



American National Standard  
E1.11 – 2008 (R2013)  
Entertainment Technology  
USITT DMX512-A  
Asynchronous Serial Digital Data  
Transmission Standard for Controlling  
Lighting Equipment and Accessories

CP/2007-1013r3.1

This document was approved as an American National Standard by the ANSI Board of Standards Review on 13 March 2013. It is a reaffirmation of the 2008 edition of the Standard.

This standard was originally published when the Entertainment Services and Technology Association was operating under the name of PLASA North America. ESTA has reverted to its original name, and this document has been rebranded with the current corporate name and logo. No changes have been made to the contents of the standard.

© 2017 ESTA. All rights reserved.

This is a preview of "ANSI E1.11-2008 (R20...". [Click here to purchase the full version from the ANSI store.](#)

## Notice and Disclaimer

ESTA does not approve, inspect, or certify any installations, procedures, equipment or materials for compliance with codes, recommended practices or standards. Compliance with a ESTA standard or recommended practice, or an American National Standard developed by ESTA, is the sole and exclusive responsibility of the manufacturer or provider and is entirely within their control and discretion. Any markings, identification or other claims of compliance do not constitute certification or approval of any type or nature whatsoever by ESTA.

ESTA neither guarantees nor warrants the accuracy or completeness of any information published herein and disclaim liability for any personal injury, property or other damage or injury of any nature whatsoever, whether special, indirect, consequential or compensatory, directly or indirectly resulting from the publication, use of, or reliance on this document.

In issuing and distributing this document, ESTA does not either (a) undertake to render professional or other services for or on behalf of any person or entity, or (b) undertake any duty to any person or entity with respect to this document or its contents. Anyone using this document should rely on his or her own independent judgment or, as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstance.

**Published by:**

Entertainment Services and Technology Association  
630 Ninth Avenue, Suite 609  
New York, NY 10036 USA  
Phone: 1-212-244-1505  
Fax: 1-212-244-1502  
[standards@esta.org](mailto:standards@esta.org)  
<http://tsp.esta.org/>

---

## **The ESTA Technical Standards Program**

The ESTA Technical Standards Program was created to serve the ESTA membership and the entertainment industry in technical standards related matters. The goal of the Program is to take a leading role regarding technology within the entertainment industry by creating recommended practices and standards, monitoring standards issues around the world on behalf of our members, and improving communications and safety within the industry. ESTA works closely with the technical standards efforts of other organizations within our industry, including USITT, and VPLT, as well as representing the interests of ESTA members to ANSI, UL, and the NFPA. The Technical Standards Program is accredited by the American National Standards Institute.

The Technical Standards Council (TSC) was established to oversee and coordinate the Technical Standards Program. Made up of individuals experienced in standards-making work from throughout our industry, the Council approves all projects undertaken and assigns them to the appropriate working group. The Technical Standards Council employs a Technical Standards Manager to coordinate the work of the Council and its working groups as well as maintain a "Standards Watch" on behalf of members. Working groups include: Control Protocols, Electrical Power, Event Safety, Floors, Fog and Smoke, Followspot Position, Photometrics, Rigging, and Stage Lifts.

ESTA encourages active participation in the Technical Standards Program. There are several ways to become involved. If you would like to become a member of an existing working group, as have over two hundred people, you must complete an application which is available from the ESTA office. Your application is subject to approval by the working group and you will be required to actively participate in the work of the group. This includes responding to letter ballots and attending meetings. Membership in ESTA is not a requirement. You can also become involved by requesting that the TSC develop a standard or a recommended practice in an area of concern to you.

The Control Protocols Working Group, which authored this Standard, consists of a cross section of entertainment industry professionals representing a diversity of interests. ESTA is committed to developing consensus-based standards and recommended practices in an open setting.

## Contact Information

### Technical Standards Manager

Karl G. Ruling  
Entertainment Services and Technology Association  
630 Ninth Avenue, Suite 609  
New York, NY 10036  
USA  
1-212-244-1505  
[karl.ruling@esta.org](mailto:karl.ruling@esta.org)

### Assistant Technical Standards Manager

Erin Grabe  
Entertainment Services and Technology Association  
630 Ninth Avenue, Suite 609  
New York, NY 10036  
USA  
1-212-244-1505  
[erin.grabe@esta.org](mailto:erin.grabe@esta.org)

