## **Detailed Specifications & Technical Data**



ENGLISH MEASUREMENT VERSION

### 2L28050 Flat - Gray Ribbon 2L280XX Series

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For more Information please call

1-800-Belden1



#### **General Description:**

Belden<sup>s</sup> 1.00mm pitch gray ribbon cable was designed for the disk drive market where the 2.00mm IDC connector is widely used.

Physical Characteristics (Overall)	
Conductor AWG:	
# Conductors AWG Stranding Conductor Material	
50         28         7x36         TC - Tinned Copper	
Total Number of Conductors:	50
Conductor Spacing Center to Center:	.039 +/003
Conductor Spacing Outside Center to Outside Center:	1.929 +/012
Insulation Insulation Material:	
Insulation Material Wall Thickness (in.)	
PVC - Polyvinyl Chloride 0.00	
Insulation Resistance:	>10,000 Megaohms
Duter Shield	
Outer Shield Material:	
Outer Shield Material	
Unshielded	
Overall Cable	
Overall Nominal Thickness:	.035 +/003
Overall Nominal Width:	1.964 +/012
lechanical Characteristics (Overall)	
Operating Temperature Range:	-40°C To +105°C
Bulk Cable Weight:	57 lbs/1000 ft.
pplicable Specifications and Agency Compliance	e (Overall)
Applicable Standards & Environmental Programs	
UL Rating:	AWM Style 2651
CSA Rating:	IA
EU Directive 2011/65/EU (ROHS II):	Yes
EU CE Mark:	Yes
EU Directive 2000/53/EC (ELV):	Yes
EU Directive 2002/95/EC (RoHS):	Yes
EU RoHS Compliance Date (mm/dd/yyyy):	07/01/2005
EU Directive 2002/96/EC (WEEE):	Yes
EU Directive 2003/11/EC (BFR):	Yes
CA Prop 65 (CJ for Wire & Cable):	Yes
MII Order #39 (China RoHS):	Yes
Flame Test	
UL Flame Test:	VW-1
CSA Flame Test:	FT1
Plenum/Non-Plenum	
Plenum (Y/N):	No

Plenum (Y/N):

No

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### 2L28050 Flat - Gray Ribbon 2L280XX Series

