

TEP106-B

TEPAC PUBLICATION

Worldwide Type Designation System for TV Picture Tubes and Monitor Tubes

TEP106-B
(Revision of TEP106-A)

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The Worldwide Type Designation System for TV Picture Tubes and Monitor Tubes was developed jointly by the technical committees of Electronic Industries Association (EIA) in the U.S.A., EIA of Japan, and Pro Electron in Europe. It covers colour and monochrome TV picture tubes for consumer receiver applications and colour and monochrome monitor or display tubes for direct-view, raster-scan applications other than consumer TV.

The JT-6 Committee has developed definitive registration procedures for administration of the Worldwide Type Designation System in the U.S.A. This includes registration and reregistration releases, bulb registration formats, base and pin connection designation system, and a recommended practice for preparation of tube outline drawings. These details are incorporated in this document.

Implementation date for Worldwide Type Designation System - April 1, 1982

TEP-106-A was revised to provide for custom phosphor designations as described on page 1.

Key Words

Definition of Worldwide Type designation System (WTDS) for TV Picture Tubes and Monitor Tubes.



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WORLDWIDE TYPE DESIGNATION SYSTEM FOR TV PICTURE TUBES AND MONITOR TUBES

Type designations for TV picture tubes and monitor tubes shall consist of six symbols of alternating groups of letters and numbers. These symbols shall have the following significance:

The **first symbol** defines the application category of the tube and shall consist of a single letter.

For TV picture tubes, this will be the letter A.

For monitor tubes (direct-view, raster-scan display tubes for applications other than consumer TV), this will be the letter M.

The **second symbol** defines the minimum viewable screen diagonal and shall consist of a two-digit number.

This number shall be determined by the glass panel design-centre value in centimetres of the minimum viewable screen diagonal. A tube having its screen diagonal within plus or minus one-half centimetre shall be assigned that integer. A tube falling exactly on a one-half centimetre shall be assigned the next larger integer.

The **third symbol** (family code) defines the tube types having specific mechanical and electrical characteristics and shall consist of three letters, excluding the letters I and O. See Guidelines for Assigning a New Type Number (pages 7 and 12) for tube variations that require a new third symbol.

The third symbol is assigned by the type administrator in alphabetical sequence from left to right (AAA, AAB, AAC, ... AZZ, BAA, ... BZZ, ... ZZZ). Once a combination has been assigned to a sponsor for a particular tube type, that combination shall be reserved for future assignments to the original sponsor. In this way the same combination will be available to a sponsor so that the family relationship may be maintained for different sizes. The four categories of tubes covered by this system – colour TV picture tubes, colour monitor tubes, monochrome TV picture tubes, and monochrome monitor tubes – shall be assigned third symbols in one continuous alphabetical sequence. Where the characteristics are identical, the same family code may be assigned for monitor and TV picture tubes at the option of the sponsor.

The **fourth symbol** (member of family) defines specific tube types within the family specified by the third symbol.¹ The fourth symbol consists of a two-digit number from 00 to 99.² The fourth symbol is assigned independent of the third symbol. See Guidelines for Assigning a New Type Number (pages 7 and 12) for tube variations that require a new fourth symbol.

The **fifth symbol** defines the phosphor category.

For colour TV picture tubes, the phosphor is defined by the letter X or the letters XX.

For colour monitor tubes, the phosphor (usually tricolour) may be defined by the letter(s) X, XX, or some other two-letter combination³, excluding the letters I and O.

For monochrome TV picture tubes, the phosphor is defined by the letters WW.

For monochrome monitors, the phosphor may be defined by the letters WW or some other two-letter combination, excluding the letters I and O.

Phosphor designations that begin with the letter M are custom phosphors. The second letter indicates the tube manufacturer. These phosphors are intended for short production runs and are controlled by the tube manufacturer.

Definitions of the phosphor assignments are contained in the latest issue of EIA Publication TEP-116.

The **sixth symbol** is only assigned to tubes having integral neck components. It defines the characteristics of these components and their adjustments.

