

DN-60 RS-232 Controller Command Set

Rev 3.1 July 29, 2006

Communication Format:

Mode: No synchronization
Character Length: 1 start bit + 8 data bits + 1 parity bit + 1 stop bit
Data Rate: 38,400 Baud
Parity: Odd

Command Format:

CMD1, CMD2, Data bytes, Checksum byte

A Command is made up of two address bytes, CMD1 and CMD2, a variable number of Data bytes (Data from 0 up to 15) and a Checksum byte. The Checksum byte is the modulo 256 sum of all preceding bytes.

The most significant nibble of the CMD1 byte represents the command group. The least significant nibble represents the number of Data bytes to follow the CMD2 byte.

Command Protocol:

CMD1, CMD2, Data bytes, Checksum byte

Response: ACK

Other than the sense command, the unit will respond to all commands affirmatively by sending a three byte acknowledgement (ACK) if the Checksum is valid. If the Checksum is not valid, the DN-60 will ignore the command. Most commands will be responded to within 8 msec. However, a PLAY command from an idle state will result in response delay of up to 700 msec. During this busy time, all commands will be ignored.

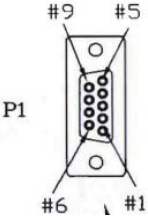
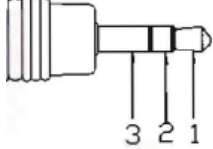
Summary List of Commands

Command	Name	Response	Name
	System Control		
00h, 11h, 11h	Device Type Request	12h, 11h, 00h, 00h, 23h	Device Type
01h, F1h, 01, F3h	Next Bin	10h, 01h, 11h	ACK
01h, F2h, 01h, F4h	Previous Bin	10h, 01h, 11h	ACK
02h, F5h, 08h, 00h, FFh	Disable Loop Play	10h, 01h, 11h	ACK
02h, F5h, 08h, 01h, 0h	Enable Loop Play	10h, 01h, 11h	ACK
01h, F0h, XXh, csum	Select Bin	10h, 01h, 11h	ACK
01h, F3h, XXh, csum	Select and Empty Bin	10h, 01h, 11h	ACK
	Transport Control		
20h, 00h, 20h	Stop	10h, 01h, 11h	ACK
20h, 01h, 21h	Play	10h, 01h, 11h	ACK
20h, 02h, 22h	Record	10h, 01h, 11h	ACK
20h, 0Dh, 2Dh	Eject	10h, 01h, 11h	ACK
20h, 10h, 30h	Fast Forward	10h, 01h, 11h	ACK
20h, 20h, 40h	Fast Rewind	10h, 01h, 11h	ACK
20h, 13h, 34h	Frame Step Forward	10h, 01h, 11h	ACK
20h, 24h, 44h	Frame Step Reverse	10h, 01h, 11h	ACK
21h, 11h, nnh, csum	Jog Forward	10h, 01h, 11h	ACK
21h, 12h, nnh, csum	Variable Forward	10h, 01h, 11h	ACK
21h, 13h, nnh, csum	Shuttle Forward	10h, 01h, 11h	ACK
21h, 21h, nnh, csum	Jog Reverse	10h, 01h, 11h	ACK
21h, 22h, nnh, csum	Variable Reverse	10h, 01h, 11h	ACK
21h, 23h, nnh, csum	Shuttle Reverse	10h, 01h, 11h	ACK
21h, 11h, 00h, 32h	Play Pause	10h, 01h, 11h	ACK
21h, F0h, nn, csum	Select Bin and Play	10h, 01h, 11h	ACK

Connector Pin Assignment

Interface : 9 pin D-Sub female to 3.5mm Jack

The pin assignment of the Controller and DN-60 is shown in the following table:

9 Pin D-Sub	Controller (P1)	DN-60 (P2)	3.5mm Jack
	Pin 2 (Rx)	2 Jack Ring	
	Pin 3 (Tx)	1 Jack Tip	
	Pin 5 (GND)	3 Jack Sleeve	

System Control

00h, 11h Device Type request

The response is 00, 00 indicating Quick Capture

01h, F1h, 01, F3h Next Bin

When this command is issued from the Idle state the next bin is selected. If the present bin is 99 then the next bin is 1.

