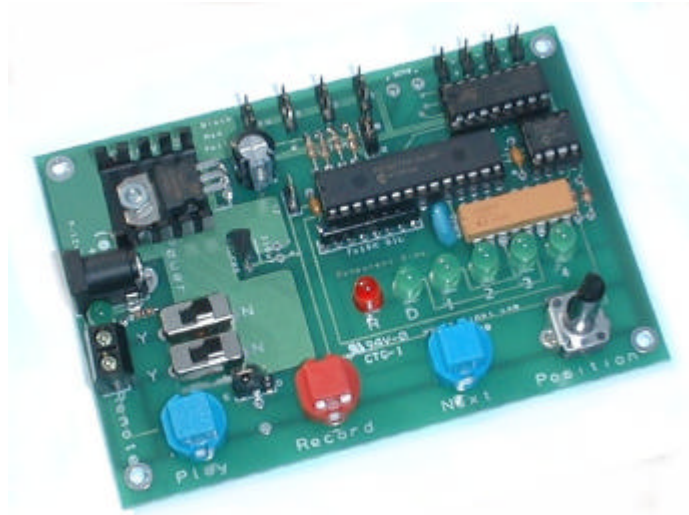


# MILFORD INSTRUMENTS Ltd

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## Wizard Card (Part Number 1-960)



The **Wizard Card** will record and playback up to 5 minutes of action for up to 4 R/C type servos and 4 digital outputs. The card also incorporates features such as looping action with variable delay between loops, auto start-up on power up and a connection interface for a PIR, remote switch or pressure pad to initiate playback.

Recording sessions are built up on a track-by-track basis- no programming is required.

During recording, all previously recorded tracks are re-played to aid synchronisation.

### Wizard Card

4 Servo output channels, each capable of recording and playback of up to 5 minutes of action

4 Digital channels- 0/5V @ 100mA outputs.

Potentiometer to adjust the servo positions during recording or to determine the time delay between play loops during automatic loop play- adjustable between 0 and 65 seconds.

NEXT, PLAY and RECORD buttons

Record enable/disable jumper

AUTO-PLAY and LOOP-PLAY switches

### NEXT-channel-key

Changes the current active channel for manual movement and recording.

Each key-press selects the next channel: servos 1 through 4 and then the digital channels (indicated by the D led being lit along with the LED for that particular channel).

### PLAY-key

Replays a set of recorded moves.

During playback the channel LEDs will form a bargraph indicating the amount of time used.

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Playback cannot be initiated when digital channels 1 through 4 are selected- at this time the PLAY button acts as the status switch for the digital channel selected. Change the selected channel to servos 1-4 to allow playback.

A switch may be connected to the REMOTE connector and this will function in the same way as the PLAY-key. When the moves have finished playing the bargraph-LEDs will go out.

### **MOVE-position-control**

When not Playing, the Move control alters the position of the servo on the current channel.

If the digital channels are selected the Move control is inoperative.

During Recording, moves for the current channel are recorded whilst the other channels are replayed.

### **RECORD-Enable link**

If the jumper is set at the "E"abled position, recording will be permitted. Remove to "D"isable recordings

### **RECORD-key**

The RECORD-key has no effect unless enabled by using the RECORD-Enable link.

Press and release the RECORD key to commence recording. Press and release the RECORD key to stop recording.

If the RECORD key is held down during power up, all memory will be erased (takes approximately 20 seconds)

During recording the channel LEDs will form a bargraph indicating the amount of time used. When the moves have finished playing the bargraph-LEDs will go out.

**The recording on servo channel 1 will set the maximum available recording time for all other channels.**

Always record servo channel 1 first. Recording periods for Servo channels 2-4 and digital channels cannot be longer than that set for servo channel1.

#### Examples

##### 1. A Short recording

Select servo channel 1 by pressing NEXT-channel-key until the servo 1 LED is lit.

Press and release the RECORD-key.

Wiggle the Move-position-control for 4 seconds.

Servo 1 will move depending on position of MOVE-position-control.

Other Servos will move following moves previously recorded.

Press and release the RECORD-key at the end of the 4 seconds to end recording.

Select channel 2.

Press and hold the RECORD-key.

Wiggle MOVE-position-control.

The recording will end automatically after 4 seconds.

Select channel 3 etc.

##### 2. A Full-length recording

Select servo channel 1 using the NEXT-channel-key.

Press and release the RECORD-key.

Wiggle the MOVE-position-control.

Servo 1 will move depending on position of MOVE-position-control.

Other Servos will move following moves previously recorded.

Recording will end when memory is full.

Select channel 2.

Press and release the RECORD-key.

Wiggle MOVE-position-control.  
Recording will end when memory is full.  
Select channel 3 etc.

### LOOP-Play-switch

To make the **Wizard Card** play the recorded moves repeatedly, move the switch to 'Y'. The moves will start to play when the PLAY-key is pressed. There will be a pause at the end of playing (determined by the position of the Move control) after which the moves will start again.  
To record moves, the LOOP switch must be set to 'N'.

### AUTO-Play-switch

If switched to 'Y' then the moves will be replayed automatically on power-on or Reset.  
To record moves this switch must be set to 'N'.

### Pause between play loops

When the **Wizard Card** is set to looping play, the length of the pause between repeated playings may be set by the MOVE-position-control.  
Turn the MOVE-position-control anti-clockwise for the minimum delay (0 seconds) and clockwise for the maximum delay (approx 65 seconds).

### Maximum Recording time

The eeprom which stores the servo moves will store approximately 5 minutes of servo and digital actions.

### Servo Outputs

The servo outputs provide standard pulse coded signals of between 1msec and 2msec duration repeated every 20 msecs making it suitable for all standard R/C type servos.

### Digital Outputs

Keep pressing the NEXT button until the digital led (D) and servo1 led (1) are lit- digital output 1 is now active. Pressing the PLAY button will set high digital output 1. Select the other digital channels by pressing the NEXT button.

You must have first set the session recording length by recording servo1 before recording digital outputs. Press and release the RECORD button to begin the recording session. Press and hold the PLAY button whenever you wish the digital output 1 to go high (+5V).

**Note that the PLAY button will not activate playback whilst one of the digital outputs is active.**

To initiate playback you must scroll round to one of the servo only positions.

The digital outputs are 5V dc with a maximum current of 100mA per output.

### Power Supply

The **Wizard Card** will work with power supplies between 9 and 12 v DC. If you find the pcb becoming too hot, reduce the incoming voltage or use smaller servos- the card has been designed for standard 3kgcm R/C servos.

Alternatively, the card includes provision for a split power supply arrangement-

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Set the jumper to the rear of the board to the B position (it is by default in the R position) and connect a 5-6VDC supply or battery to the AUX terminals- this is the dedicated supply to the servos and DC outputs. Connect a 9v at 100ma supply to the standard 2.1mm power socket- this will provide the supply to the electronics.

### Other Products

Other products from our animation range:

<b>Servo-Check</b>	Simple way to calibrate/ check standard R/C servos
<b>AutoTalk</b>	Use sound to move a servo- useful for speech applications
<b>Animate</b>	Similar to the Wizard Card but with a 20 second speech/audio chip
<b>Puppet</b>	Single servo record and playback module- up to 160 seconds action
<b>Puppet+</b>	As the standard Puppet board but with an additional digital output and 1A relay
<b>RomCopy</b>	Produces duplicate eeproms for the above modules- suitable for multiple applications.
<b>Wizard II</b>	Extended version of the Wizard board with 8 digital outputs- each with a 2Amp/30V relay

Full details of the above products can be found on our web site or contact us for special applications.