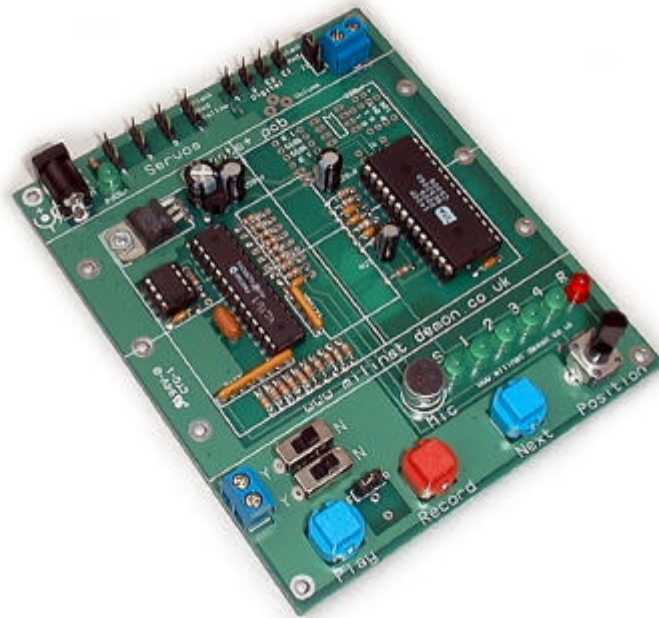


MILFORD INSTRUMENTS Ltd

Animate+ Card (Part Number 1-917)



The **Animate+ Card** will record and playback up to 20 seconds of action for up to 4 R/C type servos, 4 digital outputs and 1 sound channel from the on-board sound chip. 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.

Animate+ Card

4 Servo output channels, each capable of recording and playback of up to 20 seconds of action

4 Digital channels- 2 for the supplied eyes (E1 and E2) plus 2 further outputs.

Jumper to select whether to link the eyes together on channel E1 or control the eyes separately

20 Second sound chip for recording messages

In-Built microphone

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

Drives 8-16 ohm speaker

AUTO-PLAY and LOOP-PLAY switches

Reg Office: Milford House, 120 High Street, South Milford, LEEDS LS25 5AQ United Kingdom
Reg Number: 4222329 Tel: 01977 683665 Fax 01977 681465 www.milinst.com

NEXT-channel-key

Changes the current active channel for manual movement and recording.

Each key-press selects the next channel: servos 1 through 4, the sound chip (S) and then the digital channels (indicated by the S led being lit along with a further 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.

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

A switch may be connected to the REMOTE connector and this will function in the same 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 sound channel or 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.

If the RECORD-key is held down at switch-on any moves previously recorded will be erased. This will take about 8 seconds. Note that the speech chip is not erased by this action- old speech messages are removed by recording over the top of them.

Press (and hold down), the RECORD-key to start a recording session- release to end the session.

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.

If the Sound channel is selected, pressing the RECORD-key will initiate the recording of sound using the on-card microphone and the red LED will light

Recording on servo channel 1 or the sound channel will set the maximum available recording time for all other channels.

Always record servo channel 1 or the sound channel 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 hold 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.

Release the RECORD-key at the end of the 4 seconds to end recording.

Select channel 2.

Reg Office: Milford House, 120 High Street, South Milford, LEEDS LS25 5AQ United Kingdom

Reg Number: 4222329 Tel: 01977 683665 Fax 01977 681465 www.milinst.com

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

Due to the switch action, the Record key may append a click to the end of your sound recording. To eliminate this, connect a remote switch in parallel with the Record key- two holes are provided adjacent to the Record key on the pcb for this option.

Recording the Digital Outputs

You must have first set the session recording length by either servo1 or the sound chip before recording digital outputs.

Keep pressing the NEXT button until the sound led (S) and servo1 led (1) are lit- digital output 1 is now active. Pressing the PLAY button will toggle digital output 1.

Press and hold the RECORD button to begin the recording session. Press the PLAY button whenever you wish the digital output 1 to go high (+5V).

Select the next digital channel by pressing the NEXT button and record that channel in a similar manner.

Note that channels 1 and 2 may be ganged together for easier programming (eg for flashing eyes etc). To activate this simply place jumper J1 (next to the speaker connection) in the C position. Thereafter, during playback, digital outputs 1 and 2 are controlled by the digital 1 recording. Place the jumper in the S position for separate actions.

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 or sound positions.

LOOP-Play-switch

To make the Animate-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, etc.

To record moves this switch must be set to 'N'.

AUTO-Play-switch

If switched to 'Y' then the moves and sound 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 Animate+ 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 sound chip limits most recording sessions to approximately 20 seconds.

The eeprom which stores the servo moves will store approximately 45 seconds of servo and digital actions. If you don't need the sound chip then go ahead and use the whole servo recording space.

Recommended order of recording

We recommend the head servos be connected as follows:

Lips-	servo1
Eyes	servo2
Head Up/down	servo3
Head turn	servo4

Recordings should normally be started by recording the sound channel.

After this we recommend laying down the lip sync movements followed by the eyes, head up/down and head turn movements.

The digital channels (eye flashes) are best left until you are happy with the servo movements.

Digital Outputs

E1 and E2 are designed for use with the Blue LEDs supplied when part number 5-756 is purchased. The output line includes a 33 ohm resistor to limit the current to approx 10mA when used with the Blue leds. If you use E1 and E2 to drive other outputs, make sure the current does not exceed 20mA or you will damage the controller.

Digital outputs 3 and 4 are fitted with a serial resistor or 470 ohms to limit the current to approx 10mA.

Power Supply

The Animate+ Card requires a 1 Amp power supply at between 9 and 12V DC. If you use too low a current rating power supply, the controller on the board will be susceptible to resetting - giving strange results!

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.