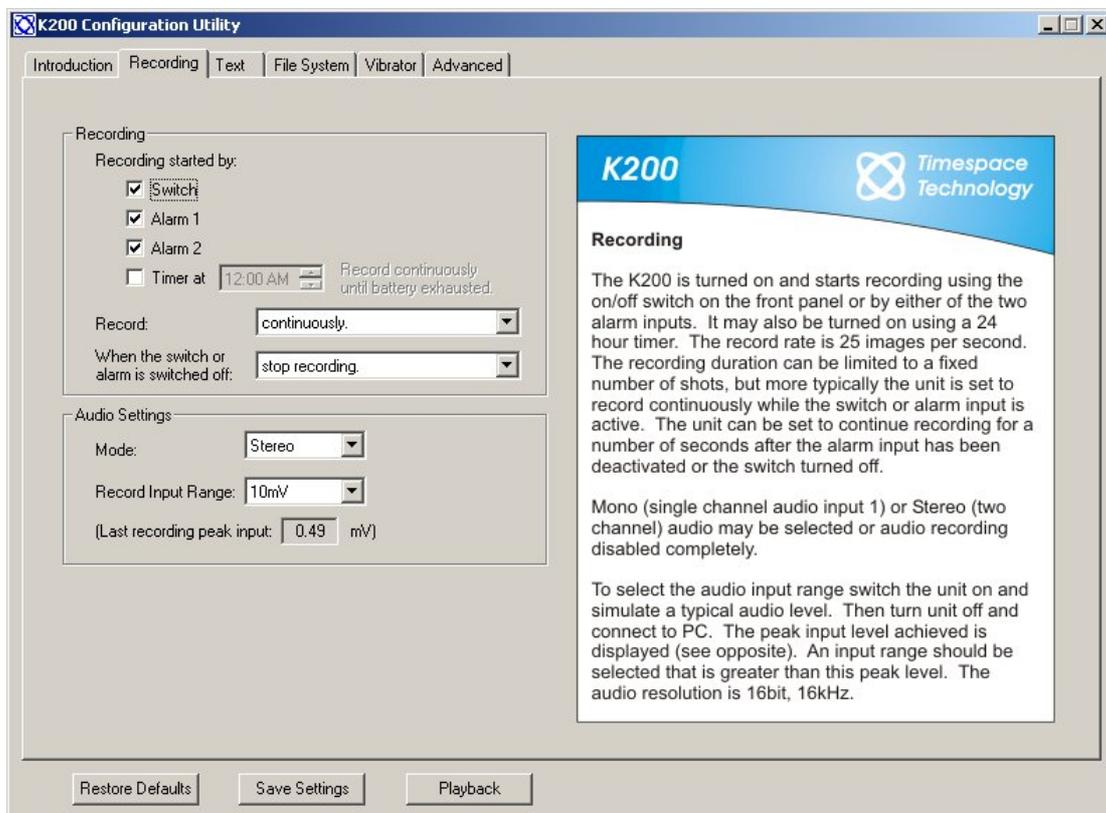
Recording started by – Defines which controls will start/stop recording. If 'Timer at' is selected then the switch and alarm inputs will be disabled.
Record – Selects whether the K200 will record constantly (video) or capture from 1 to 500 images and then stop recording.
When the switch or alarm is switched off – Determines whether the K200 immediately stops recording or continues to record from 5 seconds up to 5 minutes.
Mode – Selects whether audio recording is in mono, stereo or turned off.
Record Input Range – Selects the input range of the K200 audio inputs. An appropriate range should be chosen depending on the specification of the microphones being used. The K200 has a built in pre-amp, if a pre-amp is being used on the inputs then this setting will need adjusting down.
Last recording peak input – Shows the peak input voltage from the microphones during the last recording. This can be used as a guide when setting a value for the record input range.

The K200 battery allows a maximum of 2 hours of recording before it requires recharging.

Text

The user definable text fields allow text to be embedded in the recorded images when the Alarm Inputs are either open or closed.

