Business Recorder

Manual

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Business Recorder

is a product of:

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1 Introduction

The Business Recorder is a high capacity recording system for the business environment. It was designed around the following ideas:

- Recording of business meetings as the primary function
- Recording dictations as the secondary function
- One button presets for the two operating modes
- Ease of use for the challenging objective to record many speakers around a conference table
- High recording quality
- Compatible with professional microphones and microphone systems
- High storage capacity
- Perfect integration with today's technology of MP3 players, USB sticks, PC's and internet

In this chapter, we will explain what to expect of the Business Recorder. Chapter 2 is dedicated to installation and configuration. Chapter 3 will teach you how to work with the machine while chapter 4 will introduce some special functions and services to you.

We hope that you will quickly find your ways with our product and that this manual will serve you well as a reference.

1.1 High recording quality

The Business Recorder is designed to make recording of meetings easier. In real life, there are few meetings where everyone speaks into a microphone. Therefore, we wanted to make a very sensitive recorder that will also capture low voice that is far away form the microphone. The idea is to put one or two microphones on the table and to have the immediate result of a recording where every word spoken can be clearly understood.

This we achieved: If you use a reasonable quality of microphones, you will get recordings that allow you to understand every one of up to 20 people around a table.

In addition, when you are dealing with a large conference hall with its own professional microphone system already in place, the Business Recorder is the right choice. The input channels feature

an enormous flexibility. They can be configured to record the output of the conference audio system or a variety of other audio sources.

The input ports on the Business Recorder have many of the same features as professional studio recording systems. They feature built in microphone pre-amplifiers and 48 Volts so called Phantom Power, both of which can be selected in software. This allows you to connect almost every type of microphone.

1.2 Up to date technology

Today's technology has allowed us not only to build a high quality recorder but also to integrate some fantastic new technology that would not have been possible some years ago.

- The internal hard disk allows us to store hundreds of hours of high quality audio. There is no need to load the recorder with a recording medium. Just push the record button and the machine is recording.
- Fast mathematical processors perform real time compression of stereo inputs into MP3 digital audio. MP3 has become a standard for storage of digital audio.
- There are more tools then ever before available to facilitate distribution of recordings at a very low cost. The Business Recorder employs four methods for distribution of recordings.

1.2.1 Distribution of recordings via an integrated web server

This probably is one of the unique features of the Business Recorder: a web server is built into your Business Recorder and is ready to use. The Business Recorder can be accessed by the PC's in your network with the internet web browser they already have anyhow. The users can search for recordings and then play the recording using their standard media player or copy the recordings to their own hard disk. This process will not interfere with recordings being made and therefore the Business Recorder can be seen as the server for the recordings.

1.2.2 Distribution via USB

USB memory sticks have become the most common and reliable tool to transport data and USB compatible flash memory based

MP3 players have become very common playback devices. The idea of the Business Recorder is that you can distribute the recording instantly to persons who have attended the meeting. The recorder can copy the recording instantly to the USB stick or MP3 player. When the recording is copied to an MP3 player, it can be listened to instantly.

1.2.3 Distribution via email

Sometimes it is necessary to forward a recording to someone by email. Although this can be done from the PC, we have given the option to send the recording immediately from the recorder.

1.2.4 Distribution by CD

The Business Recorder is available with or without integrated CD recorder. The advantage of the CD recorder is that copies can be distributed on the very inexpensive medium of the recordable CD. The recorder can produce generic audio CD's and MP3 data CD's. MP3 CD's can be played on all PC's and DVD players and therefore the CD Recorder option again broadens the range of methods available to distribute recordings. Audio CD's have less capacity. Their advantage is that they can be used by even more systems; all CD players and most PC's.

1.3 Well connected

The Business Recorder has a wide range of input- and output channels.

1.3.1 The Microphone ports

The Business Recorder has three microphone ports, two main ports called channel A and B and one auxiliary input called headset microphone.

We have designed the **main microphone ports** in such a way that they offer the highest possible flexibility. Most quality microphones and microphone systems can be used directly with your Business Recorder. The microphone pre-amplifiers and the sources of microphone power are an integral part of the recorder, but they can be disabled. The flexibility of the two main microphone ports will allow you to solve almost any recording problem.

The Business Recorder may also be used as a dictation machine. The **auxiliary microphone port** is meant for that purpose and there is no need to disconnect the main microphones that quite possibly are in a fixed installation anyhow. The recorder can be reconfigured as a dictation machine with only one key press.

1.3.2 Audio output

Yet another function of the recorder is playback of the recordings. We have given the recorder three ways to reproduce the recording:

The internal loudspeakers
The loudspeakers are small and its purpose mainly is to listen to a recording to verify that the recorder is configured well. In practice, it is good enough to listen to most recordings, but it can by no means replace a good loudspeaker system.

External analog loudspeakers or amplifiers
All common types of multi media loudspeakers or amplifiers with loudspeakers can be used with the Business Recorder.

External loudspeakers with SPDIF digital input
Many loudspeakers and surround audio amplifiers feature digital inputs. The advantage is the lossless transfer of the signal to the playback device. The Business Recorder has SPDIF digital output and is compatible with these systems.

1.3.3 USB, Ethernet and serial ports

A system that must meet the expectations of people who always have a computer on their desk must be well connected. Therefore, we have given the Business Recorder all the connectivity that you would expect: USB, Ethernet and RS232 serial ports.

1.4 Easy configuration

The Business Recorder has several modes of operation and settings. This means that some configuration will be required before you can use it. We have carefully tried to keep configuration minimal. All hardware features can be controlled by software and there are no internal jumpers or switches. The recorder offers two systems of configuration:

1.4.1 Configuration through the keyboard

The recorder features a tree like configuration menu structure that will require little instruction for the user.

1.4.2 Web based configuration

Web based configuration is an alternative to keyboard configuration. For many of us it is easier to use. In addition, the user management and authorisation is through web pages. Some configuration from the keyboard might be needed before you can use the web-based configuration because you will have to enable the recorder on your network.

1.5 Special features

The Business Recorder has some special features. We introduce the most common of these features:

1.5.1 Remote control

All Business Recorders are supplied with a remote control for the basic functions to start and stop recording or playback, control the volume and place tags.

1.5.2 Placing tags within recordings

This technique is for persons who plan to type out the minutes of a meeting. While recording they can add tags to the audio data to remember the sections that are particularly important to listen to.

1.5.3 Encryption using the Crypto Card

In the front of the recorder, you find a card slot for IC cards. The card is used to encrypt the recording. Playback is only possible when a playback card is placed in the recorder or in a card reader on a PC. Encryption of recordings is a very powerful way to protect privacy and to prevent unauthorised reproduction.

2 Installation

2.1 Unpacking

The box contains:
- The recorder
- The remote control
- This manual
- A power supply

Items that are not supplied and that you may need are:
- Microphones suitable for your application
- Cables to connect these microphones wit the Business Recorder
- External loudspeakers or an amplifier with loudspeakers
- An Ethernet cable

Other optional items that are not supplied but that you may now or in the future use together with your Business Recorder are:

- USB memory sticks or USB MP3 players
- Recordable CD's
- Business Recorder Crypto Cards
- A foot pedal to control playback while typing
- A PC player program that recognises the tags placed in the recording by the Business Recorder

2.2 Hardware setup
In this stage, you must make the connections to the back panel of the recorder.

The ports are:

Nr.	Description
1	Power
2	RS232 and remote contacts
3	Ethernet
4	2 x USB
5	SPDIF optical output
6	Stereo loudspeakers output
7	Mono microphone input
8	Main microphone- or line input port A (left channel or mono)
9	Main microphone- or line input port B (right channel)

2.2.1 Power supply

The power supply must be connected to port 1 as in the picture above. Only use the power adapter supplied. Other power adapters within the range of power inputs specified may be used. However, misinterpretation of the specified power requirements may result in failure or malfunction, which is at the risk of the user. Connect the power supply to the power port at the back of the recorder and to a mains outlet.

