

8221P

PORTABLE CASSETTE TAPE RECORDER

The **8221P** tape recorder makes recordings on two cassettes simultaneously on two channels.

A tape timer is incorporated to display the total time of recording on one side of the cassette, in minutes.

Channel 1 is connected to an internal or an external microphone.

Channel 2 is connected to an internally generated spoken announcement of the date and time of day. The time announcement is in 24 hour format, spoken every ten seconds.

The recorder ensures that two cassettes must be inserted and running correctly in order to maintain the record mode and that the signal and bias currents drive both recording heads. It is not possible to run only one cassette or to drive only one recording head.

A four element LED display shows the recording level on the microphone channel.

An internal alarm sounds and the red **alarm** LED lights:
when the cassettes have reached a point 2 minutes before the end;
if a cassette jams or reaches the end;
if either channel has failed or been silent for 60 seconds.

In the absence of a mains supply, the recorder may be powered from the internal rechargeable battery.

When the battery is low the red **low battery** LED lights.

When the battery is on fast charge the orange **fast charge** LED lights.

The portable recorder is mounted in an integral carrying case.

The **remote monitor** socket allows the connection of external equipment to provide additional interview facilities.

PORTABLE RECORDER CASE

The carrying case is integral with the recorder.

To use the Recorder:

- Place the Recorder on the bench with the handle uppermost so that the case rests on its rubber feet;
- Peel off the flap attached by Velcro to the front edge of the underside of the Recorder;
- Fold the front and top section of the case over the top of the Recorder so that these two sections are now behind the rear of the Recorder;
- Reattach the Velcro flap to the rear edge of the top of the Recorder.

To use the Charger unit:

- Remove the Charger complete with lead from its compartment at the right hand side of the top of the Recorder.
- Plug the Charger into the mains power socket.
- Plug the Charger lead into the power input connector on the top of the Recorder.

To replace the Charger unit:

- Disconnect Charger from mains and from Recorder;
- Coil the output lead around the fingers;
- Replace the Charger and lead back in the compartment with the mains plug pins facing forward and with the coiled lead in front of the Charger.

To use the external Microphone:

- Peel back the Velcro flap from the rear edge of the top of the Recorder;
- Peel back the flap closing the pockets in the inside of the top cover of the outer case;
- Remove the Microphone connector from the centre pocket;
- Remove the Microphone and lead from the left hand pocket;
- Reattach the Velcro flap to the rear edge of the top of the recorder;
- Plug the Microphone connector into the **mic** socket at the left hand side of the top of the Recorder;
- Place the Microphone on a convenient horizontal surface approximately equidistant to the participants in the interview.

To replace the Microphone in the case:

- Wrap the lead around the Microphone, leaving the connector end free;
- Replace the Microphone and lead in the left hand pocket in the top of the case with the flat side of the Microphone facing outwards;
- Replace the Microphone connector in the centre pocket;
- Reattach the two Velcro flaps.

To close the Recorder case:

- Peel off the Velcro flap on the rear edge of the top of the Recorder;
- Fold the front and top section of the case back over the Recorder;
- Reattach the Velcro flap to the front edge of the underside of the Recorder.

The recorder must not be transported with cassettes inserted in the cassette carriers.

POWER SUPPLIES

The Recorder can be powered either by an external AC mains supply using the Charger unit or by the internal rechargeable battery.

When the mains supply is connected, the rechargeable battery is charged and the lights behind each cassette are lit, whether the Recorder itself is switched on or off.

Rechargeable battery operation

The rechargeable battery capacity is sufficient to power the recorder in the Record mode for approximately 4 hours.

The power consumption of the recorder when switched on in the Stop mode is approximately half of the consumption in the Record mode.

To conserve battery life, the Recorder automatically powers down after 5 minutes of inactivity in Stop, unless cassettes remain in the Recorder and the elapsed time display shows a time of **01** minutes or more.

In battery operation, the red **low battery** LED switch will start to flash when there is sufficient battery capacity for a further 45 minutes of recording, and will continue to flash until the battery is recharged. When a few minutes of battery life remain, ten audible beeps are sounded and the **low battery** LED is lit continuously. At this point the user should stop recording and remove the cassettes.

When the battery is at zero capacity, the Recorder automatically disengages the Record mode and switches off. The cassettes can be removed, but Record cannot be restarted until the Charger is connected to the Recorder.

To charge the battery when the recorder is not being used, connect the Charger unit to the Recorder and plug the Charger into an AC mains supply.

The battery is initially fast charged for a period depending on its state of discharge and for a maximum time of 3 hours.

The orange **fast charge** LED indicates that fast charge is taking place. At the end of fast charge the battery is approximately 80% charged.