The K200 internal clock can also be set to a specific date and time. This will take effect once the settings have been saved to the K200 and it is next powered up (the toggle switch is moved to the 'On' position).
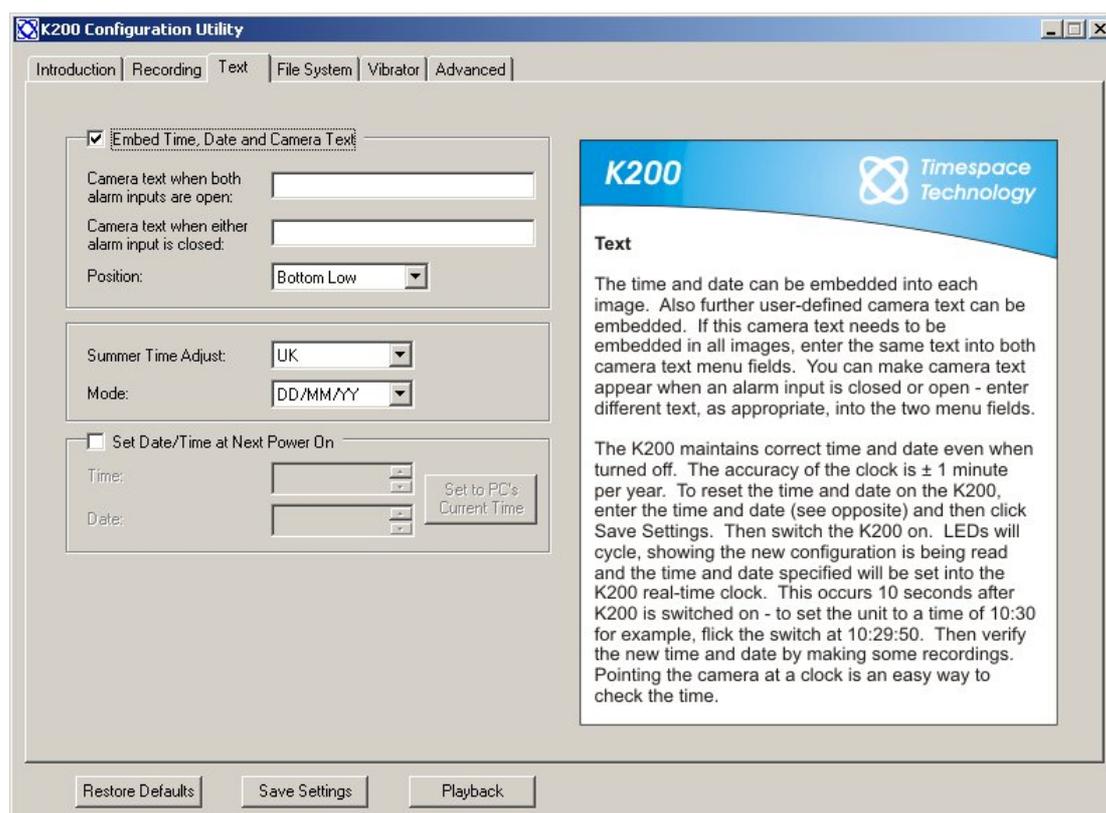
Embed Time, Date and Camera Text – When this box is checked the time and date will be embedded in all recorded images along with any user defined Alarm Input text.
Camera Text When Alarm Input is Open (default) – The user can enter text in this field to be embedded into the recorded images whilst the Alarm Inputs are open.
Camera Text When Alarm Input is Closed – The user can enter text in this field to be embedded into the recorded images whilst the Alarm Inputs are closed.
Position – Determines the position of text within the recorded images.
Summer Time Adjust – Determines whether the K200 internal clock will automatically adjust for UK/USA/EUROPE summertime or not if set to 'OFF'.
Mode – Determines whether the date is in the format DD/MM/YYYY or MM/DD/YYYY.
Set Date/Time at Next Power On – Allows the user to adjust the K200 internal clock. The new settings will only become active once the 'Save Settings' button has been pressed (all new settings saved to the K200) and the K200 has been powered up by moving the toggle switch to the 'On' position.
Time – The time in 24 hour format.
Date – The date in the format DD/MM/YYYY or MM/DD/YYYY determined by the 'Mode' setting.

