Standards and Recommended Practices

Approved SMPTE Recommended Practice

The Society approved an SMPTE Recommended Practice: RP 160-1991, Three-Channel Parallel Analog Component High-Definition Video Interface. Copies of the practice are available from Society Headquarters for $5.00.

Approved SMPTE Engineering Guidelines

Two SMPTE Engineering Guidelines were approved by the Society: EG 25-1991, Telecine Scanning for Film Transfer to Television; and EG 26-1991, Audio Channel Assignments for Digital Television Tape Recorders with AES/EBU Digital Audio Inputs. The guidelines are available from Headquarters for $5.00 each.

Proposed SMPTE Standards

Published here for a trial period and public review are two Proposed SMPTE Standards: SMPTE 125M, Television – Bit-Parallel Digital Interface – Component Video Signal 4:2:2; and SMPTE 238M, Television Analog Recording – ½-in Type L – Tapes and Cassettes. When SMPTE 125M is approved as an SMPTE Standard, SMPTE Recommended Practice RP 125-1984, Bit-Parallel Digital Interface for Component Video Signals (published in the April 1985 issue of the *Journal*), will be withdrawn. The proposals will be submitted to the American National Standards Institute for approval as American National Standards if no adverse comments are received from publication. Comments should be addressed to Sherwin H. Becker, Director of Engineering, at Society Headquarters prior to November 1, 1991. Copies of the proposals are available from Headquarters for $15.00 each.

Proposed Withdrawal of SMPTE Recommended Practice

On the recommendation of the Television Technology Committee, the Standards Committee has approved withdrawal of SMPTE Recommended Practice RP 41-1983, Evaluation of Color Films Intended for Television, which was published in the May 1984 issue of the *Journal*. Withdrawal was initiated because RP 41's usefulness is diminished for present-day use. Modern film-to-television transfers are generally done by transferring the negative straight to video tape and, thus, there is little need for optical screening. The intent of the practice was to simulate how film would be reproduced by a telecine and displayed on an electronic monitor. The positive film was projected on a screen and viewed under specific conditions. Investigation of various facilities concerned with film transfers revealed that no one used the practice nor do they have the facilities to screen film as specified in it. Comments should be addressed to Sherwin H. Becker, at Society Headquarters prior to November 1, 1991. All comments from *Journal* publication will be reviewed prior to withdrawal approval.

Withdrawn American National Standards

A recommendation for withdrawal of two American National Standards was approved by the American National Standards Institute on June 3, 1991: ANSI V98.2-1982, Specifications of Monochrome Video Magnetic Tape Leader; and ANSI V98.9-1983, Video Recording – Magnetic Tape – Color Leader. The standards were withdrawn because they have never been used in their entirety, do not apply to cassette-based formats, and do not address the needs or facilities offered by current tape formats. SMPTE Standard 256M, Television – Specifications for video Tape Leader, covers most of the specifications previously in V98.2 and V98.9. *–Sherwin H. Becker, Director of Engineering*

SMPTE RECOMMENDED PRACTICE

RP 160-1991

Three-Channel Parallel Analog Component High-Definition Video Interface

1 Scope

1.1 This practice defines the physical characteristics of an interface using three parallel channels for the interconnection of equipment operating with analog component HDTV signals. For SMPTE 240M-1988, the signals carried across this interface have a scanning structure of 1125 lines, 60.00 fields per second, 16:9 aspect ratio, and 2:1 interlace. This interface is also appropriate for HDTV signals having other scanning structures.

1.2 The intended uses of this interface are:

– to interconnect the elements of parallel analog HDTV video subsystems which use the same component sets within larger component islands or plants. Component HDTV editing and post-production suites are examples of such subsystems;

– to interconnect equipment into complete, self-contained HDTV analog component systems of relatively small size.

1.3 This practice applies to signals carried on the connectors described in 7.1 and may not apply to component signals carried on other types of connectors. The practice also defines the preferred component video signals across the interface, including their waveform structure and levels.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this practice. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this practice are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below.

SMPTE 240M-1988, Television — Signal Parameters — 1125/60 High-Definition Production System

3 Video signals

The signals carried across this interface may be those of either of two signal sets: a color set comprising E_R', E_G', and E_B' signals, or a color-difference set comprising E_Y', E_{PB}', and E_{PR}' signals. Definitions of the signal sets may be found in SMPTE 240M-1988 and other relevant standards. Figures 1 and 2 illustrate the waveform structure, synchronizing signal, and video levels for these two component sets.