The battery self discharges in a period of about four weeks. It is therefore advisable to recharge the battery prior to using the Recorder without the mains supply, if the Recorder has not been charged during the preceding week.

INSERTION AND EJECTION OF A CASSETTE

Open the cassette carrier by pulling back the projection on its top edge with the fingertips.

Insert the cassette with the open edge showing the tape at the top.

Engage the cassette by pressing on the projecting edge of the cassette carrier until the carrier closes fully.

If no cassette is present, or the cassette carrier is in the ejected position, then Record cannot be permanently engaged.

The recorder must not be transported with cassettes inserted in the cassette carriers.

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OPERATION OF RECORDER

Making a Recording - basic operations

Plug the external Microphone into the **mic** socket on top rear of the Recorder.
EITHER connect the Recorder to the Charger and plug the Charger into AC mains supply if available,
OR switch the Recorder ON by depressing **on/off time** switch.
Insert blank cassettes into the two cassette carriers **tape A** and **tape B**.
Select Record by pressing **record** switch.
To stop recording, press **stop** switch.
Remove the two cassettes and close the cassette carriers.

Power on/off switch

If the Recorder is powered from the AC mains via the Charger, the recorder switches ON automatically when this power is applied. The lights behind the cassettes are illuminated when the Charger is in use. The Recorder auto switches OFF if it is not used for a period of 5 minutes. At this point the lights behind the cassettes remain illuminated.

If the recorder is to be used from the internal battery, depress the switch marked **on/off time**. The cassette illumination does not operate with battery power, in order to conserve battery life. At switch ON the **minutes** display reads **00**. The Recorder auto switches OFF if it is not used for a period of 5 minutes.

To switch OFF the Recorder, depress and hold down the **on/off** switch for at least 3 seconds. The alarm sounds to acknowledge that the Recorder is switching OFF and the **minutes** display is extinguished.

Power on indication

When the recorder is ON, whether the Charger is connected or not, the **minutes** display is illuminated. When the Charger powers the Recorder, the lights behind the cassettes are illuminated, whether the Recorder is ON or OFF.

Clock time verification

When the recorder is ON, depress the **on/off time** switch momentarily. The Recorder responds with a beep from the alarm and then gives one full ten second announcement of date and time. There will be a delay of up to ten seconds before this announcement is heard.

Start Alarm

Each time the Record mode is selected the alarm sounds for 7 seconds. This is to avoid the possibility of attempting to record on the leader tape and also to signify the restart of a recording if the recording has been stopped in the middle of the tape.

Channel 1 - microphone signal

The microphone input is recorded on channel 1. If an external Microphone is not available, or cannot be used for any reason, the Recorder defaults to using the internal Microphone on the front panel. It is always preferable to use the external Microphone if possible.

Peak Level Indicators

The four element peak reading LED **level** meter monitors the channel 1 recording signal. The right hand green LED indicates maximum allowable recording level. The left hand green LED indicates a level approximately 30dB below this level.

Channel 2 - clock signal

The internal clock generates a spoken announcement of time once every ten seconds. The precise time spoken is indicated by the tone at the end of the announcement. The record level is preset by an internal record level control.

Tape Timer

The two digit **minutes** display indicates the elapsed period that Record has been selected. The display is reset to **00** when the cassette carriers are opened to eject the cassettes. The elapsed time display serves to show that the Recorder is switched ON.

Cleaning Cassette

When **record** is held down the alarm sounds and the tape breakage detector is disabled. This allows the use of a standard cleaning cassette, which does not drive the cleaning tape at the normal tape speed. Place a standard cassette, at the start of the tape, in the unused position.

Low Tape Alarm

When the tape in the cassette reaches a point approximately two minutes before the end the alarm sounds twice. After the low tape point, the **record** LED changes from continuous illumination to flashing.

End of Tape Sensor and Alarm

If either cassette reaches its end or becomes jammed, the **record** LED is extinguished, Stop is automatically engaged and the alarm sounds continuously. The alarm is reset by pressing **stop**.

Signal Alarm

If during recording either channel fails to record, or there is insufficient signal level on the microphone channel to light any **level** LED, or the signal on the clock channel is less than this level, for a continuous period of approximately 1 minute, the alarm sounds continuously. The alarm is silenced when the signal level is restored or Stop is selected. A silent period of approximately 1 minute is allowed after selecting Record before the signal alarm can sound.

Note that the sound of the alarm picked up by the microphone may be sufficient to light a **level** LED. If this is the case, the alarm indicates the lack of any normal recording signal for a period of approximately 2 seconds, before the recording of the alarm sound silences the alarm.

The signal alarm indicates silence at the microphone, microphone cable broken, or a fault in the recording chain of either channel.

