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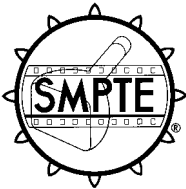
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Video Tape Recorder Type-Specific Messages for Digital Control Interface



1 Scope

This practice describes the type-specific messages used for the control of video tape recorder devices. Video tape recorder type-specific messages are used to provide the means for the control and monitoring of a specific type of virtual machine within a general-purpose communications channel of an interface system. This interface system transports data and digital control signals between equipment utilized in the production, post-production, and/or transmission of visual and aural information.

2 General

2.1 Virtual machine type

Video tape recorders shall be identified as a virtual machine of a type which is uniquely coded as "02," expressed as an 8-bit word, in hexadecimal form. This identification shall apply to both analog and digital video tape recorders.

2.2 Notation

This practice describes the coding of keywords and information fields (I/F) in the form shown below. The coding "NN" represents the assigned keyword or I/F code in hexadecimal form.

NN	KEYWORD or I/F NAME	Keyword or I/F descriptive text
	Format:	<COMMAND>
		<PARAMETER NAME 0> [Parameter description;
		... Parameter value coding, scale, or range;
		<PARAMETER NAME n> Parameter definitions and explanations.]

In the practices listed in annex B, keywords are listed numerically, in hexadecimal notation. Keyword numbers are reserved as follows:

Keywords 00 _h – 1F _h :	System service subset
Keywords 20 _h – 3F _h :	Common message subset
Keywords 40 _h – FF _h :	Virtual machine type-specific subset

NOTES

- 1 All tape motion commands (indicated below as "TMC") are mutually exclusive.
- 2 In all cases, the temporal order of entries and exits must be preserved. Thus, an entry received later in time, at the same position on the timeline, will cancel an existing exit.

3 Summary of keywords, mnemonics, and information field names

Hex	Keyword	(mnemonic)	Hex	I/F name	(mnemonic)
40	not used		40	not used	
41	STOP	STOP	41	LTC FROM TAPE	LTFT
42	VARIABLE PLAY	VAPL	42	VITC FROM TAPE	VIFT
43	STD PLAY	STPL	43	SELECTED TAPE CODE	SETC
44	STEP	STEP	44	USERBITS FROM TAPE LTC	UFTL
45	VISIBLE FAST	VFST	45	USERBITS FROM TAPE VITC	UFTV
46	SHUTTLE	SHUT	46	TT1 (Tape Timer 1)	TTON
47	TAPE SPEED OVERRIDE	TSPO	47	TT2 (Tape Timer 2)	TTTW
48	READY SELECT	REDS	48	READY TALLY	REDT
49	SERVO REFERENCE SELECT	SRES	49	SERVO REFERENCE TALLY	SRET
4A	RECORD MODE SELECT	REMS	4A	RECORD MODE TALLY	REMT
4B	ENTRY	ENTY	4B	CHANNEL RECORD STATUS	CRES
4C	EXIT	EXIT	4C	CHANNEL RECORD MASK	CREM
4D	TAPE CODE SELECT	TACS	4D	TAPE CODE SELECTION TALLY	TACT
4E	TARGET SEARCH	TASE	4E	SYNC VELOCITY	SVTY
4F	PREROLL SEARCH	PRSE	4F	PREROLL DURATION	PRDU
50	SYNC	SYNC	50	SYNC POINT	SPNT
51	COLOR FRAMER SELECT	CFRS	51	COLOR FRAMER TALLY	CFRT
52	EDIT FIELD SELECT	EDFS	52	EDIT FIELD TALLY	EDFT
53	CHASE	CHAS	53	not used	
54	TCG LTC TIMESOURCE SELECT	TLTS	54	TCG LTC TIMESOURCE TALLY	TLTT
55	TCG VITC TIMESOURCE SELECT	TVTS	55	TCG VITC TIMESOURCE TALLY	TVTT
56	TCG LTC UB SOURCE SELECT	TLUS	56	TCG LTC UB SOURCE TALLY	TLUT
57	TCG VITC UB SOURCE SELECT	TVUS	57	TCG VITC UB SOURCE TALLY	TVUT
58	EJECT/UNTHREAD	EJCT	58	not used	
59	not used		59	not used	
5A	not used		5A	TAPELENGTH	TLTH
5B	not used		5B	PARKING ACCURACY	PARK
5C	not used		5C	SYNCHRONISM ACCURACY	SYAC
5D	not used		5D	not used	
5E	TRACKING SELECT	TRKS	5E	TRACKING SELECTION TALLY	TRKT
5F	ANTI-CLOG CONTROL	ANCC	5F	ANTI-CLOG CONTROL TALLY	ANCT
60	PRESET	PRST	60	not used	
61	not used		61	TMC TALLY	TMCT
62	not used		62	VELOCITY TALLY	VELT
63	not used		63	TIMELINE CORRECTION TALLY	TLCT
64	not used		64	not used	
65	PLAYBACK CHANNEL SELECT	PLCS	65	PLAYBACK CHANNEL TALLY	PLCT
66	CHANNEL MUTE SELECT	CMUS	66	CHANNEL MUTE TALLY	CMUT
67	TAPE/EE SELECT	TEES	67	TAPE/EE TALLY	TEET
68	not used		68	TIMECODE TO TAPE LTC	TTTL
69	not used		69	TIMECODE TO TAPE VITC	TTTV
6A	not used		6A	USERBITS TO TAPE LTC	UTTL
6B	not used		6B	USERBITS TO TAPE VITC	UTTV
6C	not used		6C	PRESETTABLE TIME SRC LTC	PTSL
6D	not used		6D	PRESETTABLE TIME SRC VITC	PTSV
6E	not used		6E	PRESETTABLE UB SOURCE LTC	PUSL
6F	not used		6F	PRESETTABLE UB SOURCE VITC	PUSV