The sixth symbol consists of a two-digit number from 01 to 99.

¹ At the option of the sponsor, a new third symbol may be assigned for any tube variation.

² Previously, the fourth symbol consisted of a one-digit number from 0 to 9 for monochrome tubes. Type designations assigned under the previous rule shall remain valid.

³ Single-letter colour phosphor assignments were made prior to the adoption of the two-letter code. Although these single-letter assignments are valid, each one has been assigned a corresponding two-letter code as follows: A (DA), B (DB), C (DC), D (XB), E (DD), F (XC), G (DE), X (XX), and Y (XY).

SYSTEM ADMINISTRATION

The Type Administrators will act upon all requests for new type assignments without making a search of the existing type assignments to determine if there is already one identical to the new request.

The third symbol letters are allocated in blocks to the three type assignment agencies as follows: EIA-U.S.A. - AAA through DZZ, Pro Electron - EAA through HZZ, and EIA-Japan - JAA through MZZ. The remaining unused blocks of letters will be assigned by mutual agreement to each assigning agency when required.

Type Administrators for EIA-U.S.A., EIA-Japan and Pro Electron will assign the third symbol family code in alphabetical sequence; however, the sponsors have the option of requesting any unassigned numbers in any order for the fourth and sixth symbols. This enables the sponsors to encode tube families, within the established rules, to meet their own particular needs. The fourth and sixth symbols may even have the same meaning for all sizes of tubes within the same family.

Referral registrations are allowed only within a family (types having the same third symbol).

Each of the three type assignment agencies will send complete copies of the registration data to the other two agencies when the confidential period has expired.

Detailed type assignment procedures begin on page 7.

EXAMPLE TYPE ASSIGNMENTS**Colour TV Picture Tubes**

- | | |
|---|--|
| (1) A63AAA00XX
A
63
AAA
00
XX | First colour TV picture tube type assignment in worldwide system
TV picture tube for consumer receiver applications
63 cm minimum viewable screen diagonal measurement (projected)
First family code
First tube in "AAA" family
Tricolour phosphors |
| (2) A63AAA00XX01 | Same as (1) above except with integral yoke |
| (3) A63AAA00XX02 | Same as (2) above except different yoke and/or other neck components |
| (4) A63AAA01XX | Same family as (1) above except some minor mechanical and/or electrical differences in tube |
| (5) A63AAA01XX01 | Same as (4) above except with integral yoke. Can have same yoke as (2) at option of sponsor |
| (6) A53AAA00XX | Same as (1) above except different size |
| (7) A53AAB00XX | Different family than any of above assignments |

Colour Monitor Tubes

- | | |
|-----------------|--|
| (8) M63AAA00XX | Same family as (1) above except for monitor service |
| (9) M63AAA00DA | Same as (8) above except different tricolour phosphors |
| (10) M63AAC00XX | Different family than (1) and (8) above |
- Colour monitor tubes can also have the same kinds of differences and relationships as shown in (1) through (7) above.

Monochrome TV Picture Tubes

- | | |
|-------------------|---|
| (11) A47AAD00WW | First monochrome TV picture tube type assignment in worldwide system |
| (12) A47AAD00WW01 | Same as (11) above except with integral yoke |
| (13) A47AAD00WW02 | Same as (12) above except different yoke and/or other neck components |
| (14) A47AAD01WW | Same family as (11) above except some minor mechanical and/or electrical differences in tube |
| (15) A47AAD01WW01 | Same as (14) above except with integral yoke. Can have same yoke as (12) at option of sponsor |
| (16) A30AAD00WW | Same as (11) above except different size |
| (17) A30AAE00WW | Different family than any of above monochrome TV picture tube type assignments |

Monochrome Monitor Tubes

- | | |
|-----------------|--|
| (18) M47AAD00WW | Same family as (11) above except for monitor service |
| (19) M47AAD00GE | Same as (18) above except different phosphor |
| (20) M47AAF00WW | Different family than (11) and (18) above |

Monochrome monitor tubes can also have the same kinds of differences and relationships as shown in (11) through (17) above.