Once powered up, the recorder will boot and go through its test sequences. This will take about 30 seconds after which the welcome will sound from the internal speakers.

2.2.2 Microphones

Warning: Do not connect the microphones before you have checked the microphone configuration. Before you connect the microphones, you MUST check if the configuration matches the microphones. The reason is that microphone power (so-called Phantom Power) from the recorder could damage a microphone that is not made to receive power form the recorder.
Usually microphones cannot be damaged by the phantom power.

Microphones can be connected to ports 7, 8 and 9 as in the picture.

2.2.2.1 Microphone selection

Microphone selection is largely determined by your preferences and the way you want to use the recorder and the microphones.

There is a wide choice of microphones that can be used with your Business Recorder. In the following text we will describe some of the common characteristics of microphones to assist you with the selection.

Phantom power
It is important to note that the Business Recorder can supply "phantom power" to your microphone. Although it is possible to work with microphones that use either battery power or no external power source, we recommend the types that use phantom power for these reasons:

- the signal level that comes from a powered (phantom or battery) microphone is higher and therefore the risk that noise is picked up in the cable is less
- battery power is not so practical, you must switch it on and off and replace the battery in time, when you forget the recording quality will deteriorate

Polar pattern of the microphone
When recording meetings and conferences microphones must be placed in such a way that sound will be captured from all places where people may speak. The polar pattern is a measure of how much of the sound is captured from any direction. When you expect sound to be captured from all directions, omni directional microphones must be used. If you only use one microphone and want to record all persons attending, then you have no other choice then to put an omni directional microphone in the middle.

The pictures show two types of omni directional microphones with their so-called Polar Patterns. These are typical examples of microphones that you can use with the Business Recorder.

CM11B POLAR PATTERN

125Hz — — — —	2000Hz
250Hz	4000Hz
500Hz	8000Hz — — — —
1000Hz	
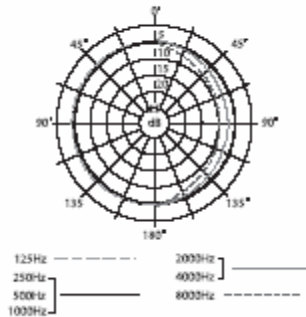
The Samson CM11B microphone in the picture above is sold by Vidicode and its distributors as an affordable omni directional microphone that is very suitable to record business meetings. This does not mean that this microphone is the microphone recommended for the Business Recorder as there are many microphones for different applications and there are omni directional boundary microphones that perform better then the CM11B but that are much higher priced.


ES945

Polar Pattern

The example in the picture above is the ES945 of Audio Technica. This is a phantom powered omni directional microphone that can easily be mounted in a wall or ceiling. This microphone is very convenient for fixed installation in a meeting room. Because it is farther away from the speakers then a conference microphone that sits on the table it picks up more environmental noise relative to the voices. Still we found this microphone to work very well with the Business Recorder.

The following is an example of a microphone with a cardioid polar pattern. This is also a suitable type of microphone, but more care must be given that the microphone is be placed in such a way, that all speakers are covered.
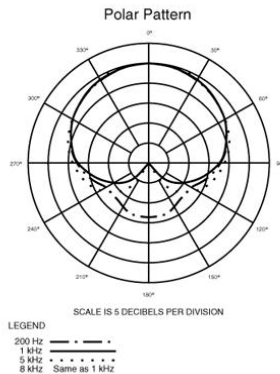
Frequency response
A higher frequency range may seem better. However when recording speech, it does not matter too much. An affordable microphone of good quality with a frequency range form 50 to 15,000 Hz exceeds the specifications required for understanding speech.

Sensitivity
A more sensitive microphone may improve the recording quality, although the effect may seem marginal.

Balanced microphones

One of the characteristics you may want to look for is if the microphone is balanced. Using a balanced microphone will result in less noise picked up in the cable, which is especially useful when you use long microphone cables.

Signal to Noise Ratio
The higher the better. However, this might be just a way to spend money. When listening to meetings the noise level caused by the microphone might not be noted within the ambient noise in the room caused by computer, ventilation, traffic outside. It is no use to buy a microphone for studio conditions when you are not recording in a studio.

Integrated pre-amplifier
Some microphones feature an integrated pre-amplifier powered by the Phantom Power of the Business Recorder. You can use these microphones as well. The much higher output levels can be compensated by deselecting the pre-amplifier of the recorder or by setting it at a low level.

Inexpensive computer microphones
Many microphones that you can buy in the computer store are the inexpensive electret microphones. The drawback of these microphones is their relatively low sensitivity. They are acceptable for dictations because then you are speaking close to the microphone. When these microphones are used with the Business Recorder to record meetings, the quality of the recordings might be affected.

Recommended characteristics of your microphones for conferencing mode
- Phantom Powered
- Omni directional
- Frequency response from 50 to 15,000 Hz
- Sensitivity < -30dB
- Signal to Noise ration > 60dB
- Balance microphone

Microphone or headset for dictation
If you want to use the Business Recorder both as a dictation machine and as a conference recorder, we suggest that you attach an inexpensive microphone to the headset port as well. This will

allow you to keep the conference microphones in there fixed position.

The headset microphone port cannot supply Phantom Power. The output of a non-powered electret microphone however will be sufficient since you are speaking directly into the microphone. We recommend a headset or an inexpensive 'gooseneck' microphone. The advantage of a headset is that you can listen back without disturbing anyone. Whatever you decide to use, gooseneck microphone or headset, both are relatively inexpensive items.

Multi microphone conference systems
The input channels of the recorder can be configured for a wide variation of levels. It is no problem to use the output of multi microphone systems of a large conference hall as input. Then you will probably not need, and therefore disable, the microphone pre-amplifier.

Connecting your microphones
After you have configured the ports, you can connect the microphones. Connect the microphone that will record the audio appearing from the left loudspeaker to port A (numbered 8 in the picture) and the microphone for the audio appearing from the right loudspeaker to Port B (numbered 9 in the picture). When you connect only one microphone to record in mono, connect it to port A.

A secondary headset-microphone or small multi media microphone can be connected to the red 3.5mm headset microphone port (numbered 7 in the picture).

One or two microphones?
This is not an easy choice. When recording mono from a single channel, you save half of the storage space of the hard disk. With a good quality omni directional microphone, you will most likely capture all that is said on an average business meeting.

Of course, the spatial effect of a stereo recording is much nicer when you listen. When the meeting room is big, the advantage of two microphones is that people sit closer to a microphone.

To summarise: It certainly is not a bad decision to record just mono from one microphone.

Positioning the microphones

Usually microphones will be placed rather far apart so that everyone attending the meeting is as close as possible to one of the microphones. A warning is in place however: when recording stereo and playing both channels mixed through one loudspeaker, microphones placed far apart will not work. It will cause strange effects, because sound reaches one microphone sooner then the other. Therefore, when recording stereo, you must playback stereo or place the microphones close together.