All embedded text is protected by the fragile watermarking system used in the K200 and PCLink200. This gives a positive indication as to whether recorded images are original or whether they may have been tampered with after recording.

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File System

The File System settings determine how the K200 stores recordings and whether it stops recording when the memory is full, or loops around and starts to overwrite oldest recordings first.
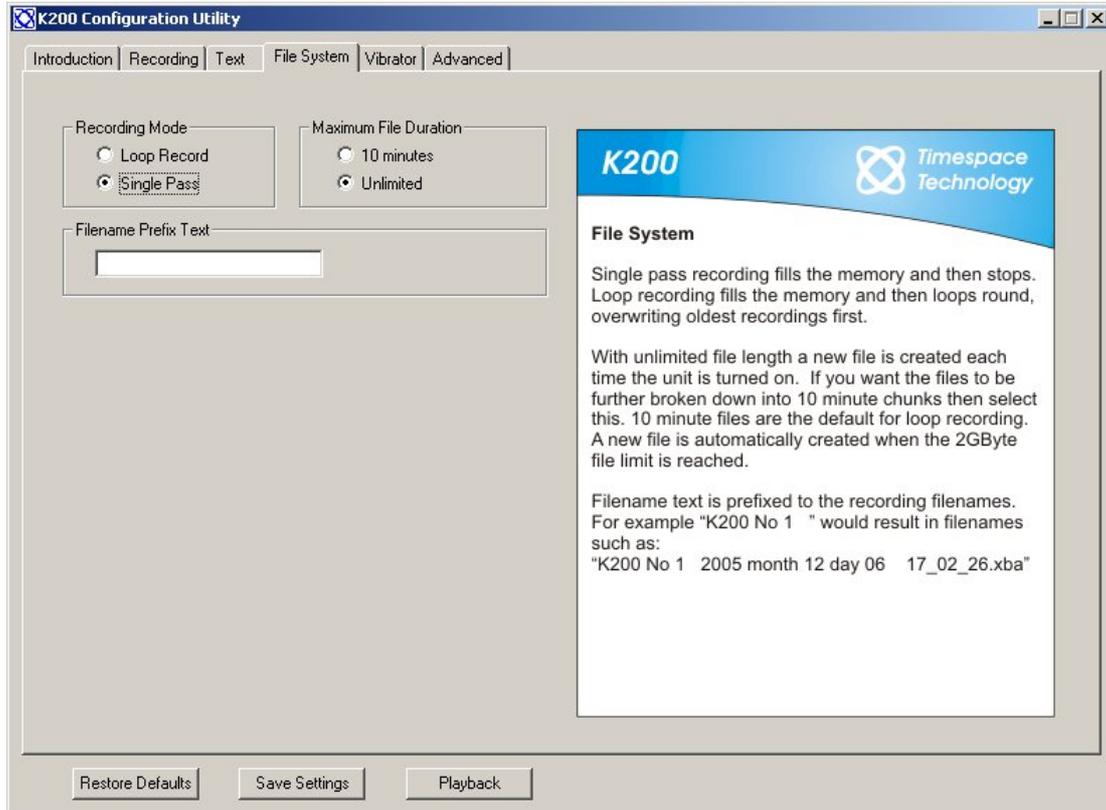
Recording Mode – This K200 can be set to either stop recording when the memory is full (Single Pass) or start to overwrite oldest (non write-protected) recordings first (Loop Record).
Maximum File Duration – If set to unlimited the K200 will create a new file each time recoding starts. If it is desirable to further break down recorded footage into smaller pieces the 10 minute option can be chosen limiting the maximum individual file duration to this period.
Filename Prefix Text – The user definable text in this field will prefix the file name of any recording files which by default are named by the time and date of creation.

