

PURENET-U5350-00

(Part No.: U5350-04-RXX2, U5350-04-PXX2)

for

4 PAIR UTP CABLES  
(ENHANCED CATEGORY 5E)

( Ref.: UL 444, ANSI/TIA/EIA-568B.2 & ISO/IEC 11801, IEC 61156-5 )

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**1. SCOPE**

This specification is based on the specifications of UL 444, ANSI/TIA/EIA-568-B.2 and ISO/IEC 11801 and covers the requirements for unshielded twisted pair (UTP) cables of 100Ω, enhanced category 5e (En-Cat.5E).

- Applicable cable size & type : 4 pairs, PVC sheath (CMR, CMP)

**2. CABLE CONSTRUCTION**

**2.1 CONDUCTOR**

The conductors shall be solid, annealed and bare copper with a diameter of AWG24 and minimum acceptable diameter shall be 0.485mm.

**2.2 INSULATION**

Each conductor shall be insulated with solid high density polyethylene(CMR grade) and FEP(Flourinated Ethylene Propylene)(CMP grade) or other material to meet the requirements of this specification.

The insulation shall be uniform and shall not have any defects.

The diameter over the insulation shall be maximum 1.22mm.

**2.3 COLOR CODE**

The color code of insulation shall be shown as Table 1.

Table 1. Color code of insulation

Pair No.	a-wire		b-wire	
	Base	Stripe	Base	Stripe
1	White	Blue	Blue	-
2	White	Orange	Orange	-
3	White	Green	Green	-
4	White	Brown	Brown	-

\* The stripe marking(CMR grade) or ring marking(CMP grade) shall be applied on the white color.

**2.4 CORE ASSEMBLY**

Two insulated conductors shall be twisted into a pair.

Four twisted pairs shall be assembled into a cable core.

**2.5 SHEATH**

The flame retardant PVC compound shall be applied over the cable core.  
The sheath shall be uniform and shall not have any defects.  
The thickness of sheath and cable diameter shall be shown as Table 2.

Table 2. Thickness of sheath and cable diameter

Grade	Sheath thickness (Nominal, mm)	Cable diameter (Nominal, mm)
CMR	0.45	4.9
CMP	0.35	4.7