### Technical Standards Council Chairpersons

Mike Garl  
Mike Garl Consulting LLC  
1-865-389-4371  
[mike@mikegarlconsulting.com](mailto:mike@mikegarlconsulting.com)

Mike Wood  
Mike Wood Consulting LLC  
1-512-288-4916  
[mike@mikewoodconsulting.com](mailto:mike@mikewoodconsulting.com)

### Control Protocols Working Group Chairpersons

Michael Lay  
Philips Color Kinetics  
3 Burlington Woods Drive  
Burlington, MA 01803  
USA  
Phone: 1-781-418-9145  
[michael.lay@philips.com](mailto:michael.lay@philips.com)

Kimberly Corbett  
Schuler Shook.  
325 North Saint Paul, Suite 3250  
Dallas, TX 75201  
USA  
Phone: 1-214-747-8300  
[kcorbett@schulershook.com](mailto:kcorbett@schulershook.com)

## Acknowledgments

The Control Protocols Working Group was the consensus body for the development of this Standard. The working group's membership at the time the working group approved this Standard on 7 January 2013 is listed below.

### Voting members:

Daniel W. Antonuk; Electronic Theatre Controls, Inc.; MP  
Robert Bell; Acuity Brands Inc.; MP  
Marcus Bengtsson; LumenRadio AB; MP  
Scott M. Blair; Full Throttle Films/ VER; DR  
Ron Bonner; PLASA EU; G  
Jean-Francois Canuel; A.C. Lighting Ltd.; CP  
Kimberly Corbett; Schuler Shook; DE  
Milton Davis; Doug Fleenor Design, Inc.; MP  
Gary Douglas; Acuity Brands Inc.; MP  
Hamish Dumbreck; James Embedded Systems Engineering; MP  
Larry Dunn; City Theatrical, Inc.; MP  
Doug Fleenor; Doug Fleenor Design, Inc.; MP  
Howard Forryan; Harting KGAA; G  
Garrett Gallant; Acuity Brands Inc.; MP  
Ed Garstkiewicz; Harting KGAA; G  
Robert Goddard; Goddard Design Co.; MP  
Dennis Grow; I.A.T.S.E. Local 728; U  
Mitch Hefter; USITT; U  
Simon Hobday; Artistic Licence Holdings; DE  
Wayne David Howell; Artistic Licence Holdings; DE  
John Huntington; I.A.T.S.E. Local 1; U  
Michael Karlsson; LumenRadio AB; MP  
Reza Khanmalek; A.C. Lighting Ltd.; CP  
Insu Kim; Electronics and Telecommunications Research Institute; G  
Peter Kirkup; Lumen Radio AB; MP  
Paul Kleissler; City Theatrical, Inc.; MP  
Edwin S. Kramer; I.A.T.S.E. Local 1; U  
Ulrich Kunkel; DIN, NVBF Committee; U  
Roger Lattin; I.A.T.S.E. Local 728; U  
Hans Lau; LumenRadio AB; MP  
Michael Lay; Royal Philips Electronics; MP  
Sang-Kyu Lim; Electronics and Telecommunications Research Institute; G  
Joshua Liposky; Lex Products Corp.; CP  
Kevin Loewen; Acuity Brands Inc.; MP  
Alan Martello; Acuity Brands Inc.; MP  
Tyrone Mellon Jr.; Lex Products Corp.; CP  
Simon Newton; Simon Newton; G  
Maya Nigrosh; Electronic Theatre Controls, Inc.; MP  
Philip Nye; Acuity Brands Inc.; MP  
Edward A. (Ted) Paget; Daktronics Inc.; G  
Charles Reese; Production Resource Group; DR  
Alan M. Rowe; I.A.T.S.E. Local 728; U  
Larry Schoeneman; DesignLab Chicago, Inc.; DR  
Sean Sill; Doug Fleenor Design, Inc.; MP  
Steve Terry; Electronic Theatre Controls, Inc.; MP  
Christopher Tilton; Westlake Reed Leskosky; DE  
Ken Vannice; Leviton Manufacturing Co., Inc.; MP  
Peter Willis; Howard Eaton Lighting Ltd.; CP

Observer members:

