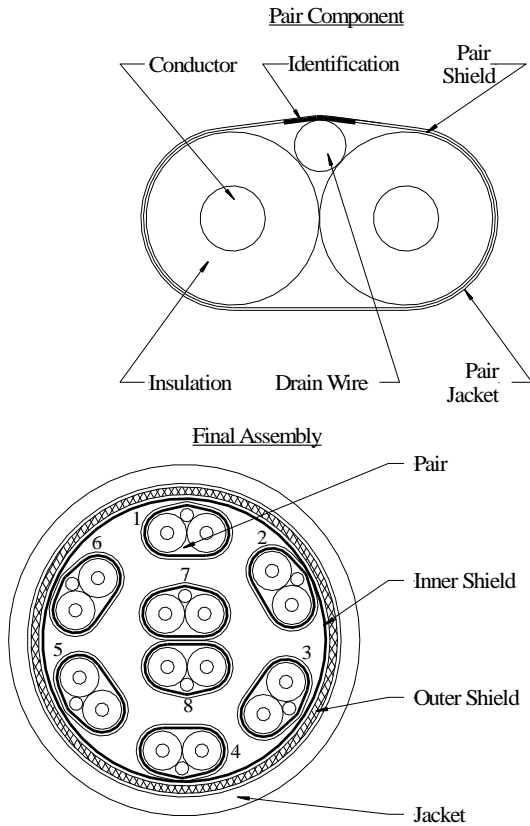


# 8 PAIR 32 AWG 25G TURBOTWIN™ CABLE

## PROPRIETARY DESIGN

THIS CONFIDENTIAL DOCUMENT HAS BEEN RELEASED WITH THE UNDERSTANDING THAT IT SHALL NOT BE SENT TO ANYONE OTHER THAN THE ORIGINAL INTENDED RECIPIENT WITHOUT PRIOR AUTHORIZATION FROM TE CONNECTIVITY/MADISON CABLE



## CONSTRUCTION

### Pair Component

**Conductor:** 32 AWG Solid Silver Plated Copper, 0.008 Inch [0.20 mm] Diameter  
**Insulation:** 0.0091 Inches [0.235 mm] of Polyolefin, 0.0262 inch [0.67 mm] Diameter, Color – Natural  
**Pair:** 2 Singles Laid Flat and Parallel  
**Drain Wire:** 33 AWG Solid Tin Plated Copper, 0.0071 Inch [0.18 mm] Diameter  
**Pair Shield:** Aluminum/Polyester Tape, Aluminum Side Facing In 25% Overlap  
**Pair Jacket:** Polyester Tape  
**Pair Diameter:** 0.0339 x 0.056 Inches [0.86 x 1.42 mm] Nominal  
**Pair Identification:** Pairs sequentially numbered on entire length of pair

### Final Assembly

**Core:** 8 Pairs (#1-8) Cabled Together  
**Inner Shield:** Aluminum/Polyester Tape, Aluminum Side Facing Out, 25% Overlap  
**Outer Shield:** 40 AWG Tin Plated Copper Braid, 85% Coverage  
**Jacket:** 0.027 Inches [0.68 mm] of Flexible PVC, Color – Black  
**Diameter:** 0.220 Inches [5.60 mm] Nominal  
**Print Legend (White Ink):** "MADISON CABLE {Mfg.LocationCode}"<sup>1</sup>  
(UL) TYPE CL2 75°C 32 AWG C(UL) TYPE CM 75°C  
TurboTwin™ 25G 104-1988 SUBSTANCE COMPLIANT 2011/65/EU  
{Date Code}"<sup>2</sup>

<sup>1</sup> Manufacturing location code, if applicable

<sup>2</sup> Date Code is a 4-digit code with the first two digits identifying the calendar week and the last two identifying the calendar year of manufacturing. Example – 0206 for cable manufactured in the second week of January 2006.