TUBE TYPE ASSIGNMENT PROCEDURES IN THE WORLDWIDE TYPE DESIGNATION SYSTEM FOR TV PICTURE TUBES AND MONITOR TUBES

1. INTRODUCTION

- 1.1. This publication prescribes the administrative procedures for the orderly assignment of type designations and registration in the Worldwide Type Designation System for TV Picture Tubes and Monitor Tubes.
- 1.2. The term "type designation" may be applied to the original assignment of a new family or to an assignment within an existing family.
- 1.3. The purpose of the type designation and registration system is to ensure that type designations accurately distinguish one type from another in performance characteristics or physical dimensions.
- 1.4. Registration consists of assigning a type designation in accordance with the established rules, recording the assignment and its defining data, and disseminating the information to the electronics industry.

Tube type assignment and registration procedures are established jointly by three agencies: (1) Electronic Industries Association (EIA) in the U.S.A., (2) Pro Electron in Europe, and (3) EIA of Japan. In any event, these agencies neither assume liability for nor endorse the use of any product which bears their authorized registration numbers. The agencies have as their primary objective the development of recommended standards. An effective registration procedure is considered basic to the achievement of that end.

- 1.5. Registered type numbers are not the property of the sponsor; other manufacturers may use registered type numbers if the data of their products are equivalent to the data registered by the original sponsor. It is the responsibility of such manufacturer to ensure that his device and the device of the original sponsor are equivalent.

2. DETAILED ASSIGNMENT AND RESERVATION/REGISTRATION PROCEDURES

- 2.1. Assignment and reservation/registration procedures take the following steps:

- A. Sponsor applies to agency in writing for a type assignment. Telex and telephone requests are acceptable if they are followed by data in writing.
- B. Type Administrator assigns the third symbol (family code) of the type designation when he has sufficient information to determine that a new designation is in order. In case of a telephone request, the type assignment is tentatively reserved until defining data are received.
- C. Type assignment is held for a confidential reservation period.
- D. At the end of the confidential reservation period, the sponsor must supply the full registration data. At this time, the type designation is registered and becomes industry property.

The detailed procedures are given below.

- 2.2. Any manufacturer of TV picture tubes or monitor tubes, whether or not a member of any of the above three agencies, may request a type designation assignment for a tube he is developing or manufacturing. At the time of assignment, the applicant is charged a registration fee, established by the agency from which the assignment is requested.
- 2.3. The request should be made in writing by the manufacturer of the tube to any one of the following agencies:

Type Administrator
Electronic Industries Association
2001 Eye Street, N.W.
Washington, DC 20006, U.S.A.

Pro Electron
Avenue Louise 430(B.12)
B-1050 Bruxelles, Belgium

Electronic Industries Association of Japan
Type Administration Office
TOSHO Building, 7 F
2-2, 3-Chome, Marunouchi
Chiyoda-ku, Tokyo 100, Japan

The applicant must supply the applicable data required on the reservation/registration format. Data may be submitted on commercial data sheets as long as all format requirements are met. If a data sheet is used for registration, only format items are considered to be part of the registration.