4 KEYWORDS

Hex Keyword

40 not used

41 STOP (TMC) Causes the controlled VTR to stop as soon as possible; indeterminate picture.

Format: <STOP>

42 VARIABLE PLAY (TMC) Causes the controlled VTR to enter continuously variable playback mode with specified direction and speed.

Format: <VARIABLE PLAY>
 <SPEED>

3-byte signed binary number: two's complement scale:

000000_h = still

010000_h = std play speed forward

7F0000_h = approximately 127 times
 standard play speed
 forward

FF0000_h = std play speed reverse

800000_h = 128 times standard play
 speed reverse

43 STD PLAY (TMC) Causes the controlled VTR to enter field-locked real time playback mode, color framed as selected.

Format: <STD PLAY>

44 STEP (TMC) Causes the controlled VTR to move the tape a specified number of fields forward or backward, with respect to its current position, only while in TMCs: STEP, TAPE SPEED OVERRIDE, VISIBLE FAST (STILL), or VARIABLE PLAY (STILL). Successive commands are cumulative until next TMC other than STEP.

Format: <STEP>
 <FIELD NUMBER>

1-byte signal number;
range: -128 ... +127.

45 VISIBLE FAST (TMC) Causes the controlled VTR to enter fast tape motion with visible but not necessarily broadcastable picture, with specified direction and speed.

Format: <VISIBLE FAST>
 <SPEED>

3-byte signed binary number;
same format as in VARIABLE PLAY.