2.2.3 Microphone Cable

To connect microphones to the main microphone ports A and B, you will need the connecting cables.

At the side of the Business Recorder, the cable must have a ¼'' TRS plug.

The most common plug type on professional microphones is the 3-pin XLRM plug. Your dealer can supply the required cables for this type of microphone because this is a stock item of the manufacturer of the Business Recorder.

The easiest way to connect Microphones with other connectors is to buy an adapter. The most common adapters that you may need are mini XLRM to normal XLRM (frequently supplied with the microphone) or 3.5mm to ¼"TRS (also frequently supplied with the microphone).

We recommend using a shielded cable as a microphone cable.

When the sensitivity of the microphone is low, the quality of the cable becomes more important. This is because the level of the noise picked up in the cable will be higher relative to the weak signal of insensitive microphone.

When you are using an **un**balanced microphone, it is important to use a **twisted** cable. This will minimise the noise picked up in the cable. For **un**balanced microphones the cable must be as short as possible. For a balanced microphone, it does not matter if the cable is twisted and longer cables can be used.

2.2.4 Headset or loudspeakers

The internal loudspeakers are small but sufficient to verify a recording. For better reproduction quality you need external loudspeakers. For typing out recordings, a stereo multi media headset might be the right choice. It is also possible to connect a headset and loudspeakers and to switch between them in software as required.

Loudspeakers
You can use two different types of multi media loudspeakers or amplifiers: the ones with analogue input or the ones with S/PDIF optical digital inputs.

When you use the analogue output of the recorder you occupy the port labelled "speaker" (numbered 6 in the picture) that may otherwise be used for the headset.
If you need digital output, you use the port labelled Optical out (numbered 5 in the picture)
If you want to use a headset and loudspeakers together you must use S/PDIF to connect to loudspeakers or amplifier.

Headset
You can connect a stereo computer headset with or without microphone with one or two 3.5mm plugs. You connect it to the headset port.

2.2.5 Ethernet

The Business Recorder is connected to your network in the same way as you connect a PC. A standard UTP cable is used. This cable is not supplied because of the variable requirements for cable length and specifications. The port on the back of the recorder is labelled "Ethernet" (numbered 3 in the picture). When you plug in the cable the yellow LED shows that the connection is active. A green flashing LED shows data activity on the port.

2.2.6 USB

The USB ports usually remain unused until someone wants to transfer a recording to a USB memory stick or a USB MP3 player. USB ports are always equivalent and therefore peripherals can be connected to any of these ports (numbered 4 in the picture).

The foot pedal

A foot pedal is a common peripheral to the Business Recorder. It allows you to control playback while typing. When someone is used to it, the foot pedal greatly enhances the ergonomics of typing out recordings. The foot pedal must be connected to one of the USB ports.

2.2.7 RS232

The RS232 (serial port, com port, numbered 2 in the picture) can be used for terminal access to the Business Recorder, mostly used by programmers who want to make applications.

For users the RS232 port backs up as a switch port for remote control of recording. See chapter 4.

3 Configuration

Once connected, you can begin with the configuration of the recorder.

There are two ways to configure your recorder, through the keyboard and through the web browser:

- Configu**!Unexpected End of Formula**ration using the keyboard of the recorder. This option is always ready for you to use.

- Configuration using the web browser. The recorder first has to be given an IP address.

3.1.1 Using the keyboard for configuration

To begin you press the settings button. The display will show you a list of configuration menus. With Up and Down you can browse through the list and with OK you can select the menu.

The list contains the following menus:
- Conference Audio Setup
- Dictation Audio Setup
- Security Options
- Network setup
- CD Burn Options
- General Setup

When you select a menu, you can with softkeys UP and DOWN browse a list of menu items and with OK you can select the item.

With every item, you can either browse the options for the item or select or deselect the feature if those are the only options. This is self-instructive from the display so we will not explain for every item how to set it.

3.1.2 Using the web browser for configuration

With your web browser, you have access to the same configuration options in an internet web page. When the recorder has an IP address, you can open your browser and type the IP address.

The pre set of the recorder is to ask your networks DHCP server for an IP address. When you connect the recorder to the network, after a while it may have found an IP address. Press the leftmost soft key underneath the LCD and the IP address should display. If after a few minutes of being connected it still displays 0.0.0.0 the recorder has been unable acquire an IP address from your DHCP server or when there is no DHCP server. In that case, you have to give your recorder an IP address using the keyboard.

When you connect to the internal web server, the first screen that appears will ask you to log in with username and password. First time you must use "root" both as username and as password. Of course, you must change this. See also: Security Configuration.

When you logged in, you come to the main page that shows today's recordings and gives you the option to find recordings. From there click the Admin button. In the Admin screen, you can administer users and you can select Settings.

The settings screen shows you the same options as you get with keyboard configuration.

3.1.3 General Setup

There are three general setup options:

Language
You can select your language from a list. The language will apply to the display and the web interface.

LCD Invert
The default configuration is white characters on a blue background. The inverted mode is blue on a white background

Date and Time
The internal clock can be set and is important because your recordings are stored on date and time. Also, note that the recorder can work with an external NTP timeserver. See Network configuration.

3.1.4 Operating mode configuration

The recorder has two sets of configuration, called "conference" and "dictation". These sets of configuration concern inputs and outputs only. Dictation mode and conference mode are just alternative

presets of the same configuration. The two presets are just there to help you to configure the recorder for two alternative purposes that can be selected from then on with just a key press.

Options for Conference and Dictation mode
These are the options and their default values for Conference mode:

Minimum recording length	5 sec
Serial Control	Disabled
Headset Microphone	Disabled
Internal speaker enable	Enabled
Compression mode	Stereo 192 Kbs
Record Volume	50
Playback volume	65
Overload protection	Disabled
Channel Configuration	4 separate items per channel

The configuration options have the following meaning:

Minimum recording length
Recording with duration of less then the minimum will be deleted.

Serial control
This enables remote control via the serial port to start and stop recording. Normally this will be disabled. When enabled to start and stop recoding using the recorder keys is disabled.

Headset Microphone
This is the 3.5 mm microphone input that you will use with a headset microphone or a small gooseneck dictation microphone. It is an alternative to the main channel inputs A and B. Usually you will disable this in conference mode. This is a mono input channel.

Internal speaker enable
This refers to the small internal loudspeaker. Enabling this speaker will not affect the operation of external loudspeakers.

Coding mode
A range of common audio compression modes is listed. There are stereo and mono recording modes. When mono is selected, only channel A will be used.
Although all recording qualities are good for understanding speech, less compression (that is a higher bit rate) will result in better audio quality.

Coding mode	Capacity of 40Gb hard disk	Capacity of CD
MP3 - 64 Kilobit/second stereo or mono	1418 Hours	21 Hours
MP3 - 96 Kilobit/second stereo or mono	945 Hours	14 Hours
MP3 - 128 Kilobit/second stereo or mono	709 Hours	10 Hours
MP3 - 192 Kilobit/second stereo or mono	472 Hours	7 Hours
MP3 - 384 Kilobit/second stereo	236 Hours	3.5 Hours
Uncompressed Wave (CD Quality)	65 Hours	1 Hour

Record volume

This is the input level volume control of the audio device of the recorder that converts analogue audio input to digital. It can be controlled from low to high amplification in 100 steps.
This is your only record volume control when you do not use the microphone pre amplifier, for example, when you record from a conference room microphone-system.
When the microphone pre amplifier is used, we tend not to open the volume control too much because this is supposed to give a better signal noise ratio and the pre amplifier can very well be used to give any desired input volume. Most people will find it hard to hear any difference and therefore you may want to test yourself to find the optimal balance between record volume and pre-amplifier gain.