Vibrator

The K200 has an output (pin 5 on the USB2 / Control Connector) which can be connected to a suitable actuator such as a buzzer/vibrator. This is intended to give a discreet covert indication of various user defined conditions.
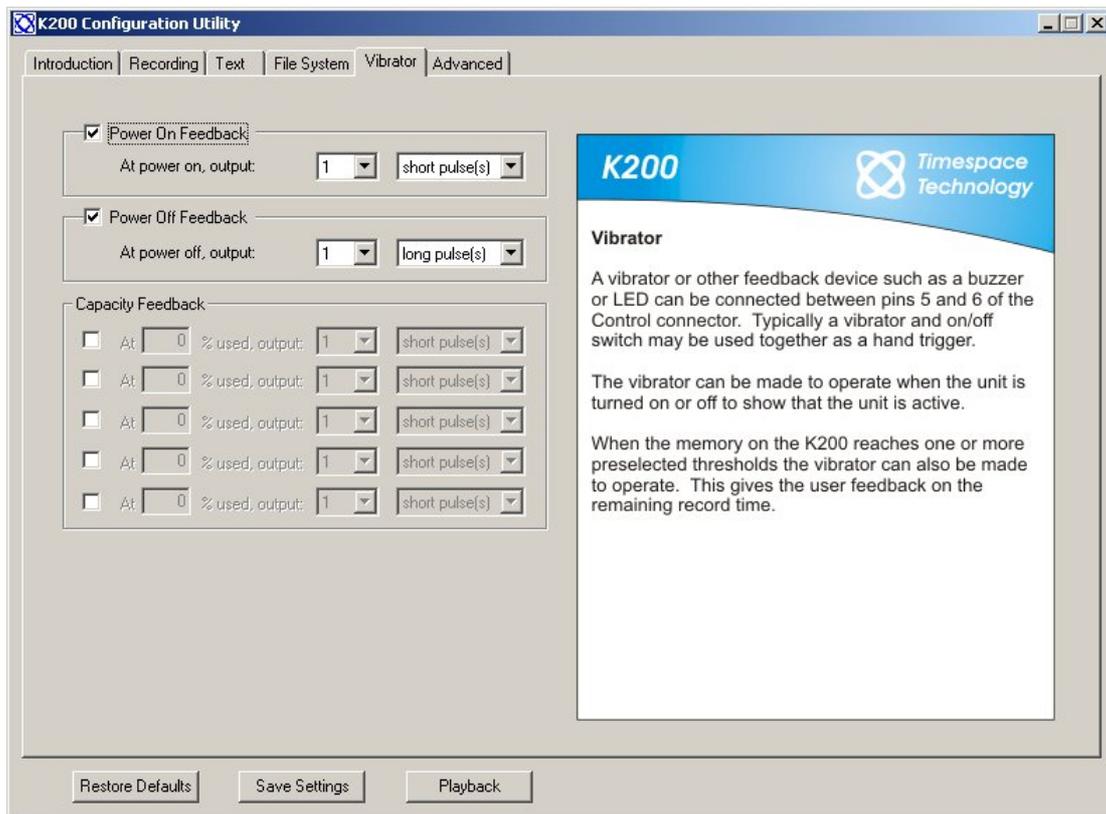
Power On Feedback – The vibrator output will produce 1-5 short or long pulses when the K200 is turned on and recording commences.

Power Off Feedback – The vibrator output will produce 1-5 short or long pulses when the K200 is turned off and recording ceases.

Capacity Feedback – The vibrator output will produce 1-5 short or long pulses when the K200 memory is a user defined percentage used from 1-100%. There are 5 independent settings allowing the user to set various patterns of pulses for different percentages used.