Charles Alicea; Royal Philips Electronics; MP  
Simon Alpert; Lighttech Event Technologies; CP  
Klaus Amling; Licht-Technik; MP  
Shahid Anwar; Avolites Ltd.; MP  
Matthew Ardine; IATSE Local 728; U  
Daniel Ayers; Norcostco; DR  
Timothy Baarsch; Artistic Licence Holdings; DE  
Robert Barbagallo; Solotech Inc.; U  
Adam Bennette; Electronic Theatre Controls, Inc.; MP  
David Bertenshaw; G  
Stephen Bickford; T. Kondos Associates; U  
Torrey Bievenour; Vision Quest Lighting; G  
Lee J. Bloch; Bloch Design Group, Inc.; G  
David A. Boller; Organic Machines LLC; CP  
André Broucke; G  
John (Javid) D. Butler; Integrated Theatre, Inc.; CP  
Steve Carlson; High Speed Design, Inc.; MP  
Nyasha Chigwamba; Rhodes University; U  
Soo-Myong Chung; Bloch Design Group, Inc.; G  
Paul J. Clark; HxDx; CP  
Edward R. Condit; Edward R. Condit; G  
Eric Cornwell; West Side Systems; U  
Stuart Cotts; Oregon Shakespeare Festival; U  
Klas Dalbjorn; TC Group; MP  
Ben Darrington; Wireless Solutions Sweden AB; MP  
Gilray Densham; CAST Group Inc; MP  
Gary Dove; Dove Systems; MP  
Yongshun Duan; Macostar International Ltd.; CP  
Jerry Durand; Durand Interstellar, Inc.; CP  
James Eade; PLASA; G  
Andrew Eales; Rhodes University; U  
Bill Ellis; Candela Controls, Inc.; U  
Paul K. Ericson; Syska Hennessy Group Lighting Design; U  
Jon R. Farley; Sixteenth Avenue Systems; CP  
Martin Farnik; Robe Show Lighting s.r.o.; MP  
Trevor Forrest; Helvar Lighting Control; MP  
Steve Friedlander; Auerbach Pollock Friedlander; U  
Phillip M. Gallo; TMB; DR  
Jerry Gorrell; Theatre Safety Programs; G  
Tom Grimes; Barco; MP  
Josh Gubler; CP  
Rob Halliday; U  
Sean Harding; High Output, Inc.; G  
Bill Hewlett; Hewlett Electronics; CP  
Helge Hoffmann; JB Lighting; MP  
Jim Holladay; Luxence; G  
Osedum P. Igumbor; Rhodes University; U  
Sierk Janszen; Ground Zero; U  
Eric Johnson; G  
Rob Johnston; Interactive Technologies, Inc.; MP  
Ed Jones; Edwin Jones Co., Inc.; CP  
Jussi Kallioinen; Eastway Sound & Lighting; U  
Tae Gyu Kang; Electronics and Telecommunications Research Institute; G  
Hiroshi Kita; Marumo Electric Co., Ltd.; MP  
Phil Klapwyk; IATSE Local 891; U

Mark T. Kraft; Lehigh Electric Products Co.; MP  
Jason Kyle; JPK Systems Ltd.; MP  
Rick Leinen; Leviton Manufacturing Co., Inc.; MP  
Hans Leiter; Electronic Theatre Controls, Inc.; MP  
Jon Lenard; Applied Electronics; MP  
Maarten Lepelaars; eldoLED; MP  
Mark Manthei; Shure Inc.; G  
Paul F. Mardon; Pulsar Ltd.; MP  
Mick Martin; ShowCAD Control Systems; MP  
Paul Kenneth McEwan; Cooper Controls Ltd.; MP  
John Mehlretter; Lehigh Electric Products Co.; MP  
Avraham Mendall Mor "Avi"; Lightswitch; U  
John Musarra; U  
Tobin Neis; Barbizon Companies; DR  
Lars F. Paape; Scientific Algorithms and Embedded Systems; U  
Gary Pritchard; LSC Lighting Systems PTY Ltd; MP  
Eric Proce; U  
Torben Kaas Rasmussen; Martin Professional A/S; G  
Charlie Richmond; Richmond Sound Design Ltd.; CP  
Bernardo Benito Rico; Ben-Ri Electronica S.A.; MP  
Steve Roberts; Carr & Angier; G  
Erwin Rol; G  
Dietmar Rottinghaus; Connex GmbH; G  
Richard Salzedo; Avolites Ltd.; MP  
Yngve Sandboe; Sand Network Systems, Inc.; MP  
Martin Searancke; Dream Solutions Ltd.; MP  
Chuck Seifried; City of Phoenix; U  
John Sellers; AIM Northwest; G  
Andrew Sherar; Lightmoves PLC; MP  
Yehuda Shukram; Compulite Systems; MP  
Storm K. Staley; Stormwerx; U  
Ralph Stillinger; Royal Philips Electronics; MP  
Bart Swinnen; Luminex LCE; MP  
Arnold Tang; Arnold Tang Productions; U  
Geoffrey O. Thompson; IEEE 802.3/Nortel Networks; G  
David Timmins; Jands Electronics; MP  
J. B. Toby; Avolites Ltd.; MP  
Bob Toms; Catalyst Microsystems LLC; G  
Robert Tooker; U  
Tad Trylski; Tad Trylski; U  
Stephen J. Tyrrell; Quantum Logic; MP  
Tracy Underhill; 4U Consulting; G  
Steve Unwin; Pulsar Ltd.; MP  
Samuli Valo; Picturall Ltd.; MP  
Carlo Venturati; Clay Paky S.P.A.; MP  
Will Wagner; Carallon Ltd.; MP  
Oliver Waits; Avolites Ltd.; MP  
John Warwick; Royal Philips Electronics; MP  
Colin Waters; TMB; DR  
Ralph Weber; ENDL Texas; G  
Lars Wernlund; Lewlight; MP  
Michael (Mike) Whetstone; Integrated Theatre, Inc.; CP  
Loren Wilton; Showman Systems; CP  
Barbara Wohlsen; Barbara Wohlsen; U  
C. S. Wong; Macostar International Ltd.; CP  
Jiantong Wu; Beijing Special Engineering Design & Research Institute; G