4 Impedance

Equipment using this interface shall have nominal 75-ohm input and output impedances.

5 Clamping and signal dc content

The clamp period shown in figures 1 and 2 may be used as a dc level clamp reference point. If an ac coupled system is employed, the average dc level of any signal specified herein shall not exceed ± 1 volt.

6 Component timing

The three component video signals (E_G', E_B', E_R') or (E_Y', E_{PB}', E_{PR}') should be simultaneous in real time.

Approved April 1, 1991

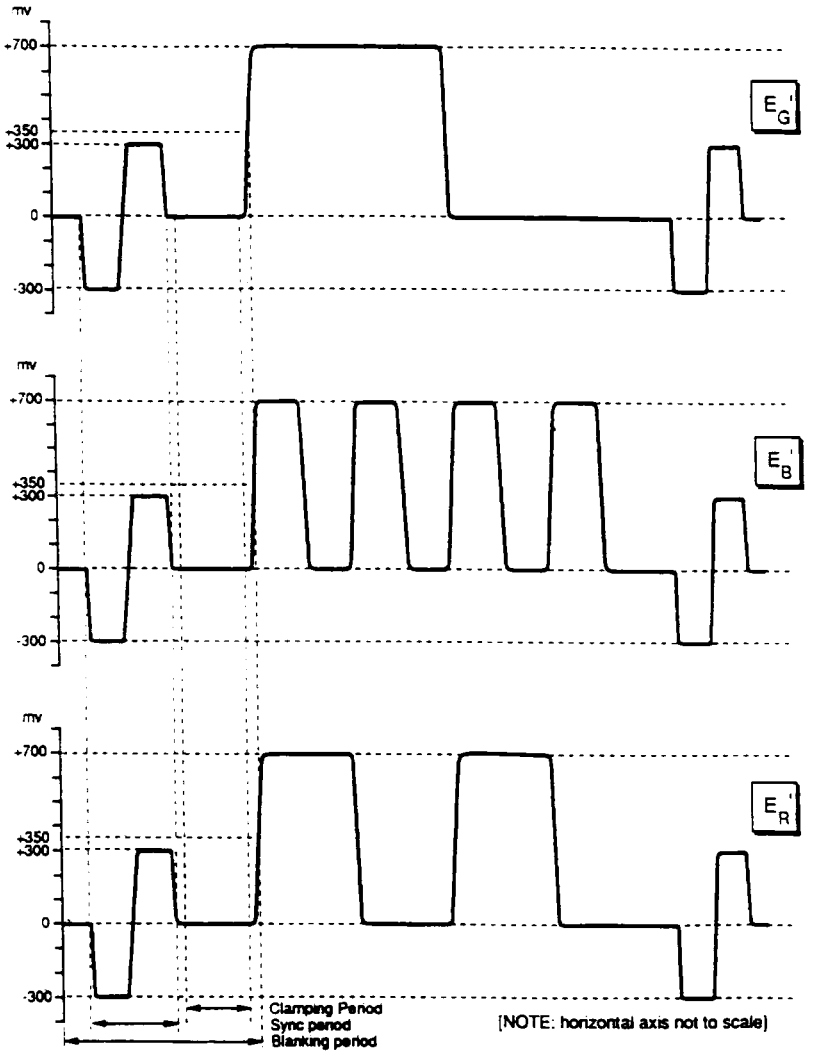

Figure 1 – Waveform structure and levels of (E_G', E_B', E_R') signals for 100% color bars