Advanced

This section of the K200 Configuration Utility allows the user to set a number of preferences.
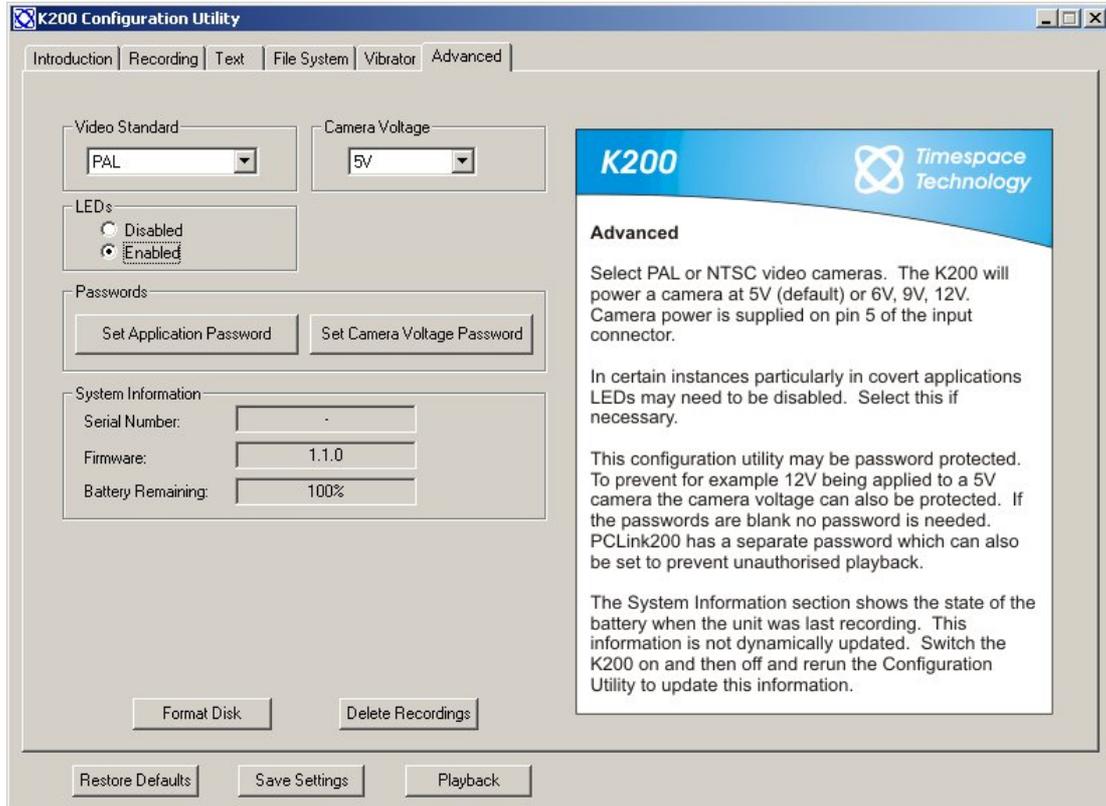
Video Standard – Selects whether the K200 is to be used with PAL or NTSC cameras.
Camera Voltage – Selects the appropriate camera voltage supplied by the K200.

Please be careful not to exceed the connected camera's voltage rating as this can cause permanent damage to the camera.

LEDs – Disables or enables the K200 LED indicators.
Set Application Password – A password can be entered in order to prevent unauthorized access to the K200 Configuration Utility.
Set Camera Voltage Password – A password can be entered in order to prevent unauthorized changes to the supplied camera voltage.
System Information – Displays information about the K200.

In addition there are two buttons at the bottom of the Advanced Menu. Format Disk will completely clear all recordings and menu settings from the K200 the next time it is turned on (by moving the toggle switch to the 'On – Recording' position). This should only ever be used to completely reset the K200 system.

The Delete Recordings button will remove all recording files from memory but leave the menu settings unchanged.

*Note – the battery remaining reading is only updated when the K200 is plugged in and the configuration utility started. It does not dynamically changed whilst charging. Disconnect and reconnect the K200 to refresh the reading.