Kehang Wu; Shure Inc.; G  
David Yellin; LightMinded Industries, Inc.; MP  
Larry Zoll; Zoll Design & Consulting, LLC; U

CP Custom-market Producer  
DE DEsigner incorporating the subject matter of the working group in projects  
DR Dealer or Rental company  
G General interest  
MP Mass-market Producer  
U User

**Contents**

Notice and Disclaimer.....i

Contact Information ..... iii

Acknowledgments ..... iv

Contents ..... viii

Foreword.....xii

1 General ..... 1

    1.1 Scope ..... 1

    1.2 Overview and Architecture ..... 1

    1.3 Appropriate uses of this Standard ..... 1

    1.4 Classes of data appropriate for transmission over links designed to this Standard ..... 2

    1.5 Classes of data not appropriate for transmission over links designed to this Standard ..... 2

    1.6 Compliance ..... 2

2 Normative references ..... 2

3 Definitions ..... 3

4 Electrical Specifications and Physical Layer ..... 5

    4.1 General ..... 5

    4.2 Electrical isolation ..... 5

    4.3 Topology ..... 5

    4.4 DMX512 ports ..... 5

    4.5 Data link common and grounding topologies..... 6

    4.6 Preferred method of earth grounding data link common ..... 6

    4.7 Primary data link ..... 6

    4.8 Secondary data link ..... 6

        4.8.1 Secondary data link - active use ..... 6

        4.8.2 Secondary data link - passive loop through ports ..... 6

    4.9 Data link termination procedures ..... 6

    4.10 Unpowered devices ..... 6

5 Nominal Operating Characteristics..... 7

    5.1 General ..... 7

    5.2 Chassis in power isolated equipment ..... 7

    5.3 Earth grounding of data link common for transmitters ..... 7

    5.4 Ground referenced transmitters ..... 7

    5.5 Disallowed transmitter topology ..... 8

    5.6 Earth grounding of data link common for receivers ..... 9

    5.8 Disallowed receiver topology ..... 10

    5.9 DMX512 processing devices ..... 11

    5.10 Loading designation ..... 11

6 Protection .....	11
6.1 Minimum protection against interconnection damage .....	11
6.2 Minimum Electro Static Discharge (ESD) protection .....	12
7 Connection Methods.....	12
7.1 Equipment fitted with user accessible pluggable data link connections .....	12
7.1.1 Required connector.....	12
7.1.2 Concession for use of an alternate connector (NCC DMX512-A) .....	12
7.2 Equipment intended for fixed installation with internal connections to the data link.....	12
7.3 IEC 60603-7 8-position modular connectors .....	13
8 Data protocol .....	13
8.1 Format.....	13
8.2 Slot format.....	13
8.3 Break.....	14
8.4 Mark after break.....	14
8.5 START code .....	14
8.5.1 NULL START code .....	14
8.5.2 Dimmer class data .....	14
8.5.3 Other START codes.....	15
8.5.4 START code processing .....	15
8.6 Maximum number of data slots.....	15
8.7 Minimum number of data slots.....	16
8.8 Defined line state between slots .....	16
8.9 Defined line state between data packets (Mark Before Break) .....	16
8.10 Break-to-Break spacing .....	16
8.11 Timing Diagram - data+ .....	16
9 Receiver Performance.....	18
9.1 Rejection of Improperly framed slots .....	18
9.2 Loss of data tolerance / Resumption of acceptance of data.....	18
9.3 Receiver performance at maximum refresh rate .....	18
9.4 Packet processing latency .....	18
10 Marking and Disclosures .....	19
10.1 Identification.....	19
10.2 DMX512 port marking.....	19
10.3 Data line termination marking.....	19
10.4 Ground / Isolation marking.....	19
10.5 Required disclosures and markings.....	20
10.5.1 Portable products and products fitted with external pluggable data link connectors.....	20
10.5.2 Equipment intended for fixed installation with internal connections to the data link.....	20