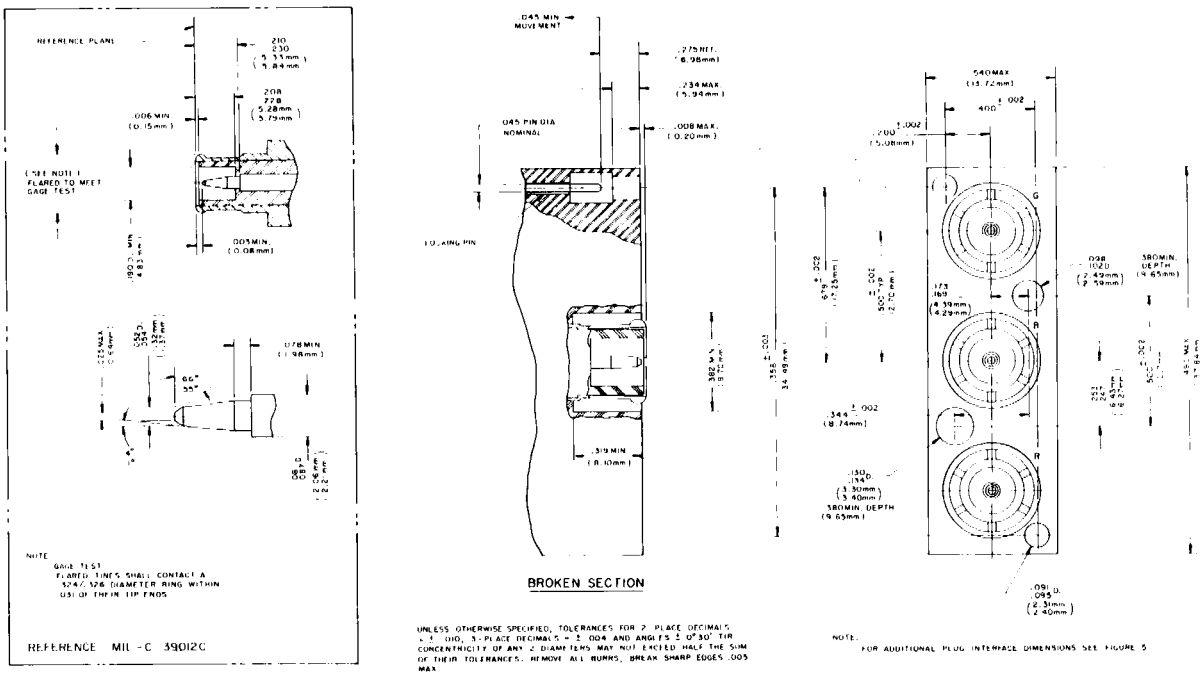

Figure 3 – Plug interface

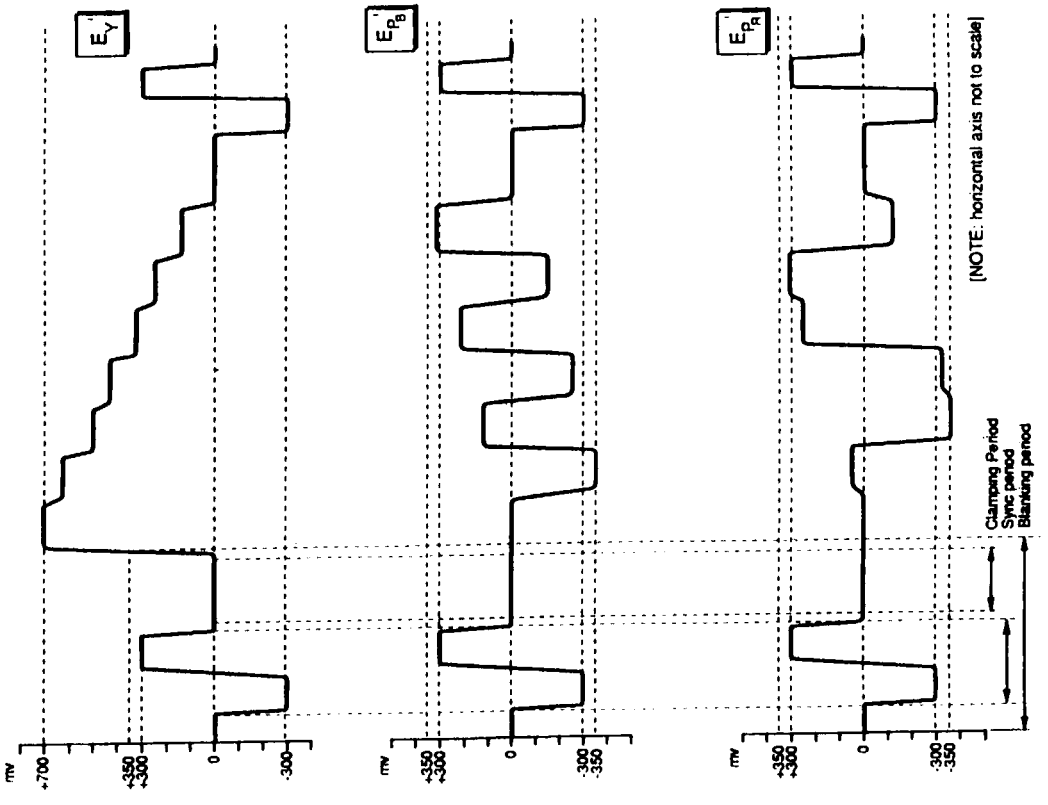

Figure 2 – Waveform structure and levels of (E_Y', E_{PB}' and E_{PR}') signals for 100% color bars