Play volume

This is the play volume for the internal or external analogue loudspeakers. It does not apply to S/PDIF because wit a digital connection the play volume must be controlled on the decoder/amplifier that is sometimes integrated in the loudspeakers.

Overload protection
This is a software mechanism that will reduce the record volume when an overload occurs. It is only for extreme situation, for example, where people speak far away and very close to the microphone. Normally it should be disabled.

3.1.5 Channel configuration

For Conference Mode and for Dictation Mode there are separate configurations for **Channel A (left)** and **Channel B (right)**. There is no configuration for the headset microphone.

Usually the first configuration changes that you may want to make concern the input channels so you will be able to make the first recordings. When the Business Recorder comes from the box, the input channels are configured as follows:

Pre amplifier enable	Yes
Pre amplifier gain	40
Automatic gain control	No
Phantom Power Supply	No

The default configuration above is perfectly acceptable as reference point for you to start with, with one exception: we have disabled the Phantom Power Supply to the microphones. If you have bought the recommended type of microphone that requires Phantom Power, you must first enable it. As said before it was disabled because we did not want to take the risk to apply Phantom Power to a microphone that was not made for it. This even though we have no evidence that Phantom Power will damage microphones that are not made to receive it.

Pre-amplifier enable of channel A and B
This allows you to enable or disable the microphone pre amplifier of channel A and B. When you use microphone input you will probably use the pre-amplifier, unless the microphone has its own pre amplifier. Even with battery-powered microphones, you must use the pre amplifier.

Pre-amplifier gain
This controls the pre-amplifier circuitry with levels from zero to 63. The best way to set it is at a high mid level such as 40. Then adjust it from there. The trick is to adjust is the microphone in

such a way, that you make the best of very soft sounds and very loud sounds. When you configure the pre amplifier well, it is achievable that a person whispering in a far corner of the room and someone shouting close to the microphone can both be understood.

Automatic gain-control
When enabled, the recorder will automatically adjust the amplification when the sound is within a certain low range. It is an attractive way to make sure that low sound levels are recorded. However, it has the negative side effect to amplify background noise too. This side effect is no problem when you are monitoring a room for technical reasons. However, automatic gain control will not result in a nice recording due to the volume changes and with that the changes in background noise. Therefore, use it for room monitoring and not for recording meetings.

Phantom power supply
This is the 48-volt power supply from the recorder to the microphone. We cannot give you a full guarantee that you will not damage a microphone when you apply Phantom Power to it and therefore you must always check the specifications of the microphone before you apply Phantom Power.

3.1.6 Security configuration

There are three independent security mechanisms in the Business Recorder:

The Device Password
This password must be given before someone can alter the configuration. It will be asked when you press the settings key on the keyboard of the recorder. With a new recorder, the password is disabled.

The user configuration for remote access
This is only for network access and offers some more security. The reason is that you want to be more careful with remote access, especially while this may also be via internet. Unidentified access to your recordings on the network is not possible.

This is an example of the login screen of a Business Recorder:
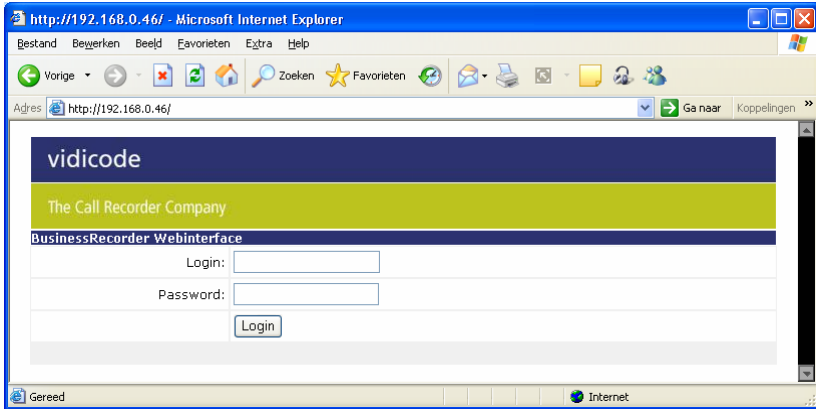
This is a sample of the user administration screen:
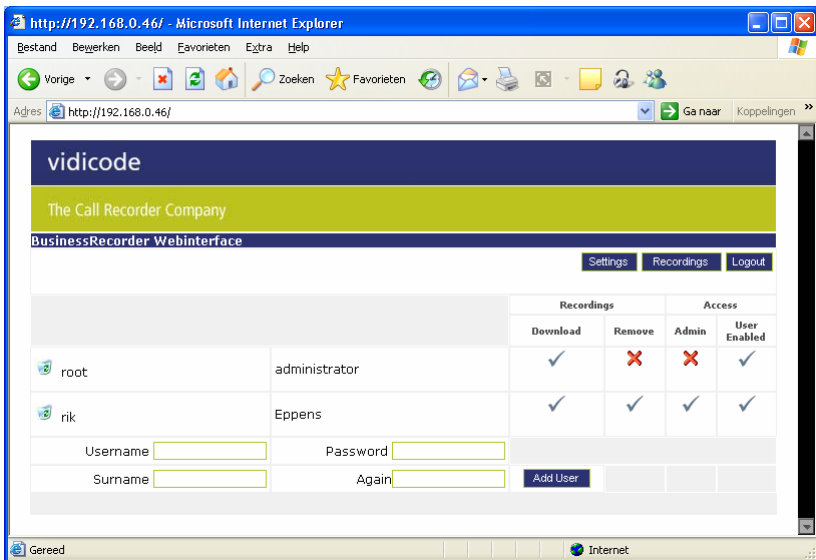
You can add and delete users and control their authorisation by clicking on the icons.

The CryptoCard
The options are to enable or disable the use of CryptoCards. This also serves as a protection when you want to use a CryptoCard for

recording. When enabled the recorder will not start recording before you have placed a CryptoCard in the front of the recorder. It will show a warning message on the display instead.

3.1.7 Network configuration

Network name
This name identifies the recorder on the local network. When your network supports this function, a name can be used instead of the IP address. The name will also show on the web pages sent by the recorder so you can identify the individual recorder when you have more then one in your organisation. The name is also used as the originating address when sending email.

Use DHCP
When enabled the recorder will get all IP addresses from the DHCP server in your network, which is safe (because you can make no mistakes) and easy (because you not have to do anything to configure the recorder). If there is no DHCP server in the network the recorder will not get an IP address. Then you must disable DHCP and configure the network with the keyboard of the recorder.

IP address – set by DHCP server
This is the address on the network where your recorder can be found. When you connect the recorder on the LAN it will usually be an internal address such as 192.168.0.46. The first 6 digits 192.168 are standard on local networks.

IP subnet mask - set by DHCP server
Identifies the part of the network address that is internal, when seen from a wide are network

Default gateway - set by DHCP server
The address of the gateway to extended networks such as internet.