- 2.4. Reservation/registration format forms and type assignment guidelines are available from any of the three agencies.
- 2.5. Type numbers may be reserved by letter, telex, or telephone; however, if written data are not received within thirty (30) days, the reservation may be cancelled. The Type Administrator will inform the applicant if this action is to be taken.
- 2.6. All type assignments must be made by one of the above three agencies even if the new type is another member of an existing family (where only the fourth symbol and/or the sixth symbol changes).
- 2.7. It is the responsibility of the applicant to state whether a new family code (third symbol) is required or if a new member of an existing family is being requested. If only a new member of an existing family is being requested, the applicant must give the existing family code (third symbol) and the desired variant.
- 2.8. Upon receipt of a request, the Type Administrator determines the adequacy of the data and makes an assignment of the third symbol if one is in order. If the sponsor has not specified the fourth and sixth (if applicable) symbols, the Type Administrator will assign these also. Written notice of the assignment is sent to the applicant along with the invoice for the registration fee.
- 2.9. Once a new third symbol (family code) is assigned to an applicant, it will be reserved for that sponsor for future assignments of other types within the same size or for other sizes having the same family relationship. However, with permission of the original sponsor, other manufacturers may specify assignments in the same family.
- 2.10. Manufacturers sometimes add prefix or suffix letters to type designations on their tubes or in their commercial literature. Prefixes or suffixes are not part of the designation. The agencies assume no responsibility for the use or meaning of such additions.
- 2.11. The reservation data received by any of the three agencies shall be kept strictly confidential until the sponsor is ready to release it. This confidential reservation period shall not exceed six (6) months from the date of the assignment unless the sponsor requests in writing a six-month extension (allowed one time only). If the need for a type assignment ceases to exist, the sponsor shall cancel it and no further use of the type designation will be made. The reservation data shall remain confidential after cancellation.

The confidential period ends automatically after public announcement of the type by the sponsor.

- 2.12. Corrections or changes in the reservation data may be submitted during the confidential period.

3. REGISTRATION RELEASE

- 3.1. The Type Administrator shall inform the sponsor one month prior to the end of the confidential period. If no correspondence is received, the original reservation data shall become the registered data and release of the registration data should be made on schedule.
- 3.2. Each agency will establish its own registration release procedures; however, at the end of the confidential period each agency will send the completed registration data to the other two agencies.

3A. ADDITIONAL REGISTRATION RELEASE PROCEDURES FOR EIA-U.S.A.

- 3A.1. Sponsors of type designations shall provide the required number of copies of the data for each type for the registration release at the end of the reservation period. Failure to provide the copies will result in EIA printing and releasing the reservation data, at the expense of the sponsor, and releasing this information as the registered data.
- 3A.2. Registration Releases may be modified by Correction Notices only on behalf of the original sponsor or by the Type Administrator. Corrections must be received by the Type Administrator within sixty (60) days after the release date.
- 3A.3. A Correction Notice does not become effective until sixty (60) days after its release. During this period any manufacturer may object if he can show that the change is not truly an obvious error, incompatibility or ambiguity. A single valid objection, if it can not be reconciled, will cause the Correction Notice to be cancelled.

4. **REREGISTRATION**

- 4.1. Registered data may be changed by reregistration. Reregistration may be proposed only by a tube manufacturer or the cognizant technical committee.
- 4.2. Reregistrations should be used only for changes or additions which will not affect unilateral interchangeability with the original version. However, reregistration may be proposed even though unilateral interchangeability may be affected if the proposal is accompanied by information indicating that user interests will not be adversely affected by the reregistration.

4A. **ADDITIONAL REREGISTRATION PROCEDURES FOR EIA-U.S.A.**

- 4A.1. Approved reregistration requests will be processed as follows. Type Administrator will distribute the reregistration proposal to the same Registration Data Release Mailing List as used for the original registration. The proposal will clearly indicate the items "As Registered" and "As Proposed" and it will specify that valid objections must be filed in writing with the Type Administrator within sixty (60) days from the date of the proposed reregistration.
- 4A.2. If no written adverse comments are received within the sixty-day period, the reregistration will become effective, superseding the original registration, and the Type Administrator will issue an announcement of final reregistration to that effect.
- 4A.3. In the event that adverse comments on the proposed reregistration are received and:
 - (1) If there is a possibility that the objections may be resolved the Type Administrator shall issue a "Hold in Abeyance" notice at the end of the sixty-day comment period.
 - (2) If attempts at reconciliation fail, the reregistration shall be cancelled and a cancellation notice sent to all recipients of the previous information.
 - (3) If the reconciliation results in a compromise, the previous proposal shall be cancelled and the new proposal submitted for another sixty-day approval period.
 - (4) If the reconciliation results in the objectors rescinding their negative comments, the Type Administrator shall issue a notice that the reregistration proposal has been accepted.