UPDATING THE K200 OPERATING SOFTWARE

To update the K200 operating software to a later version the K200 must be connected to a PC with the toggle switch in the 'Off – USB2' position.

The new software takes the form of a .xos file which should be copied into the K200 contents window so that it is stored on the K200.

The toggle switch should then be moved to the 'Record – On' position. The K200 'Memory Used' LED's will then cycle a number of times to indicate that the new software is being stored. Wait until this process stops completely (approx 30 seconds) and then the K200 can be used as normal.

When new operating software is loaded onto the K200 the menu setting in the Configuration Utility will be set back to the latest factory default settings. If the desired settings differ from these then the Configuration Utility should be started and the new settings entered and saved before use.

PCLINK SUITE
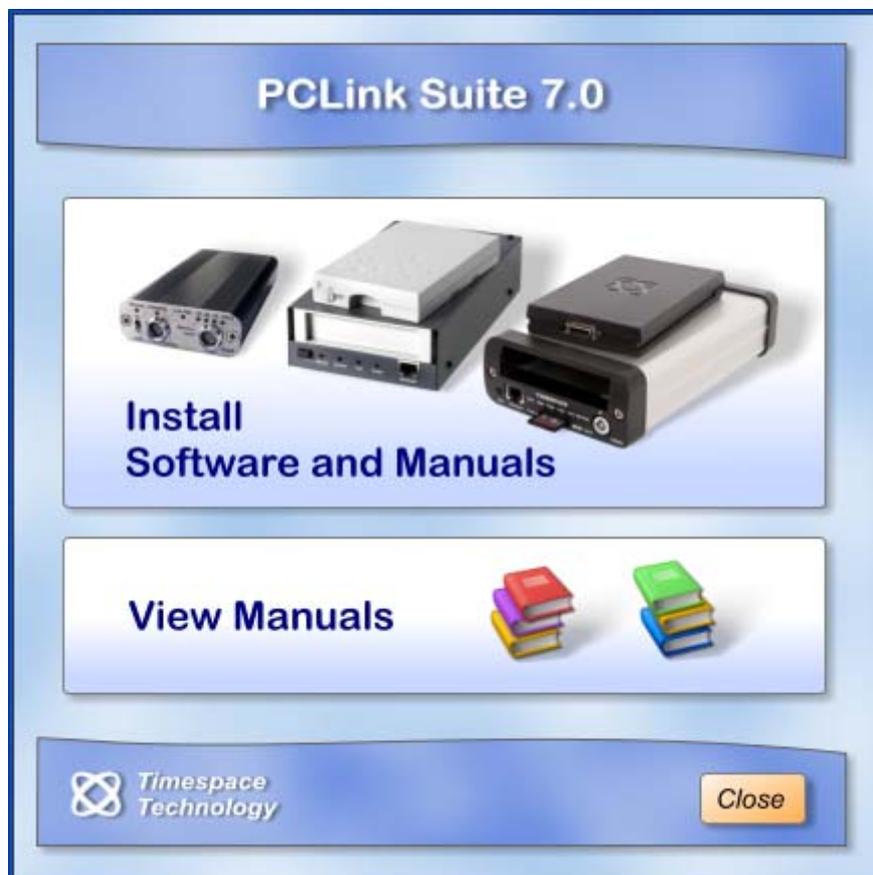
Timespace PCLink Suite consists of applications that allow Playback, Live View, Configuration and Download of recorded files from the X and K series range of digital video recorders.

Detailed instructions of each application within PCLink Suite can be found in the PCLink Suite manual, available on our website www.tspace.co.uk

Application overview;

PCLink200   - Review recorded footage via USB cable connected to removable cartridge.
                      - Review recorded footage over IP connection to the X300.

RemoteLink   - Live view of cameras.
                      - Configuration of X300 menu settings.

LANLink   - Automatic X300 Health checking over IP connection.
                      - Automatic and scheduled downloading of footage.

ImageLink   - X300 can send a snapshot image to a PC using a connected GSM modem.