01h, F2h, 01h, F4h Previous Bin

When this command is issued from the Idle state the previous bin is selected. If the present bin is 1 then the next bin is 99.

02h, F5h, 08h, 00h, FFh Disable Loop Play

When this command is issued from the Idle state the Loop Play feature is disabled. Loop Play is where the the last play command is repeated from its beginning when the end is reached.

02h, F5h, 08h, 01h, 0h Enable Loop Play

When this command is issued from the Idle state the Loop Play feature is enabled. Loop Play is where the the last play command is repeated from its beginning when the end is reached.

01h, F0h, XXh Select Bin XX

When this command is issued from the Idle state bin XX is selected. XX varies between 1 and 99. Illegal bins are ignored.

01h, F3h, XXh Select and Empty Bin XX

When this command is issued from the Idle state bin XX is selected and **all of its content is permanently deleted**. XX varies between 1 and 99. Illegal bins are ignored.

Sense Request

61h, 0Ch, 04h Current Time Sense

Requests the Time code data. The unit responds with 4 bytes indicating the present time code in Binary-Coded-Decimal. The first byte holds the frame number, the second byte holds the seconds, the third the minutes and the fourth the hour. In the play state, the time code returned is the time associated with the current frame being played, in the record state, the time code returned represents the elapsed time recorded in the present bin.

Command	Name	Response	Name
61h, 0Ch, 04h, 71h	Current Time Sense	74h, 00h, TC(3:0), csum	Time Code
61h, 20h, OL, csum	Status Sense	7Lh, 20h, Stat(L), csum	Status
61h, F0h, 04h, 55h	Current Frame Offset	74h, 00h, FO(3:0), csum	Frame Offset
61h, F1h, 01h, 53h	Current Bin	61h, 00h, nn, csum	Bin Number

24h, F1h, nn Play Offset nn

Frame Offset number nn is played. The number nn is made up of 4 binary encoded bytes and sent out with the least significant byte first. This command may be issued from the idle state or any other Play state. **Note:** Frame Offset are represented in absolute frame numbers where the first frame of the bin is 0.

24h, F2h, nn Play from Offset nn

Content of the present bin is played at 1x speed starting at Frame Offset nn. This command may be issued from the Idle state or any other Play state.

24h, F3h, bb, nn Select Bin and Play Offset

Bin number bb is selected and Frame Offset number nn is played. This command may be issued from the idle state or any other Play state.

24h, F4h, bb, nn Select Bin and Play from Offset

Content of the bin number bb is played at 1x speed starting at Frame Offset nn. This command may be issued from the idle state or any other Play state.

24h, F5h, nn Play to Offset nn

Content of the present bin is played at 1x speed starting from present Frame Offset until Frame Offset nn at which point it pauses. Frame Offset nn is 4 bytes and starts with the LSB. This command may be issued from the idle state or any other Play state.

25h, F5h, bb, nn Select Bin and Play to Offset

Content of the bin number bb is played at 1x speed starting at Frame Offset 0 to Frame Offset nn then pause. Frame Offset nn is 4 bytes and starts with the LSB. This command may be issued from the idle state or any other Play state.

29h, F5h, bb, nn, ee Select Bin and Play from Offset to Offset

Content of the bin number bb is played at 1x speed starting at Frame Offset nn to Frame Offset ee then pause. Frame Offsets nn and ee are 4 bytes and start with the LSB. This

Transport Control

20h, 00h, Stop

The unit enters the idle state. In the A2D, the outputs reflect the video source as selected by the Front Panel.