In those cases where the Type Administrator has rejected comments because he considers them to be not valid, he shall notify the objector of his action and inform the objector that he has thirty (30) days in which to file an appeal with EIA. If no appeal is made within the specified period, the Type Administrator will proceed in accordance with the previous paragraphs.

- 4A.4. In a case where an attempt at reregistration has failed, a request for a new type designation may be appropriate, in which case the normal registration procedure would apply.

5. **FINAL AUTHORITY**

- 5.1. In those instances where the application of the procedures as herein described are unsatisfactory to the parties concerned and are not apparently reconcilable, the final authority shall rest with the technical committee of the assigning agency.

GUIDELINES FOR ASSIGNING A NEW TYPE NUMBER (FAMILY CODE AND/OR MEMBER OF FAMILY) TO COLOUR TV PICTURE TUBES AND COLOUR MONITOR TUBES

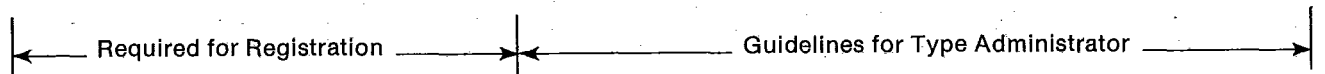
GENERAL

All applicable items in the first column of the format are required for registration.

Where agency designations have not been established, defining data must be supplied.

Complete items in Section VIII only if product is integral tube/yoke and neck component combination.

All values are nominal unless otherwise specified.



**Third Symbol (New Family)
New Assignment Required**

**Fourth Symbol (New Member
of Existing Family)
New Assignment Recommended
(A new third symbol
may be assigned at the option
of the sponsor.)**

I. Description and General Data

- | | | |
|---|---|--|
| A. Viewable Screen Diagonal | Any change requires a new Second Symbol | |
| B. Diagonal Deflection Angle | Any change | |
| C. Electron Gun | | |
| 1. Configuration (delta or in-line) | Any change | |
| 2. Type of focus (unipotential, bipotential, tripotential, etc.) | Any change | |
| D. Neck Diameter | Any change in excess of 1.0 mm | |
| E. Screen Structure (dot, line, etc.) | Any change | |
| F. TV-Line System (525, 625, etc.) | | Any change |
| G. Deflection Yoke Design, nonintegral (yoke manufacturer's model number) | | Any change affecting tube interchangeability |
| H. Integral (internal or external) Magnetic Shield (yes or no) | | Any change |

II. Optical Data

- | | | |
|---|------------|---|
| A. Light Transmittance of Panel | | Any change in excess of ± 4 units of percentage |
| 1. Selective Absorption (yes or no) | | Any change |
| B. Antireflection (yes or no) | | Any change |
| C. Phosphor Sequence or Orientation | Any change | |
| D. Dark Surround or Matrix (yes or no) | | Any change |
| E. Selectively Filtered or Pigmented Phosphor (yes or no) | | Any change |

III. Mechanical Data

- | | | |
|-------------------------------------|-----------------------------------|--------------------------------|
| A. Tube Dimensions | | |
| 1. Overall length | | Any change in excess of 6.5 mm |
| 2. Neck length (YRL to end of base) | | Any change in excess of 3.2 mm |
| B. Minimum Useful Screen, projected | | |
| 1. Diagonal axis | Any change in excess of 3.0 mm | |
| 2. Horizontal axis | Any change in excess of 3.0 mm | |
| 3. Vertical axis | Any change in excess of 3.0 mm | |
| 4. Area | Not for use by Type Administrator | |