10.5.3 Loss of data handling procedure.....	20
10.5.4 Packet processing latency .....	20
10.5.5 NULL START Code functionality .....	20
10.5.6 Slot footprint .....	20
Annex A - Non Preferred (Alternate) topologies (Normative).....	21
A1 Isolated transmitters .....	21
A2 Non-isolated receivers.....	22
A3 Grounded Receivers.....	23
A4 Earth grounding of data link common for floating devices .....	24
Annex B (Normative) - Enhanced DMX512.....	26
B1 General.....	26
B2 Summary of Enhanced Function Topologies .....	26
B3 Identification of data protocols for Enhanced DMX512 .....	26
B3.1 EF1 Half Duplex DMX512 - Bidirectional use of the primary data link .....	27
B3.2 EF2 - Full duplex DMX512.....	27
B3.3 EF3 Half duplex on the second data link .....	28
B3.4 EF4 Protocols that use the primary and the secondary data links in ways not covered above ..	28
B3.5 Additional electrical requirements.....	28
Annex C (Normative) - Higher Protection Levels – “DMX512-A Protected” .....	29
Annex D (Normative) - Reserved Alternate START Codes .....	30
D1 Reserved Alternate START Codes .....	30
D2 ASC text packet.....	30
D3 ASC test packet.....	31
D4 UTF-8 text packet.....	31
D5 System Information Packet (SIP) Alternate START Code .....	31
D5.1 Application .....	31
D5.2 SIP format.....	31
D5.3 SIP checksum pointer.....	31
D5.4 Control bit field.....	32
D5.5 Checksums.....	33
D5.6 SIP Sequence number .....	33
D5.7 Originating universe.....	33
D5.8 DMX512 processing level.....	33
D5.9 Software version .....	33
D5.10 Packet lengths .....	33
D5.11 Number of packets .....	33
D5.12 Manufacturer ID.....	33
D5.13 Packet history .....	33

---

---

D5.14 SIP Checksum .....	34
Annex E (Normative) - Alternate START Code, Manufacturer ID, and Enhanced Functionality Registration .....	35
E1 Alternate START Code Registration Policy: 1 - 255 decimal (01 - FF hexadecimal) .....	35
E2 Authorized use.....	35
E3 Reserved Alternate START Codes .....	35
E4 Requests for Registration of New START Codes .....	35
E4.1 Number of Alternate START Codes per entity .....	35
E4.2 Selection of the Alternate START Code value and Manufacturer ID .....	35
E5 Requirements for registration of an EF protocol .....	35
E6 Documentation Register .....	35
E6.1 Documentation for use of Alternate START Codes.....	35
E6.2 Maintenance and Publication.....	35
E6.3 Supplemental documentation .....	36
E7 Ownership.....	36

## Foreword

*(This foreword contains no requirements and is not part of E1.11.)*

This Standard describes a method of digital data transmission between controllers and controlled lighting equipment and accessories, including dimmers and related equipment. This Standard is intended to provide for interoperability at both communication and mechanical levels with controllers made by different manufacturers.

There are five normative annexes in this Standard. These address extensions of the base standard and are considered part of the Standard, which means that when an extension described in an Annex is implemented, compliance with the annex is mandatory. However, a product compliant with the Standard can be manufactured without implementing these annexes.

The original version of the DMX512 Standard was developed in 1986 by the Engineering Commission of the United States Institute for Theatre Technology, Inc. (USITT). Minor revisions were made in 1990. DMX512 has gained international acceptance throughout the entertainment industry, even though USITT is not formally accredited as a standards making body. The earlier versions of this Standard covered only data used by dimmers. In practice this Standard has been used by a wide variety of devices; this version recognizes this fact.