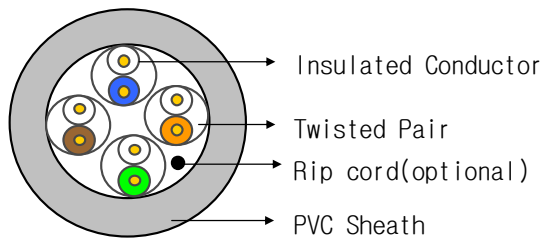


Fig. 1. Cross-sectional Diagram of cable

3. ELECTRICAL CHARACTERISTICS

3.1 ELECTRICAL CHARACTERISTICS

Characteristics		Unit	En-Cat.5e				
DC Resistance		$\Omega$ /100m	Max. 9.38				
DC Resistance Unbalance		%	Max. 5.0				
Mutual Capacitance		nF/100m	Max. 5.6				
Capacitance Unbalance (Pair to Ground)		pF/100m	Max. 330				
Insulation resistance		M $\Omega$ -100m	Min. 500				
Dielectric Strength		DC KV/sec.	2.5 / 2				
Impedance - Zo	1 ~100MHz	$\Omega$	100 $\pm$ 15				
Return Loss (RL)		dB/100m	RL (Min.)	Att. (Max.)	NEXT (Min.)	PSNEXT (Min.)	
Attenuation (Att.)	1MHz		20.0	2.0	68.3	65.3	
	4MHz		23.0	4.1	59.3	56.3	
Pair-to-Pair Near End	10MHz		25.0	6.5	53.3	50.3	
	16MHz		25.0	8.2	50.2	47.2	
Cross Talk (NEXT)	20MHz		25.0	9.3	48.8	45.8	
	31.25MHz		23.6	11.7	45.9	42.9	
Power Sum Near End	62.5MHz		21.5	17.0	41.4	38.4	
	100MHz		20.1	22.0	38.3	35.3	
Cross Talk (PSNEXT)	125MHz		19.4	24.9	33.8	30.8	
	200MHz		18.0	32.4	30.8	27.8	
	250MHz		17.3	36.9	29.3	26.3	
	300MHz		16.8	41.0	28.1	25.1	
	350MHz		16.3	44.9	27.1	24.1	
Pair-to-Pair Equal Level Far End Cross Talk (ELFEXT)			dB/100m	ELFEXT (Min.)	PSELFEXT (Min.)		
	1MHz	63.8		60.8			
	4MHz	51.8		48.8			
	Power Sum Equal Level Far End	10MHz		43.8	40.8		
		16MHz		39.7	36.7		
	Cross Talk (PSELFEXT)	20MHz		37.8	34.8		
		31.25MHz		33.9	30.9		
		62.5MHz		27.9	24.9		
		100MHz		23.8	20.8		
		125MHz		21.9	18.9		
		200MHz		17.8	14.8		
	Propagation Delay	1MHz		ns/100m	Max. 570		
10MHz		Max. 545					
100MHz		Max. 538					
350MHz		Max. 536					
Propagation Delay Skew	1MHz	ns/100m	Max. 45				
	10MHz		Max. 45				
	100MHz		Max. 45				
	350MHz		Max. 45				

\*Above 100MHz are information only.

### 3.2 MEASUREMENTS PRECAUTION

All electrical characteristics specified in clause 3.1 shall be tested on one sample length of 100 meter or greater removed from the package .

## **4. PHYSICAL PROPERTIES**

### 4.1 INSULATION

The unaged tensile strength and elongation, measured in accordance with clause 7.3 of UL 444 shall be,

minimum 16.5MPa and 300%, respectively (HDPE material).

minimum 17.2MPa and 200%, respectively (FEP material).

The heat-aged tensile strength and elongation, measured in accordance with clause 7.3 of UL 444 shall be minimum 75% and 75% of un-aged, respectively.

The insulation shrinkage, measured in accordance with clause 7.4 of UL 444, shall not exceed 9.5mm.

The insulation cold bend, measured in accordance with clause 7.5 of UL 444, shall show no visible cracks.

### 4.2 SHEATH

The unaged tensile strength and elongation, measured in accordance with clause 7.8 of UL 444 shall be minimum 17.24MPa and 100%, respectively.

The heat-aged tensile strength and elongation, measured in accordance with clause 7.8 of UL 444 shall be minimum 85% and 50% of un-aged, respectively.

### 4.3 CABLE COLD BEND

All cables shall meet the requirements of clause 7.10 of UL 444.

### 4.4 FLAME REQUIREMENTS

A cable marked CMR shall comply with the riser test specified in UL 1666.

A cable marked CMP shall comply with NFPA 262.

## 5. MARKING OF CABLES

The cable shall be marked on the sheath to designate the transmission performance and/or others (If ordered by purchaser).

The marking shall be repeated through the outer sheath clearly.

The marking details are as follows,

- CMR Grade

(LENGTH MARKING) PureNet E335253 UTP 4PR 24AWG CMR 75C C(UL)US  
Listed (UL) Category 5E TIA/EIA-568B.2 350MHz Listed (ETL) MM/YY

- CMP Grade

(LENGTH MARKING) PureNet E335253 UTP 4PR 24AWG CMP 75C C(UL)US  
Listed (UL) Category 5E TIA/EIA-568B.2 350MHz Listed (ETL) MM/YY

\*MM/YY: Manufactured Month/Year (each 2 digits)

## 6. PACKING

Each length of completed cable shall be wound on box.

The standard delivery length is 305m.

## 7. MARKING ON TAG OR BOX

The following details shall be marked on a tag affixed to each shipping length of cable in a box, or directly printed on the outer surface of the box.

- 1) AWG size and number of pairs
- 2) Flame test classification
- 3) Manufacturer name and Logo
- 4) Length
- 5) Others

- End of Specification -