- 46 SHUTTLE (TMC) Causes the controlled VTR to travel at specified direction and speed without necessarily reproducing picture or sound.
- Format: <SHUTTLE>
<SPEED>
- 3-byte signed binary number;
same format as VARIABLE PLAY.
- 47 TAPE SPEED OVERRIDE (TMC) Causes the controlled VTR to override instantaneous play speed for synchronizing purposes.
- Format: <TAPE SPEED OVERRIDE>
<SPEED>
- 3-byte signed binary number;
same format as in VARIABLE PLAY.
- 48 READY SELECT Establishes the VTR in a state to minimize start-up time.
- Format: <READY SELECT>
<SWITCH>
- Boolean value: 00_h = OFF (= default)
01_h = ON
- 49 SERVO REFERENCE SELECT Selects the input switch for video reference source.
- Format: <SERVO REFERENCE SELECT>
<MODE>
- 1-byte special binary code:
00_h = auto select (= default)
01_h = video in
02_h = external ref input
FF_h = as selected locally
- 4A RECORD MODE SELECT Selects the mode of the subsequent recording(s) or edit(s).
- Format: <RECORD MODE>
<MODE>
- 1-byte special binary code:
00_h = record disable (= default)
01_h = insert
02_h = assemble; all channels
03_h = assemble; channel selectable
04_h = rehearsal
05_h = crash record
06_h = read-before-write

4B ENTRY

In any <RECORD MODE> other than "rehearsal," causes a start of edit insertion on the specified channel(s) or track(s). When <RECORD MODE> = "rehearsal," causes a signal system monitoring switch (e.g., tape-to-EE at entry point) to occur in the specified channel(s), such as to produce visual/aural simulation of commencement of recording.

Format: <ENTRY>
<CHANNELS>

3-byte bit mask:
 bit 0 (LSB) = video
 bit 1 = sync track
 bit 2 = VITC
 bit 3 = cue audio
 bit 4 = reserved
 bit 5 = reserved
 bit 6 = reserved
 bit 7 = LTC
 bits 8–23 = audios 1–16,
 respectively
 logic: 0 = channel not affected
 1 = channel turned on or
 stays on

NOTES

- 1 In "assemble/all channels" mode, the channel bits have no meaning.
- 2 Bits 0–7 form the least significant byte; this byte is transmitted last.

4C EXIT

In any <RECORD MODE> other than "rehearsal," causes a termination of edit insertion on the specified channel(s) or track(s). When <RECORD MODE> = "rehearsal," causes a signal system monitoring switch (e.g., EE-to-tape at exit point) to occur in the specified channel(s), such as to produce visual/aural simulation of commencement of recording.

Format: <EXIT>
<CHANNELS>

3-byte bit mask:
 bit 0 (LSB) = video
 bit 1 = sync track
 bit 2 = VITC
 bit 3 = cue audio
 bit 4 = reserved
 bit 5 = reserved
 bit 6 = reserved
 bit 7 = LTC
 bits 8–23 = audios 1–16,
 respectively
 logic: 0 = channel not affected
 1 = channel turned off or
 stays off

NOTES

- 1 In "assemble/all channels" mode, the channel bits have no meaning.
- 2 Bits 0–7 form the least significant byte; this byte is transmitted last.

- 4D TAPE CODE SELECT Selects the type of code for all succeeding messages that refer to "TAPE CODE."

NOTE – As LTC, VITC, TT1, and TT2 are also contained in an item of the VTR-specific INFORMATION FIELD, they may be accessed by a READ command at any time, even if not selected as TAPE CODE by the command TAPE CODE SELECT.

Format: <TAPE CODE SELECT>
<CODE TYPE>

1-byte special binary code:
00_h = longitudinal time code
(= default)
01_h = vertical interval time code
02_h = TT1
03_h = TT2
04_h = auto TC
FF_h = as selected locally

- 4E TARGET SEARCH (TMC) Causes the controlled VTR to move to a defined tape position in accordance with the TAPE CODE.

Format: <TARGET SEARCH>
<TAPE CODE>

(type TIME; field referenced)

NOTE – The type of TAPE CODE is selected by the command TAPE CODE SELECT.

- 4F PREROLL SEARCH (TMC) Causes the controlled VTR to move to a tape position determined by the duration of the PREROLL TIME in advance of the SYNC POINT and by the SYNC VELOCITY, in accordance with the TAPE CODE.