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CLOCK TIME SETTING

The clock speaks the time in the order - MONTH * DAY * YEAR * HOUR * MINUTE * SECONDS

The time is set in the following order - YEAR * MONTH * DAY * HOUR * MINUTE

The user can monitor the time being set either by observing the **minutes** display or by listening to the loudspeaker according to personal preference.

To reset the time, depress and hold down the **stop** switch for at least 10 seconds. SET THE YEAR is spoken, the **minutes** display changes to show the Year and the YEAR is then spoken.

In general, **stop** may be held pressed or released without changing the time or date already set. The time or date can only be changed by pressing **record** while in time set mode.

If the year is correct, press **stop** again or simply hold **stop** down, and the display will change to show the Month and the MONTH will be spoken.

If the month is correct, press **stop** again or hold **stop** down, and the display will change to show the Day and the DAY will be spoken.

If the day is correct, press **stop** again or hold **stop** down, and the display will change to show the Hour and the HOUR will be spoken.

If the hour is correct, press **stop** again or hold **stop** down, and the display will change to show the Minute and the MINUTE will be spoken.

To change the year, release **stop** while the year is displayed and spoken, and press **record** for the year to increment. When the desired year is reached, press **stop** until the month is displayed and spoken.

The month, day and hour are set in a similar fashion.

It is usually appropriate to reset the minute.

To set the minute, release **stop** while the minute is displayed and spoken, and press **record** for the minute to increment. When the desired minute is displayed and spoken, press **stop** momentarily. The display will change to **CO** and PRESS TO SYNCHRONIZE will be spoken.

At exactly the minute which has been set, depress **stop** momentarily. This synchronizes the clock.

After synchronization, the clock will speak the date and time finishing with the hour, minute and seconds for the time 10 seconds after the minute actually set.

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SUMMER TIME CORRECTION

The Recorder incorporates the option of automatic BST correction.

With the Charger disconnected, hold down the **on/off** switch at power up.

The Recorder will beep twice and speak two numbers, repeating this sequence until the **on/off** switch is released.

First digit	1 shows automatic BST correction is enabled
	0 shows automatic BST correction is disabled.
Second digit	1 shows that the date is in Summer Time
	0 shows that the date is in Winter Time

To change the setting, hold down the **on/off** switch to hear these announcements.

Hold down **record** until the first digit changes to **1**, to enable automatic BST correction;

Hold down **stop** until the first digit changes to **0**, to disable automatic BST correction.

When automatic BST correction is enabled, avoid resetting the clock at the time of changeover between Winter and Summer Time.

The Recorder is programmed with changeover dates up to the year 2033.



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CONNECTIONS

Mic Input

Connection is made using a 3 pin XLR plug.

This input directly powers a PZM.

- 3 Signal
- 2 Signal ground (at +3 volts DC)
- 1 Ground (not required for signal connection)

Use 2 core screened cable with screen connected to pin 1.

Remote Output

This is intended to be used with dedicated monitoring equipment

Connection is made using a 5 pin 180° DIN plug.

- 1 Linked internally to pin 5
- 2 Ground (0V)
- 3 Low when Record mode engaged
- 4 Channel 1 output (400mV rms at 0dB)

Use screened cable, with the screen connected to the shell of the plug.

MALFUNCTION

In the event of any apparent malfunction in the operation of the equipment, first switch off, wait at least ten seconds and switch on again. Contact service personnel if the malfunction remains.

NEAL RECORDING SYSTEMS

NEAL Recording Systems manufacture the **NEAL** range of Interview and Communications recorders, primarily designed around the compact cassette format and manufactured in our factory under ISO 9002/BS 5750 quality assurance. **NEAL** brand equipment is the choice of every police force in the UK, as well as many other organisations.

The **NEAL** range of equipment is proven in service and includes:

Audio Interview Recording - the range includes Home Office-approved audio tape recorders, featuring portable, extended-duration and three tape models.

Video Interview Recording - built to the same high standards as our audio recorders. These can be supplied as new combined audio/video systems or as upgrades to the existing units. They are available as child witness and as suspect interview systems.

Transcribers - the only dedicated transcriber available from a PACE Interview Recorder manufacturer, thus ensuring compatibility of formats and the same quality build standard. Two and four channel transcribers are available for use with our communications recorders.

High Speed Copiers - state-of-the-art audio cassette copiers, operating at up to 16x normal speed to ensure immediate availability of extra working copies. A 20 minute interview can be copied in just 75 seconds.

Communications Recorders - 2 and 4 -channel recorders which can record up to 12 hours of radio or telephone activity. Automatic voice detect or remote contact recording with time and date search, NEAL Communications Recorders can be supplied to meet a variety of requirements for fixed location or portable use. Dedicated Communications transcribers are available with time/date search.

We also supply a range of accessories including cassette tapes and headphones.

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