SafetyLink   - Review G-Sensor events that have exceeded the configured threshold.

K200 SPECIFICATION

Recording
Activation	Manual switch, external triggers or timer
Media	4GB compact flash, supplied installed
Recording Duration	Typ. 2 hours
Power On Until Recording	<1 sec

Video Recording
Rate	25ips PAL, 30ips NTSC
TVL	540
Pixels	720 x 288 PAL; 720 x 240 NTSC
Format	MPEG - full image update
Input Signal	1 input; composite video 1V p/p; colour/mono; PAL/NTSC
Embedded Text	Date/time plus 12 user-defined characters
Camera Power	Max 2W Camera

Audio Recording
Type	Mono or stereo
Inputs	2 Mic level inputs 3V phantom powered (compatible with most condenser mics)
Sampling Rate	16kHz
Sampling Res.	16 bits

Connectors/Controls/Indicators

Actual Size

Toggle Switch	Off (USB2 to PC), On (record)
USB2/Control	Fischer 102 series 7 way(keyed); USB2 on 4 pins; control signals on 3 pins
Input/Output	Fischer 102 series 7 way (separately keyed); 1 video input, 2 audio inputs, plus camera power output and on/off signal
Camera Power	5V, 6V, 9V or 12V (menu selectable) supplied by K200 (max. 2W)

Battery
Power	Rechargeable Lithium Polymer 3.7V battery supplied installed
Recharging	Recharge in K200 by PC via USB2
Charge Time	Typ. <4 hours
Duration	Typ. 2 hours, recording with 0.6W camera
Consumption Recording	1.8W + 0.6W (miniature camera) = 2.4W
Consumption not Recording	1.1W
Consumption Hibernate	150mW
Auto Power Off	On low battery

Configuration
Entry	PC on-screen menus Via USB2
Security	Password protection

Date Options	dd/mm/yy; mm/dd/yy
Summertime Correction	UK; Europe; USA; Off

File System

File Type	Proprietary ".xba", convertible (with password) to AVI
File Name	Optional file text plus date & time
File Size	10 min or continuous

General

Security	Proprietary files; password protection; fragile watermark every image [MD5+DES]; embedded camera text
LED Indicators	Software enable/disable
Clock	TCXO +/- 4 minutes per year
Case	Aluminium body, stainless steel end plates
Dimensions [mm]	109 x 58 x 21 mm (case)
Dimensions [mm]	112 x 58 x 21 mm (including controls)
Weight	197g
Operating Temp. Range	0°C to 45°C
Supplied Accessories	USB2 cable 1.5m; PCLink Suite software CD (including manuals); input plug and 4.7mm collet
Warranty	2 years (battery 1 year)

Playback

File access	Via USB2 connection, using PCLink200 software; typical transfer rate 7.0 MByte/sec

PCLINK200 REVIEWING/ARCHIVING SOFTWARE (supplied)

Availability	Supplied with K200; software available to law enforcement agencies
Compatibility	Recordings made on K200
Access	Via USB2 connection from K200 to PC
Operating Systems	Windows 98, ME, 2000, XP
Hardware Requirements	2GHz Pentium, 256MByte RAM, USB2
Security	Optional password on PCLink software and on export video to AVI function
Playback Controls	Rewind, jog back, stop, play and fast forward, jump to time, rapid shuttle via timeline.
Playback Speed	Variable x0.1, x0.2, x0.5, x1, x2, x3, x4, x6, x8, x10 realtime for rapid playback.
Features	Realtime playback with audio
	Review archive files
	Copy files from K200 to PC
	Copy images into Microsoft Word etc.
	Activate and verify watermarks
	Export video in multiple CD/DVD sized files
	Non-install playback software
	Export video to AVI file
	Motion graphing
	Full screen video playback

K-STATION FOR RECHARGING/DOWNLOADING (optional)

Automatically download recordings while recharging battery on up to 5 K200 units

Timespace Technology are constantly improving products, and reserve the right to alter specifications at any time without notice.