DNS Server addresses - set by DHCP server
These addresses are required to find IP addresses when a name is used as a network address.

Network domain
Identifies the location of the mail server when sending email. (Networkname@Networkdomain).

Outgoing mail server

This is the address of a SMTP mail server. The Business Recorder will use it when forwarding a recording by email. It will be either a name or an IP address. In case of doubt, the IP-address is safe because no DNS-server will be required to translate the address.

Time Server (NTP)
A time server can supply a very accurate time setting for your hardware using the Network Time Protocol. If you give the recorder an IP-address or network name of an NTP server the time will be updated automatically and the information with your recording when it is made will be very accurate too.

3.1.8 CD burn options

The few options for burning CD's can only be configured form the keyboard of the recorder.
You can configure the recorder to make generic audio CD's or data CD's. MP3 CD's are data CD's.

Audio CD's are very convenient, but the drawback is that they contain uncompressed data and therefore the capacity is limited to 74 minutes.

The options are:
- Always make audio CD's
- Always make data CD's
- Ask before making the CD

From the CD burn options menu you can also access the CD tools menu that is further described in chapter 5.

3.2 Care and Maintenance

	Keep the Business Recorder dry. If it gets wet, wipe it dry immediately Liquids might contain minerals that can corrode the electronic circuits.
	Use and store the Business Recorder only in normal temperature environments. Temperature extremes can shorten the life of electronic devices and distort or melt plastic

	parts.
	Keep the Business Recorder away from excessive dust and dirt that can cause premature wear of parts.
	Do not use harsh chemicals, cleaning solvents or strong detergents to clean the Call Recorder.

4 Using the Business Recorder

4.1 Introduction

Vidicode uses some basic principles for the user interface of all products. The keys are grouped by function and in this paragraph, we will show you how that works.

4.1.1 Recorder keys

On the picture you see the **recorder keys** (numbered 8 in the picture). These work as the keys of every normal recorder. The only difference is the ![key] key that is not common in recorders and will be explained later in this chapter.

4.1.2 Function keys

The recorder keys can also be found on the remote control.
The recorder has so called **function keys** are a quick way to start
a certain function:

Dictation	select dictation mode (also found on remote)
Conference	select conference mode (also found on remote)
Recordings	add selected recording to play list or bring up play list
Settings	bring up recorder configuration menu's
	add selected recording to USB list or bring up USB list
	add selected recording to CD list or bring up CD list
Contents	bring up the contents of the CD in the CD drive
Delete	delete a selected item

4.1.3 Soft keys

When you are working with the recorder, the display will show you
what your options are. You will read these options above the so
called **soft keys** (numbered 1 in the picture). When you press the
key you select the option.

```
TUE 23 MAY 2006 14:13:30.MP3
TUE 23 MAY 2006 10:20:12.MP3
TUE 23 MAY 2006 08:30:40.MP3
OK        DOWN      UP        RETURN
```
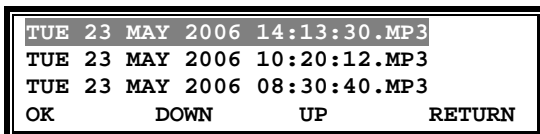
In the example above, that is a menu for browsing recordings, the options are OK, DOWN, UP and RETURN. When you press the softkey labelled DOWN once, you go to the next recording:

```
TUE 23 MAY 2006 14:13:30.MP3
TUE 23 MAY 2006 10:20:12.MP3
TUE 23 MAY 2006 08:30:40.MP3
OK        DOWN      UP        RETURN
```
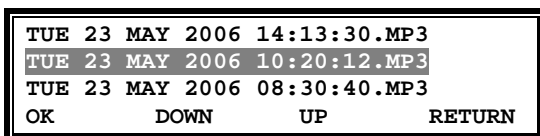
If you now press OK to select the recording you see:

```
TUE 23 MAY 2006 10:20:12.MP3
DURATION 01:12:30
BITRATE 192KBPS
EMAIL     CD        USB       RETURN
```
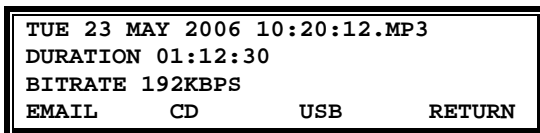
When you have made a recording the display always says: EMAIL, CD, USB and QUIT. When you then for example press the soft key with EMAIL the display will continue with the appropriate instructions to send the recording as an email.

4.1.4 The numeric keys

The **numeric keys** (numbered 5 in the picture and shown below) allow you to enter data into the recorder GSM style. This might be an email address, a configuration item such as an IP address etc.

The exception here is the "search key" 🔍, that backs up as an extra function key.

4.1.5 The volume controls

The **volume controls** (numbered 10 in the picture) are as with any normal audio device. You can also find the volume controls on the remote control unit.

4.1.6 The remote control

On the **remote contro**l you find some of the same keys as on the main keyboard that we thought you would want to control from remote while in a meeting.

4.2 Recording and playback

If you have already read the chapter about installation and configuration you will know, that the recorder works with two presets called "dictation" and "conference". If you use the presets as alternatives, you must, before you start recording or playback, check if the right preset is selected.

- To record you press .

- To stop recording you press .

- While recording you can press to pause the recording. When you press the button again, recording will

continue in the same file. A special pause bookmark will be placed in the recording.

To play a recording you must remember that the recorder contains many recordings. When you want to play the last recording, it is sufficient to press ▐▐▷ .

If you want to play old recordings, press the search key 🔍. This will bring the search screen up where today is indicated as the date. Then you can enter a date, a month or a year, which will give you a list of recordings from these dates. You can use the key .@ to enter a * that will serve as a wildcard. Suppose you want to see all the recordings of May 2006, you press the search button and then you enter **-05-2006. The selection shown then will be all recordings of the month May 2006.

When a list is shown you can browse to items in the list. Press ▐▐▷ to play the item. To select an item as the "currently selected recording" press the softkey labelled with OK. Then the recorder will show the details of the item and you can press ▐▐▷ to play the item.

While playing, you can use the following controls:

▐▐▷	Pause
»	fast forward
«	fast rewind
⥲	skip to the next bookmark or, if no bookmark exists, to the next recording in your selection
+ and – volume controls	control the loudspeaker volume

4.2.1 Bookmarks

The idea of bookmarks is that when you have to write minutes of a long meeting you would spend lots of time to find the important sections. If you place bookmarks while recording, you will save yourself a lot of time otherwise spent searching.

On the remote control while recording you can place a bookmark by pressing the keys conference or dictation.
On the keyboard while recording you can place a bookmark by pressing one of the numerical keys. Then the key will remain stored in the bookmark.
When playing back, you can jump directly to a place in the recording some seconds before the next bookmark.

Bookmarks can be used when playing back on the recorder. When you press the recorder will skip to the next bookmark.

Bookmarks can also be used with the Business Recorder Access System software. Just like the key on the recorder, the software allows you to jump to the next bookmark.

Recordings containing bookmarks can be played on any normal MP3 player or with all player software. This is because the possibility to add bookmarks is standard in multi media files. However, media players do not recognise the bookmarks. Therefore, to work with bookmarks on a PC, you must use the Vidicode software.