NOTE – PREROLL TIME, SYNC POINT, and SYNC VELOCITY are part of the VTR specific INFORMATION FIELD.

Format: <PREROLL SEARCH>

- 50 SYNC (TMC) Causes the controlled VTR to start and synchronize so that after the preroll duration, the tape will be at the SYNC POINT and travelling at the SYNC VELOCITY.

NOTES

- 1 SYNC POINT and SYNC VELOCITY are part of the VTR-specific INFORMATION FIELD, and must be pre-defined by a PRESET command before execution.
- 2 The tape must be positioned and tallied previously by a PREROLL SEARCH command.
- 3 If the SYNC VELOCITY is standard play speed, the VTR reverts to STD PLAY after attaining sync.
- 4 In PAL, the VTR will be ADVANCED by one frame when necessary, to be in accordance with the P-phase, and the color framer will ADVANCE the VTR by as many frames as necessary.

Format: <SYNC>

- 51 COLOR FRAMER SELECT Selects the color framer mode.
- Format: <COLOR FRAMER>
 <MODE>
- 1-byte special binary code:
bit 7 (msb):
 0 = OFF – 2-field lock NTSC
 – 4-field lock PAL/SECAM
 1 = ON – 4-field lock NTSC
 – 8-field lock PAL/SECAM
bit 6:
 0 = normal lock
 1 = inverted lock
bits 3–0:
 nibble contains binary number, which specifies an offset from the lock specified above in units of fields. Exception: FF_h = as selected locally.
- 52 EDIT FIELD SELECT Selects the edit field.
- Format: <EDIT FIELD SELECT>
 <MODE>
- 1-byte special binary code:
00_h = start of field 1 always
01_h = start of field 2 always
02_h = at next vertical in immediate mode, or determined by field bit of timeline if in timeline mode
FF_h = as selected locally
- 53 CHASE
- (TMC) Maintains a given time offset between the selected tape code of the machine and the specified timeline using appropriate transport mode as determined by the timeline (usually with “external reference time” source; see common message TIMELINE SOURCE).
- Format: <CHASE>
 <OFFSET TIME>
- (type TIME) Definition: offset = master-slave — e.g., if slave is to lead by 1 minute, send: 00 01 00 00; if slave is to lag by 1 minute, send: 23 59 00 00; i.e., “24 hours complement” notation.
- 54 TCG LTC TIME SOURCE SELECT Selects the time source for the LTC time code generator of the controlled VTR.

Format: <TCG LTC TIME SOURCE SELECT>
<TIME SOURCE>

1-byte special binary code:

00_h = hold

01_h = run independently, starting with the value contained in I/F item PRESETTABLE TIME SOURCE LTC

02_h = run with external, unspecified source

03_h = run with the regenerated value of the LTC time code as source (also contained in the I/F field LTC from tape) until a record ENTRY of the LTC track; then continue independently, running with the time value most recently read from tape, i.e., "jam-sync" function

04_h = run with regenerated VITC time code from tape as source (also contained in I/F field VITC FROM TAPE), i.e., "copy function"

05_h = run with TAPE CODE as source (also contained in I/F field TAPE CODE

55 TCG VITC TIME SOURCE SELECT Selects the time source for the VITC time code generator of the controlled VTR.

Format: <TCG VITC TIME SOURCE SELECT>
<TIME SOURCE>

1-byte special binary code:

00_h = hold

01_h = run independently, starting with the value contained in I/F item PRESETTABLE TIME SOURCE VITC

02_h = run with external, unspecified source

03_h = run with the regenerated value of the VITC time code as source (also contained in the I/F field VITC from tape) until a record ENTRY of the VITC track; then continue independently, running with the time value most recently read from tape, i.e., "jam-sync" function

04_h = run with regenerated LTC time code from tape as source (also contained in I/F field LTC FROM TAPE), i.e., "copy function"

05_h = run with TAPE CODE as source (also contained in I/F field TAPE CODE