20h, 01h Play

Content of the present bin is played at 1x speed. This command may be issued from the idle state or any other Play state.

20h 02h Record

The video is recorded from the selected source onto the current Bin. This command may be issued only from the idle state.

20h, 10h Fast Forward

A play state where video is played at the highest speed of 32x in the forward direction.

20h, 20h Fast Rewind

A play state where video is played at the highest speed of 32x in the reverse direction.

NOTE: When receiving one of the following commands (JOG, VARIABLE or SHUTTLE), the unit will play forward or backward according to the speed data.

The first data byte may only be a maximum of 80:

Play Speed= $10(n/32-2)$

Note that setting nn to 0 will result in pausing the unit.

21h, 11h, nnh Jog Forward

21h, 12h, nnh Variable Forward

21h, 13h, nnh Shuttle Forward

A Play state where video is played at the commanded play speed as described above in the forward direction. **Note: Setting the speed to 0 causes the play to pause.**

21h, 21h, nnh Jog Reverse

21h, 22h, nnh Variable Reverse

21h, 23h, nnh Shuttle Reverse

A Play state where video is played at the commanded play speed as described above in the reverse direction. **Note: Setting the speed to 0 causes the play to pause.**

21h, F0h, nnh Select Bin and Play

Content of the bin number nn is played at 1x speed from the beginning. This command may be issued from the idle state or any other Play state

Command	Name	Response	Name
01h, F3h, XXh, csum	Select and Empty Bin	10h, 01h, 11h	ACK
	Transport Control		
20h, 00h, 20h	Stop	10h, 01h, 11h	ACK
20h, 01h, 21h	Play	10h, 01h, 11h	ACK
20h, 02h, 22h	Record	10h, 01h, 11h	ACK
20h, 0Dh, 2Dh	Eject	10h, 01h, 11h	ACK
20h, 10h, 30h	Fast Forward	10h, 01h, 11h	ACK
20h, 20h, 40h	Fast Rewind	10h, 01h, 11h	ACK
20h, 14h, 34h	Frame Step Forward	10h, 01h, 11h	ACK
20h, 24h, 44h	Frame Step Reverse	10h, 01h, 11h	ACK
21h, 11h, nnh, csum	Jog Forward	10h, 01h, 11h	ACK
21h, 12h, nnh, csum	Variable Forward	10h, 01h, 11h	ACK
21h, 13h, nnh, csum	Shuttle Forward	10h, 01h, 11h	ACK
21h, 21h, nnh, csum	Jog Reverse	10h, 01h, 11h	ACK
21h, 22h, nnh, csum	Variable Reverse	10h, 01h, 11h	ACK
21h, 23h, nnh, csum	Shuttle Reverse	10h, 01h, 11h	ACK
21h, 11h, 00h, 32h	Play Pause	10h, 01h, 11h	ACK
21h, F0h, nn, csum	Select Bin and Play	10h, 01h, 11h	ACK
24h, F1h, nn (4 x), csum	Play Offset	10h, 01h, 11h	ACK
24h, F2h, nn (4 x), csum	Play from Offset	10h, 01h, 11h	ACK
24h, F3h, bb, nn (4 x), csum	Select Bin and Play Offset	10h, 01h, 11h	ACK
24h, F4h, bb, nn (4 x), csum	Select Bin and Play from Offset	10h, 01h, 11h	ACK
24h, F5h, nn (4 x), csum	Play to Offset	10h, 01h, 11h	ACK
25h, F5h, XXh, YYh, YYh, YYh, YYh, csum	Select Bin and Play to Offset	10h, 01h, 11h	ACK
29h, F6h, XXh, YYh, YYh, YYh, YYh, ZZh, ZZh, ZZh, ZZh, csum	Select Bin and Play from Offset Y to Offset Z	10h, 01h, 11h	ACK
	Sense Request		
61h, 0Ch, 04h, 71h	Current Time Sense	74h, 00h, TC(3:0), csum	Time Code