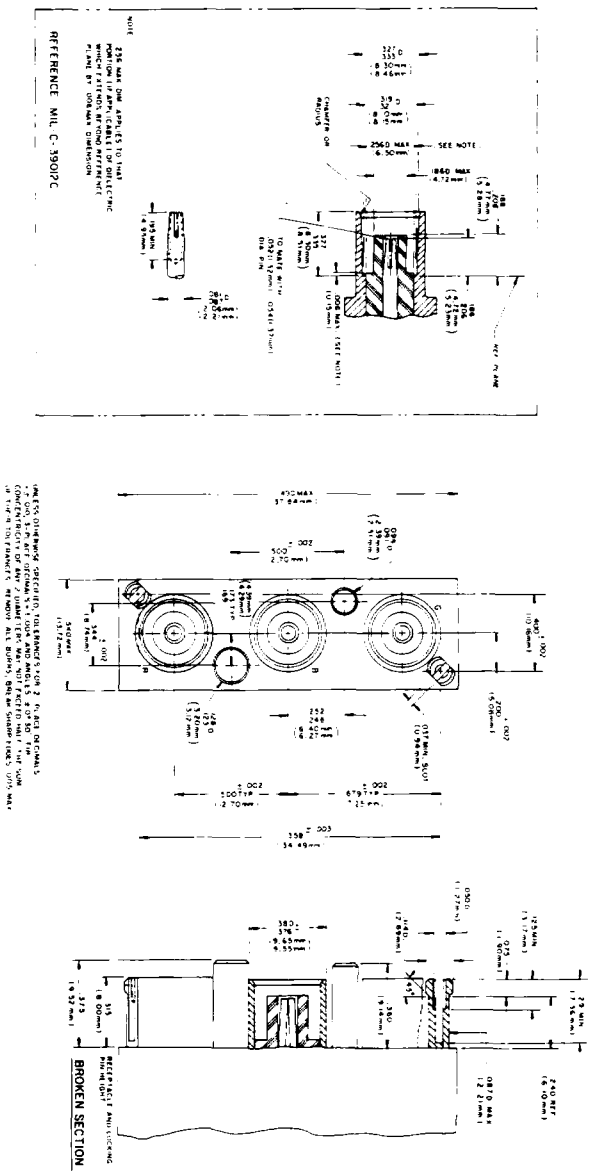

Figure 4 – Socket interace

7 Connector and cable

Two different connector implementations are permissible under this practice. The preferred implementation incorporates a single multiconductor cable and keyed connector arrangement carrying all three parallel signals. The secondary implementation utilizes three separate cables with BNC connectors carrying the three parallel signals. This clause describes the preferred implementation.

7.1 Connector

The connector consists of three BNC inserts mounted in a rectangular housing. Latching is accomplished by two latch posts and receptacles, internal to the connector. Additional posts are utilized for polarizing and reinforcing purposes.

This practice defines the dimensions and tolerances necessary to permit the interchange of plug and socket connectors that contain the three BNC inserts.

The plug interface is described in figure 3, and the socket interface in figure 4. The BNC pin and socket are derived from Mil Spec. No. Mil-C-39012C and are described in figures 3 and 4.

Individual insert positions in each mating connector shall be marked with G, B, and R, respectively, as shown in figures 3 and 4. These position identifications correspond to the cable coding.

7.2 Cable

The recommended cable consists of three individual, insulated, coded, coaxial cables, all housed in a non-metallic jacket.

Annex A (informative)
Bibliography

SMPTE 253, Television – Three-Channel Parallel Component Analog Video Interface

7.2.1 Cable selection considerations

HDTV component sets as specified, for example, in SMPTE 240M-1988, are wideband signals. In choosing the coaxial cable to implement this interface, the user should take account of the following:

– 30-MHz bandwidth for each video component signal;

– Differential timing between each of the three coaxial cables (this refers specifically to the tolerance in cable transit time);

– Crosstalk among the three coaxial cables;

– A cable with nominal impedance of 75 ohms is recommended;

– Return loss of the cable.

7.2.2 Cable color coding

Each individual coax within this cable shall be uniquely coded to identify the signal to be carried upon it. The coding shall be:

Coax coding	Signal carried
Color green or letter G	E_G' or E_Y'
Color blue or letter B	E_B' or E_{PB}'
Color red or letter R	E_R' or E_{PR}'