	New Third Symbol Required	New Fourth Symbol Recommended
III. Mechanical Data (continued)		
C. Bulb Nomenclature		
1. Funnel (agency designation) }	{ Any change in equivalent agency 2. Panel (agency designation) } 3. Anode contact (agency designation)	Any change in equivalent agency number
D. Base and Pin Connections (agency designation)		Any change in equivalent agency number
E. Pin Position Alignment (base pin which most nearly aligns with anode bulb contact)		Any change
F. Anode Location (clock position, viewed from base)		Any change
G. External Conductive Coating-to-Anode Capacitance, including implosion protection hardware		Any change in excess of 10% outside listed range
H. Dimensional Details (see Tube Outline)		Any change if not interchangeable
IV. Implosion Protection		
A. Implosion Protection May Be Listed as One of the Following		Any change in listed items, except an alternate implosion protection system may be specified if it is mechanically interchangeable without a change in the symbol
1. None		
2. Tension band(s)		
3. Filled rim		
4. Rimband(s) and tension band(s)		
5. Bonded sheet		
6. Other (specify)		
B. Greatest Tube Face Axes Dimensions, including implosion protection hardware and excluding mounting lugs, if any		Any change in excess of 6.0 mm
1. Diagonal		
2. Horizontal		
3. Vertical		
C. Integral Mounting System (yes or no)		
1. Mounting hole centre-to-centre dimensions (horizontal x vertical)		Any change in excess of 3.0 mm
2. Panel reference Z point to front of lug dimension (Z points are normally at the ends of the minimum screen diagonals; if not, specify x and y coordinates)		Any change in excess of 1.5 mm for non push-through types and 3.0 mm for push-through types
3. Hole dimensions (minimum)		Any decrease in excess of 1.5 mm
V. X-Radiation Characteristics Per Latest Issue of (EIA Publication TEP-94, EIA Standards RS-501 and RS-503, or IEC Publication 65, or EIAJ Publications ET-1012, ET-1014, and ET-1015)	Any change in the rated x-radiation characteristics of the tube	
VI. Typical Design Values Unless otherwise specified, values are for each gun, and voltage values are positive with respect to (cathode or grid no.1).		
A. Heater Voltage	Any change in excess of 5%	
B. Heater Current	Any change in excess of 15%	
C. Anode Voltage		
1. Absolute-maximum value	Any decrease in excess of 10%	Any increase in excess of 10%
2. Typical value		Any change in excess of 2 kV

	New Third Symbol Required	New Fourth Symbol Recommended
VI. Typical Design Values (continued)		
D. Grid No. _____ (focusing electrode) Voltage in Percent of Typical Anode Voltage	Any change in excess of 4 units of percentage	
E. Grid Nos. _____ (other high-voltage grids) Voltage in Percent of Typical Anode Voltage	Any change in excess of 4 units of percentage	
F. Control Voltages for Visual Cutoff of Focused Spot at Typical Anode Voltage		
1. Grid no.2 voltage at grid no.1 voltage of -100, -150, and -200 V (or cathode voltage of 100, 150, and 200 V)	Any change in excess of 20% outside listed range	Any change in excess of 20% inside listed range
G. Maximum Ratio of Grid No.2 Voltages, highest gun to lowest gun for spot cutoff at grid no.1 of -100 V or Maximum Ratio of Cathode Cutoff Voltages, highest gun to lowest gun (with grid no.2 of gun having highest cathode voltage adjusted to give 150 V spot cutoff)		Any increase in excess of 5% Any increase in excess of 5%
H. Ratio of Cathode Currents to Produce a White Light Output having CIE Coordinates of $x = 0.313$, $y = 0.329$ (or $x = 0.281$, $y = 0.311$)		Any change in excess of 25% outside listed range
VII. Drawings		
A. Tube Outline with Essential Dimensions, Tolerances, and Pin Connections		
VIII. Integral Tube/Neck Component Combinations	New Sixth Symbol Required	
A. Deflection Yoke Specifications	Any change affecting interchangeability*	
B. Other Neck Components	Any change affecting interchangeability	
C. Drawings		
1. Assembly outline must meet same requirements as listed in Items III and IV with the addition of clearance dimensions for the integral neck components	Any increase in clearance dimensions in excess of 15 mm	
2. Yoke connector designation or manufacturer's number	Any change	
3. Pin connections to yoke connector with signal polarity indicated	Any change	
4. Minimum lead length, if any, for yoke connection (show location on outline)	Any decrease in excess of 10%	

*Any change in adjustment required for tube to operate in a different geographical location also requires a new sixth symbol.