## ELECTRICAL CHARACTERISTICS

**Differential Impedance:** 100 ± 5 Ohms @ TDR

**Time Delay Skew (Within Pair):** 30 ps/2 m Nominal

**Attenuation (SDD21):**

Frequency (GHz)	Attenuation <sup>3</sup> (dB/2 m Maximum)
5.00	9.03
7.00	10.70
10.00	12.90
12.89	15.00
15.00	17.10
20.00	22.30
25.00	27.40

**Return Loss(SDD11):**  $\leq -19.5 + 2 \sqrt{f}$  for 0.01 GHz < f < 4.1 GHz,  
 $\leq -13.66 + 14 \log^*(f/5.5)$  for 4.1 GHz < f < 19 GHz

**Return Loss(SDD22):**  $\leq -19.5 + 2 \sqrt{f}$  for 0.01 GHz < f < 4.1 GHz,  
 $\leq -13.66 + 14 \log^*(f/5.5)$  for 4.1 GHz < f < 19 GHz

**SCD21- SDD21:**  $\leq -12$  for 0.01 GHz < f < 12.89 GHz,  
 $\leq -29 + (29/22)*f$  for 12.89 GHz < f < 15.7 GHz,  
 $\leq -8.3$  for 15.7 GHz < f < 19 GHz

**Pair-to-Pair IL Variation:**  $\leq 0.5$  dB @ 12.89 GHz (abs(Max IL – Min IL)) among all pairs

### Qualification Testing:

**Mutual Capacitance<sup>4</sup>:** 14 pF/ft [45.9 pF/m] Nominal

**Insertion Loss Deviation:** ILDmin = -0.8  
ILDmax = +0.8

**Pair to Pair Differential Insertion Loss Variation:**

**SCD11:**  $\leq -24 + (20/25.78)*f$  from 10 MHz to 12.89 GHz,  
 $\leq -17 + (6/25.78)*f$  from 12.89 GHz to 19 GHz



### Madison Cable

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## REVISION HISTORY

2	01/12/18	EL	Revised Electricals
3	03/28/18	EL	Revised Electricals, add Physical Characteristics
4	04/11/18	EL	Add drain wire
5	06/29/18	EL	Revised Electricals
6	08/17/18	EL	Revised Electrical and Mech Characteristics
7	10/27/21	EL	Revised CM Certification and Print Legend

**Spec Number:** 104-1988

**Part Number:** 16PA2LF014

**Customer:**

**Customer #:**

**Prepared By:** E. Liu

**Reviewed By:** W. Yao

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Users should evaluate the suitability of this product for their application. Contact factory for latest revision of specification. Tyco Electronics reserves the right to make changes in materials or processing, which do not affect compliance with any specification, without notification to the Buyer.

## 8 PAIR 32 AWG 25G TURBOTWIN™ CABLE

**SCD22:**  $\leq -24 + (20/25.78) * f$  from 10 MHz to 12.89 GHz,

$\leq -17 + (6/25.78) * f$  from 12.89 GHz to 19 GHz

**Far-End Crosstalk:**  $\leq -50$  dB from 10 MHz to 19 GHz

**NEXT Crosstalk:**  $\leq -50$  dB from 10 MHz to 19 GHz

**Pair to Pair Differential Insertion Loss Variation:**

Differential Insertion Loss Stability to remain  $< 1$  dB @ 12.89 GHz through out the life of the product.

**Conductor DC Resistance**<sup>4</sup>: 0.16 Ohms/ft [530 Ohms/km] Nominal @ 20°C

<sup>3</sup> Tested/Functional to 25 GHz on a 2meter length

<sup>4</sup> Values are for information purposes only.

### PHYSICAL CHARACTERISTICS

**Temperature Rating:**

**Operating:** -10°C to +60°C

**Transport/Installation:** -25°C to +80°C

### MECHANICAL CHARACTERISTICS

**Product Validation Test:** Per QS-500A (Exhibit)

### INDUSTRY SAANDARDS

**IEEE 802.3bj:** Physical Layer Specifications and Management Parameters for 100 Gb/s Operation Over Backplanes and Copper Cables.

**InfiniBand™ Architecture (Extended Data Rate):** 1X = 25 Gb/s

4X = 100 Gb/s

### SAFETY CERTIFICATION

**UL Listing:** Type CL2 as specified in Article 725 of the National Electrical Code

**C(UL)Listing:** Type CM as specified in Article 800 of the National Electrical Code

**RoHS II Material Compliance:** In accordance with EU Directive 2011/65/EU for the Restriction of Hazardous Substances



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