4.3 The use of export lists or play lists

To manage more then one recording at a time the Business Recorder works with lists, Play lists and Export lists. There are three lists:

- The play list
- The list of recordings to be copied to a CD
- The list of recordings to be copied to a USB device

When a recording is visibly selected on the LCD, you can press the function keys with the list symbol: , and . This will add the currently selected recording to the Playlist, CD list or USB list.

When the recorder is idle you can press any of these keys to select the list. Suppose you press , then the display the list and will give you the options that apply to this list. This would for example be to play the list.

When you select , an option is to send the list, that is all files in the list to the CD.

If you want to add recordings to a list you begin to press the search key .
This will bring the search screen up where today is indicated as the date. Then you can enter a date, a month or a year, which will give you a list of recordings from these dates. You can use the key .@ to enter a * that will serve as a wildcard. Suppose you want to see all the recordings of may 2006, you press the search button and then you enter **-05-2006. The selection shown then will be for the month May 2006.

When a list is shown you can browse to items in the list. To select an item press the softkey labelled with OK. Then the recorder will show the details of the item and you can press the PLAY button to play the item. To add the item to a list you press the function key for that list: , or .

It is important to mention that all lists will be processed or played in the order of from the beginning to the end. Therefore we have given you the option to change the order in any of these lists. When the list is selected, you can navigate in the list with the softkeys UP and DOWN. When you have highlighted a recording you can move it up in the list using the numeric key 2 and you can move it down with the numeric key 8.

The can use to remove items from the list.

4.4 Export of recordings to other media

Distribution of recordings is very much built into the Business Recorder. You can either use the web interface to retrieve recordings from remote, or use the recorder to export recordings

from the hard disk to other media. This section is about export to other media initiated from the recorder.

There are two methods:
- **For USB and email**: transfer the currently selected recording to another medium
- **For CD and USB**: make a list of recordings to be transferred and then send all at once to the other media as we have explained in the section above

Whenever a recording is selected, the recorder gives you options for what to do with it. There are always two options shown, EMAIL and USB, and when you have the internal CD recorder there is a third option, CD.

When you want to make a list of recordings to be exported, you use the function keys ▰▰▰ or ▰▰▰.

It is not possible to transfer more then one recording at a time by email. Therefore, there is no function key to make a list of recordings to be transferred by email.

4.4.1 Email

The first option to export recordings is by email. If you are dictating letters, you can send them instantly to the person typing the letters for you.
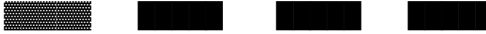
When the recording is selected, or when finished recording, you press the softkey labelled EMAIL.

```
TUE 23 MAY 2006 10:20:12.MP3
DURATION 01:12:30
BITRATE 192KBPS
EMAIL      CD        USB       RETURN
```

The recorder will show the email address last used (or an empty line with a cursor when you are using this the first time).

```
┌─────────────────────────────────────────┐
│            EMAIL TO                    _ │
│        RECORDERS@VIDICODE.NL             │
│                                          │
│  OK        <<<       >>>        CANCEL    │
└─────────────────────────────────────────┘
```

Now you can enter a new email address with the numeric keys, typing characters in SMS style, or you can leave it as it is. When you press the Softkey labelled OK, the recorder will ask for a subject line.

```
┌─────────────────────────────────────────┐
│             SUBJECT                    _ │
│    LETTER TO TIM ABOUT OIL SALES         │
│                                          │
│  OK        <<<       >>>        CANCEL    │
└─────────────────────────────────────────┘
```

The subject can be left empty if you want. When you press OK once more, the recording is sent. In practice, this means for persons making many dictations that they can send their dictations away by just pushing the same key 3 times.

Of course, there are many other applications of sending recordings by email. There is just one limitation to mention and that is the file size of the recordings.
A dictation for a letter may take one or maximum several minutes and can easily be sent as email attachment. Usually with a dictation, the compression used is high 64Kbs. A dictation of 2 minutes will be 960Kbyte. You can send it easily as email.
The recording of a meeting however will perhaps last 2 hours while the compression is low and recording is in stereo because you want the highest quality and best dynamics. Typically, a file of this size (345 Mb) is far too big to send as email. You should not even try that.

4.4.2 CD

When you have the CD recorder installed, you can export recordings to a CD. The CD option differs from the EMAIL and USB options because a CD must always be made from the CD list.

When you are finished recording or at any time when you have selected a recording, you can:

- Press the softkey marked CD.
- Press .

In both cases, the recording will be added to the list of items to be sent to the CD later.

When the Recorder is idle you can press . This will bring up the CD list. Press CD to send all items in the list to CD. Of course, this can be repeated, so if you want to make more CD's with the same contents you just repeat the procedure.

During the transfer of recordings to a CD you can follow the progress on the LCD. Please do not interfere with the transfer.

The CD functions are explained in more detail in the next chapter.

4.4.3 USB

Another option that you have to distribute recordings is via an USB memory stick or MP3 player. A one-gigabyte USB stick can carry up to 6 hours recording of the highest quality stereo. These devices are very reliable as a carrier of data. Moreover, they have become inexpensive. The transfer to a memory stick is relatively quick. We think, that USB memory sticks are a great tool to give attendees of a meeting their own copy of the recording.

To use a USB device, connect it to one of the two USB ports on the back of the recorder.

When you are finished recording or at any time when you have selected a recording, there are two possibilities:

- There is a softkey marked USB. When you press this key the selected recording will be transferred to the USB device.

- You can also press ![icon]. Then the recording will be added to the list of items to be sent to a USB device later.

When the Recorder is idle you can press ![icon]. This will bring up the USB list. Press USB to send all items in the list to the USB device. Of course this can be repeated, so if you want to send the list to more USB devices that then will have the same contents you just repeat the procedure.

During the transfer of recordings to a USB device you can follow the progress on the LCD. Please do not interfere with the transfer.

USB devices can be safely plugged into the recorder and be taken out after transfer. There is no need to power the recorder down before connecting or disconnecting a USB device. You must not however disconnect the device while transfer is in progress.

WARNING: Do not disconnect a USB device while transfer is in progress, because this may result in loss of data or damage to the device.

A USB device can be connected to a PC and the recording can be played directly from the USB stick using the media player of the PC, or it can be transferred to the disk of the PC.

An MP3 player has the additional advantage that it is possible to listen to the recording direct from the player.

NOTE: The USB functionality was tested with many USB devices. It is most likely that the recorder will work with the generic USB memory sticks that you find in the electronics store. There will be USB devices that the Business Recorder cannot work with. If this is causing you a problem for a special application, you might inform the manufacturer at support@vidicode.nl . It is possible that new drivers will be published.
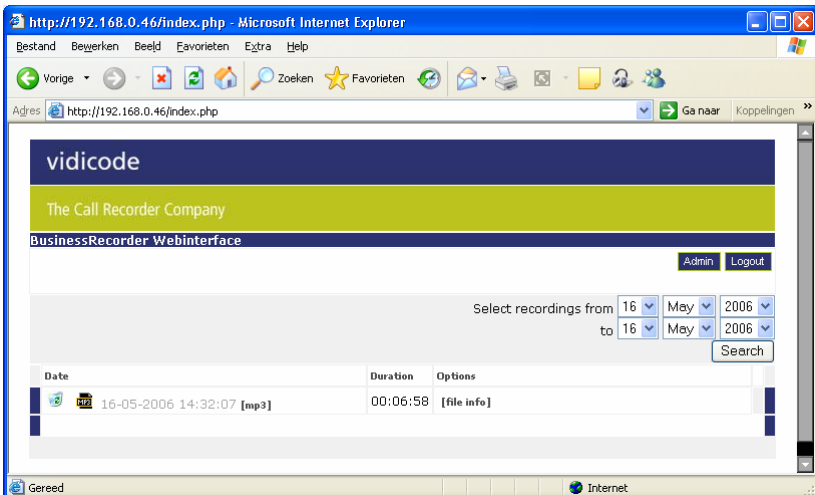
4.5 The web interface

The web interface is an alternative way to access recordings.