In 1998, it became evident that additional updates to the Standard were necessary and formal recognition through an internationally recognized standards organization was required. USITT issued a Call for Comments in order to solicit recommendations for changes to the Standard. At the same time, USITT transferred maintenance of DMX512 to ESTA's ANSI-accredited Technical Standards Program, now operating as ESTA's Technical Standards Program.

A Task Group established under the TSP's Control Protocols Working Group acted on the proposals received in response to the Call for Comments. The primary goal was to make editorial updates to DMX512 appropriate for current times, including the addition of technical features while maintaining a balance with backward compatibility. Many proposals, while technically innovative, could not be accepted because their implementation would not have been backward compatible and would have immediately rendered obsolete most of the installed base of equipment.

In 2004, as a result of the actions taken on those proposals and subsequent development under the *Policies and Procedures* of the ESTA Technical Standards Program, E1.11-2004 was approved as an American National Standard. Despite being an American National Standard, development has had strong international participation and support.

Beginning in 2007, based on comments and requests from users and manufacturers, minor revisions were made to E1.11-2004 and submitted to the public for review and comment. These changes included defining one of the reserved Alternate START Codes for UTF-8 text packets, a note emphasizing refresh timings, and removal of the informative PICS (Protocol Implementation Compliance Statement) clauses. The PICS clauses were simply a summary of the mandatory requirements of the standard, but often had to employ language that used double negatives and led to confusion about some requirements. The 2008 edition was the result of those revisions to the 2004 edition. This edition is a reaffirmation of the 2008 edition.

## 1 General

### 1.1 Scope

This Standard describes a method of digital data transmission between controllers and controlled equipment as described in Clause 1.4 and accessories, including dimmers. It covers electrical characteristics, data format, data protocol, and connector types.

This Standard is intended as a guide for:

1. Equipment manufacturers and system specifiers who wish to integrate systems of lighting equipment and accessories, including dimmers, with controllers made by different manufacturers.
2. Equipment manufacturers seeking to implement a standard digital transmission protocol in their lighting control and accessory products.
3. System specifiers and designers to gain detailed information about allowed connectors and allowed system topologies.

This standard is not intended to replace existing protocols other than USITT DMX512 and DMX512/1990. Cable requirements and premises wiring are not within the scope of this Standard.

Equipment compliant with this Standard will be marked DMX512-A or USITT DMX512-A in order to distinguish it from the previous (informally recognized) versions. Unless otherwise noted, references to DMX512 in this document refer to DMX512-A.

### 1.2 Overview and Architecture

This standard uses a simple asynchronous eight-bit serial protocol consisting of an untyped byte stream produced by standard UARTs. The physical media, not addressed in this document, is normally, but not exclusively, a two-pair cable, with each pair serving as a data link. The media is driven using ANSI/TIA/EIA-485-A-1998 (hereafter referred to as EIA-485-A in this document) balanced data transmission techniques. Physical connection at devices is via 5-pin XLR connectors or by "hard-wiring" to terminals. Restricted use of connectors other than 5-pin XLR is allowed if certain conditions apply (see clause 7).

Data on the primary data link is sent in packets of up to 513 slots. The first slot is a START Code, which defines the information in the subsequent slots in the packet. The interoperability of equipment complying with the Standard is largely due to the use of the NULL START Code by transmitting devices. Proper function is dependent upon the receiving device(s) extracting the pertinent data for processing from each transmitted packet.

Data on the secondary data link, when implemented, is used for a variety of purposes, all of which fall within the scope of EIA-485-A. Identification of the required circuit topology for any particular implementation is defined.

### 1.3 Appropriate uses of this Standard

Equipment designers and general users of this Standard will recognize that this Standard is intended to fill only a limited range of uses. Other standards will be more appropriate for different uses. This is not intended to support a venue wide network that can carry data for lighting, sound, and scenery mechanization, for example, all on the same wire.

This Standard does not require mandatory error checking of NULL START Code packets. There is no assurance that all DMX512 packets will be delivered. It is common practice for merge units and protocol converters to drop packets that they cannot process in a timely manner. The 1986 and 1990 versions of the USITT Standard specifically allow dimmers to ignore packets that they cannot process in a timely manner, and this concept survives in this version of the Standard with respect to NULL START Code packets.