When the user types the IP address or the network name of the Business Recorder in his browser, he will see the Login screen. Enter username and password.
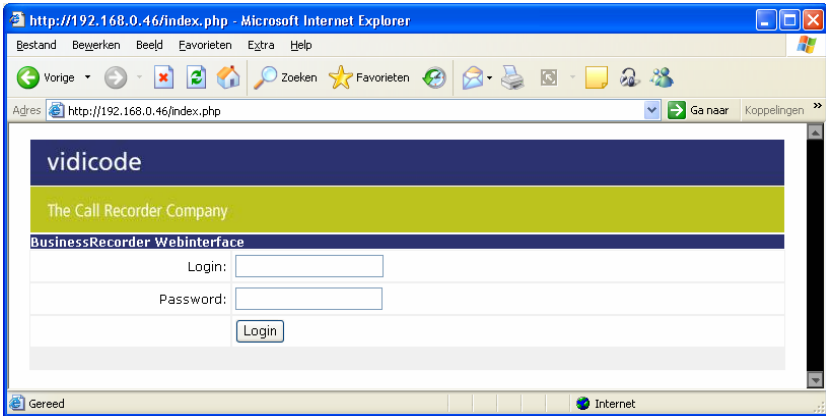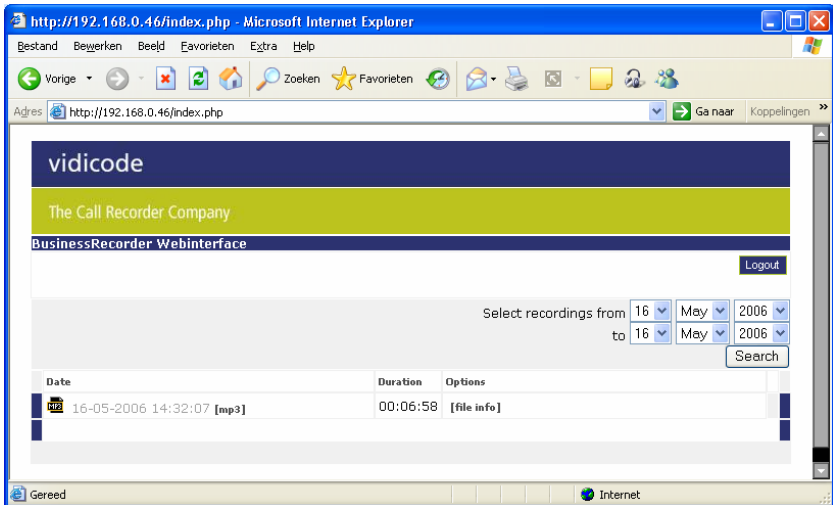

When username and password have been entered, the recording page of today will appear.

The above is an example as seen by a fully authorised user. The following example is as seen by a user who is only allowed to listen

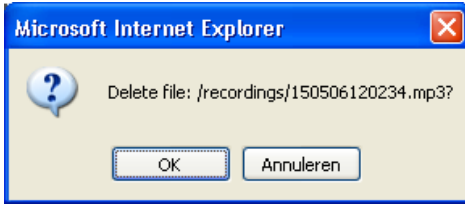to recordings, but is not allowed to delete recordings or administer Users and Settings.

The pictures show that today only one recording was made.

The user can change the dates shown and then click "Search" to find other recordings. Every line in the page represents one recording with date and time it was made. For further information click "file info".

To play or download the recording it is sufficient to click the icon of the recording and the web browser will offer you the option to open or download the recording. When you decide to open the recording, it is possible that a media player program will open that is not capable of reproducing the recording.

Authorised users can also delete recordings. They must click on the recycle bin icon and then the browser will ask for confirmation:

Warning: In many organisations, it is not recommended to allow on line users to delete recordings, because once the deletion is confirmed, the recording cannot be recovered.

5 Using the CD

5.1 Introduction

This chapter only applies to Business Recorders that have the optional CD recorder installed.

A CD drive is relatively slow when compared with a hard disk. At various stages when you have changed the CD in the CD drive you will not get immediate response. The display will temporary show a progress indicator while you must wait. An example of when this happens when you want to see the contents of a CD after you have placed a new CD in the drive. You will see:
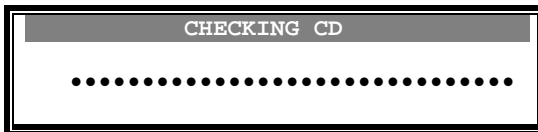
The delay will only happen the first time after you have changed the CD.

5.1.1 Audio CD's and data CD's

Recordable CD's nowadays are widely used as a carrier for audio and data. The world started using CD's for audio in a time that MP3 was not yet invented. Therefore, normal audio CD's contain uncompressed audio while the newer system is to compress audio and store audio tracks as computer data.

This means that when using the Business Recorder you have two options: to make generic **AUDIO** CD's or to make **DATA** CD's. The Business Recorder will not let you mix the two systems on one CD because it is too complicated and will often not work on your playback device.

When you have recorded compressed audio (MP3), the recordings cannot be stored in compressed mode on a generic audio CD. Therefore, when making the CD the MP3 will be decompressed. In this case, it could be argued that you would have done better to record uncompressed. With compression, you will always loose some quality that does not come back when you decompress the

audio. Another drawback is that burning a generic audio CD from a MP3 file takes a lot of time because the recorder must first decompress the MP3 and write it to the hard disk before it can burn the CD.

As you already learned, more recording time can be stored on a CD when it contains MP3 files. In this case, you make a DATA CD.

5.1.2 Recordable CD's and rewritable CD's

There are two types of CD that can be recorded:
- a recordable CD can be recorded once and never be overwritten
- a rewritable CD can be recorder and erased, then recorded again

It must be understood that a rewritable CD does not function as a hard disk. It functions like a normal recordable CD that can be written once and where perhaps data files or recordings can be added, but nothing can be overwritten. To use it again it must be erased.

The Business Recorder can erase (blank) rewritable CD's. Apart from that the functions for writing to rewritable CD are identical as for writing that a recordable CD.

5.1.3 Single session and multi session CD

A data CD can be made in two different ways: single session or multi session. The difference is that in multi session mode, new recordings can be added. It is no problem to use CD's multi session. In some situations it can however be useful to only have one single write session on a CD because the, when making it, you can completely control what will be on the CD. An audio CD can only be single session

5.2   Making a CD

To make a CD you place a CD with enough remaining capacity in the CD drive. Then you press 🖹 ➜ 💿 . You will see the list of recordings to burn displayed on the LCD:

```
01-FRI 15 DEC 2005 12:20:18.MP3
02-MON 18 DEC 2005 09:50:22.MP3

BURN        DOWN        UP          RETURN
```
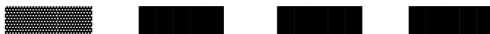
Press BURN. You will see:

```
----------- BURN CD ----------------


AUDIO       DATA        TOOLS       RETURN
```

Press DATA. You will see:

```
              QUESTION
         START MULTI SESSION?

            YES          NO
```
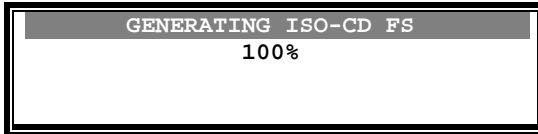
If this is the first time that you write data on this CD, the recorder
will prompt you for a label.
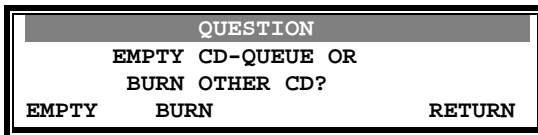
```
              CD LABEL


OK          <<<         >>>         CANCEL
```

Press OK. You will see:

```
┌─────────────────────────────────────┐
│      GENERATING ISO-CD FS           │
│            100%                      │
│                                      │
└─────────────────────────────────────┘
```

and:

```
┌─────────────────────────────────────┐
│      BURNIG ………                     │
│          FIXATING                    │
│                                      │
└─────────────────────────────────────┘
```

and then:

```
┌─────────────────────────────────────┐
│           QUESTION                   │
│      EMPTY CD-QUEUE OR               │
│      BURN OTHER CD?                  │
│ EMPTY    BURN            RETURN      │
└─────────────────────────────────────┘
```

Press whatever is required. Now you have successfully made a CD
with your own recordings.

At various stages in the procedure above, things can go wrong.
The CD might be full, made for single session or there might be no
CD in the drive. In these cases, you will see comprehensive
warnings that will tell you what to do. Usually you must replace
the CD and continue.

5.3   CD tools

When you press the ▤▸🖬 softkey, you see the CD (burn) list,
with TOOLS as one of the options. Select TOOLS. This all has been
kept very simple. You will see some options options:

```
┌─────────────────────────────────────────┐
│ INFO                                     │
│ BLANK                                    │
│  EJECT                                   │
│ OK        DOWN      UP       RETURN       │
└─────────────────────────────────────────┘
```

The options are:

- Clear CD Queue
- Info
- Blank
- Eject

Clear CD Queue will empty the list of recordings to be written to the CD. Of course the recordings will remain on the internal hard disk.
Info will present the size of the CD.
Blank will erase a rewritable CD.
Eject will open the drive so you can replace the CD.

5.4   Access to the contents of a CD

Press the ⬤ Contents function key. The LCD will list the contents of the CD.

You will see a list of recordings that is identical to the list that you see when you make a selection from the recordings on the hard disk. Of course you can play the recordings from the CD. Other available options are to copy the recording to USB or to send it by email. It is not possible however to add a recording from a CD to a list because a CD can be removed and if that would happen the list would not be valid anymore.

6 Special functions and services

The Business Recorder has several functions that do not fit in the general user instructions. They are presented in this separate chapter.

6.1 Business Recorder Access System

The optional software package for Windows PC's is called Business Recorder Access System. Its primary function is to present the contents of up to four recorders as a searchable database. The user can query the database with various search criteria. Important recordings can be archived on the PC with a mouse click. Interesting features of the integrated MP3player are:

- It works with a CryptoCard to reproduce encrypted recordings on a PC
- It can read and jump to tags placed by the recorder
- It can decrease (or increase) the play speed with constant pitch which can makes speakers who speak fast much easier to understand
- Various tools are provided to enhance the audibility of the recordings of dictations, meetings and conferences

For a full overview of the functions of the Business Recorder Access System and a downloadable manual, please go to our website: WWW.VIDiCODE.NL.

6.2 Using the optional CryptoCards

On the front of the Business Recorder, a slot can be used to place an IC card in the recorder. There are two applications. One of these – encoding of recordings – is available at this moment. The other application – creation of certificates to demonstrate the authenticity of recordings – is under development.

6.2.1 Encoding of recordings

The current application is to encode recordings. Encoding is a strong protection against illegitimate listening to recordings. To listen to recordings made using a CryptoCard, a card from the same set is needed. The card is protected with a PinCode, so the

user will need both the card and the password to be able to listen to the recordings. To make recordings only the card is enough.

There is no connection between the recorder and the encoded recording. With the right CryptoCard the recording can be played on every Business Recorder or on a PC with an IC card reader. We supply inexpensive add-on card readers for the USB port of the PC. The integrated player of the Business Recorder Access system can be used to reproduce encoded recordings or to export encrypted recordings to normal recordings without any loss of quality.

The CryptoCard technology effectively limits the use of recordings to persons who have access to a card from the set and know its PIN code. The use of CryptoCards is essential when external access is possible to your recorder, especially when the recorder can be reached on internet and your recordings contain confidential information.

There are two types of CryptoCards available. The most important difference between them is that there are cards can only be used for recording, while others can be used for recording and playback. Cards that can only be used for recording are useful when there is a risk that the recorder is used for illegal playback. With a Business Recorder, it is more common to use the type of card that is for both recording and playback because the real threat for a Business Recorder is access via the network or via recordings that are copied on a CD or USB.

When a card with playback functionality is placed and an encrypted recording is selected, the display will prompt the user for the PIN code. When the PIN is entered wrong for 3 times in sequence, the PUC code is needed to make that card operational again. During playback, there is no difference in audio quality.

6.2.2 Certificates

Certificates can be used to provide additional evidence that a recording is real and unchanged. They can also provide a better indication of when the recording was made and of the person who was responsible.

The requirements for certificates can vary between users. Therefore, introduction of certificates as we write this is delayed

until a further investigation of the subject is completed. The Business Recorder as it is now however is ready to produce certificates. For further information on the subject, you may want to check the website www.vidicode.nl.

6.3 Using a foot pedal

There is an optional foot pedal available for the Business Recorder. The foot pedal is a tool when typing out the minutes of a meeting. Play and Pause, Fast Forward and Rewind can be controlled by foot.

The foot pedal has a USB connection. It must be connected to one of the USB ports on the back of the recorder.

The USB foot pedal also works with the Business Recorder Access System software for the PC.

6.4 Software updates

The Business Recorder is a complicated and powerful system. While these lines are written it is also very new. There is a lot of potential to develop extra features for the product. Users will propose changes and bugs may be found and resolved. Therefore, we suggest that occasionally you check for updates.

The update procedure can be found in the settings menu under general settings. When you select the option, you will be given two possibilities, web and USB.

When there is a direct connection between the Business Recorder and the internet, the web update can be tried. The requirement is that it must be allowed to the Business Recorder to access the website of the manufacturer and download the latest version of the software. The display of the recorder will show you when download and installation of the software are in progress. Please do not interrupt this process.
When this does not work you must consult your network manager, or use the other alternative, update through USB.

The latest update of the software for the Business recorder can be downloaded from the website WWW.VIDICODE.NL. When you have downloaded it into your PC you can transfer the update file to USB device. The USB device then must be connected to the back of the Business Recorder and then the update from USB must be started.

As with the web update, the display of the recorder will show you when download and installation of the software are in progress. Please do not interrupt this process.

New features in updates may influence this manual. Therefore, we may decide to publish a new manual. The manual will be uploaded to your recorder together with the update. You can find it on the ADMIN page of your recorder or on the manuals pages at WWW.VIDICODE.NL.

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