Carceloration         Conversion         Con	Surface Printing (Overall)						
Sec: Pairedian functional sectors of the sector of the		worall)					
event       Television       Television		verall)					
(a)       (a)         (b)       (a)         (b)       (b)         (c)       (c)         (c)							
com         Com           com							
The function of the fun							
Part of the state of							
• The Train of th							
Image: Constructions       Conductor to Con		t)					
Total Paralleliand Conductor to Conductor           Description Capacitance (Pfill) (1 + the (CS) 3 - 5 (1 + the (CS)							
Pic of the second of	@ 1 MHz (GSG) .16						
	Nom. Capacitance Conductor to Cor	nductor:					
ⓐ 1 Mikr (cSS) a 6         ⓑ 1 d 5             ⓑ 1 Mikr (cSS) d Popagation             ⓑ 2 Mikr (SS) d Popagation             ⓑ 2 Mikr (SS) d Popagation		/ft)					
Second Velocity of Propagation         Being Velocity of Propagation         Veninal Usespe:         Delay (rist)         Delay (rist)         Maximum Velocity of Propagation         Reservation         Veninal Velocity of Propagation         Delay (rist)         Maximum Velocity         Delay (rist)         Maximum Velocity         Veninal Velocity         Provide Velocity         Velocity     <							
Period       0         Intra Diely:       0         Intra NURT:       0         Scientificione File       0	@ 1 MHz (GSG) 16.5						
φ           torm low list           torm low list      <	Nominal Velocity of Propagation:						
Descriptional Design and	Description VP (%)						
Display range       Display range<	69						
I Ar NSFT. (SSG)         tem. Conductor DC Resistanci:         DCR @ 2070 (DMI/000 FT MAX:         Tem. (Mint Amantania (Mi/00 ft))         1         2	lominal Delay:						
Line Conductor De Resistance:         Define Conductor De Resistance:         Define Conductor De Resistance:         Define Conductor (Define)         Res - Other Max - Define Conductor (Define)							
PC 2000 COMMINDENT HAXX.         Standard Commentation (dBr100 ft)         10       3.3         10       3.3         10       3.3         10       3.3         10       3.3         10       3.3         10       3.3         10       3.3         10       3.3         10       3.3         10       3.3         10       3.1         10       3.1         10       1.1.6         10       1.1.6         10       1.1.6         10       1.3.1         10       1.4.2         10       1.4.2         10       1.4.2         10       1.4.2         10       1.4.2         10       1.4.2         10       1.4.2         10       1.4.2         10       1.4.2         10       1.4.2         10       1.4.2         11       1.4.2         12       2.000 VRIS         Parameter Rength (Statter	1.47 NS/FT. (GSG)						
PC 2000 COMMINDENT HAXX.         Standard Commentation (dBr100 ft)         10       3.3         10       3.3         10       3.3         10       3.3         10       3.3         10       3.3         10       3.3         10       3.3         10       3.3         10       3.3         10       3.3         10       3.1         10       3.1         10       1.1.6         10       1.1.6         10       1.1.6         10       1.3.1         10       1.4.2         10       1.4.2         10       1.4.2         10       1.4.2         10       1.4.2         10       1.4.2         10       1.4.2         10       1.4.2         10       1.4.2         10       1.4.2         10       1.4.2         11       1.4.2         12       2.000 VRIS         Parameter Rength (Statter	Nom Conductor DC Resistance:						
B2 OHMS/100 FT. MAX         Vom. Attenuation:         Frag. (Mirg. 3 a inclusion (BP/00 ft) in							
Server Atternuation:         Image: Server Atternuation (dB1/00 ft.)         10       3.3         10       3.3         10       3.3         10       1.5							
Freq. (MH2)         Attenuation (dB*100 ft.)           0         3.3           0         9.8           0         9.8           0         9.8           0         9.8           0         9.8           0         11.6           0         12.3           0         14.2           0         16.4           100         17.8           101         101           101         101           101							
10       3.3         20       5.1         30       7         40       8.3         50       9.8         50       9.8         50       11.6         70       13.1         80       14.2         90       16.4         100       17.6         300 V RMS         Max. Operating Voltage - UL:         Voltage         300 V RMS         Max. Recommended Current:         Current         1 Amp per conductor @ 20'C         Delectric Withstand Voltage:       2.000 V RMS         Typical Unbalanced Crosstalk:         Description       4.3         10 ft. sample length 3       4.3         3.8       2.5         tots: CoSC=Ground-Signal-Ground Mode         colarity Identification (Overall)         Pelarity Identification:       BLACK POLARITY STRIPE ON #1 CONDUCTOR         tu Ups and Colors:       BLACK POLARITY STRIPE ON #1 CONDUCTOR		<b>F</b> + \					
20       5.1         30       7         40       6.3         50       9.8         60       11.6         70       13.1         80       14.2         90       16.4         100       17.6         300       14.2         90       16.4         100       17.6         300       14.2         900       16.4         100       17.6         300       7.8         200 V RMS         Ask constants:         Cypical Ubbalanced Crostalk:         Description       Note Rise Rise Time (NS) (MHz) Near End % (MHz)         Description       10.8         10.15. sample length 3       3.8         3.8       3.4         10.15. sample length 5       3.8         3.8       3.4         10.15. sample length 7       3.6         Store Ground-Signal-Ground Mode							
30         7           40         8.3           50         9.8           60         11.6           70         13.1           80         16.4           100         17.5           80         16.4           100         17.5           80         16.4           100         17.5           300 V RMS         Values 0.0           Max. Recommended Current:         Current           Current         Current           1 Amp per conductor @ 20°C         2,000 V RMS           Delectric Withstand Voltage:         2,000 V RMS           Typical Unbalanced Crosstalk:         2,000 V RMS           Toff. sample length 3         4.3           10 ft. sample length 3         3.8           3.8         3.4           10 ft. sample length 7         3.6           2.5         Colorestill           Receive Conductor @ 200           Motes:         CSG=Ground-Signal-Ground Mode           Colarity Identification (Overall)           Painty Identification:         BLACK POLARITY STRIPE ON #1 CONDUCTOR           Uty Site of Colores:		_					
40         8.3           50         9.8           60         11.6           70         13.1           80         14.2           90         16.4           100         77.6           Wax Operating Voltage - UL:         Voltage           Voltage         30.0 V RMS           Wax Recommended Current:         2.000 V RMS           Max Recommended Current:         2.000 V RMS           Tamp per conductor @ 20°C         2.000 V RMS           Description         Puise Resommended Voltage:           2.000 V RMS         2.000 V RMS   Propical Unbalanced Crosstalk:           Description         Puise Resommende           10 ft. sample length 3         4.3           10 ft. sample length 7         3.6           10 ft. sample length 7         3.6           10 ft. sample length 7         3.6           Volarity Identification (Overall)         Placer Konde Mode           Polarity Identification:         BLACK POLARITY STRIPE ON #1 CONDUCTOR           Vut Ups and Colors:         Elack Polarity Stripe ON #1 CONDUCTOR		_					
initial         initial <t< td=""><td></td><td>-</td><td></td><td></td><td></td><td></td><td></td></t<>		-					
60       11.6         70       13.1         80       14.2         90       16.4         100       17.6         100       17.6         Watege       000 Y RMS         Watege <td< td=""><td></td><td>-</td><td></td><td></td><td></td><td></td><td></td></td<>		-					
80       14.2         90       16.4         10.0       17.6         Wax. Operating Voltage - UL:       Voltagi         300 V RMS       Value         Value       Value         300 V RMS       Value         Wax. Recommended Current:       Value         1 Amp per conductor @ 20°C       Value         Dielectric Withstand Voltage:       2,000 V RMS         Poleating Unbalanced Crosstalk:       Value         Description       Puise Rise Time (NS) (MHz) Near End % (MHz) Far End % (MHz)         Top Control In Puise Rise Time (NS) (MHz) Near End % (MHz) Far End % (MHz)         Nample length 3       4.3         3.8       3.4         10 ft. sample length 5       3.8         3.6       2.5         Notes: GSG=Ground-Signal-Ground Mode         Value:       Scale Colone:         Polarity Identification:       BLACK POLARITY STRIPE ON #1 CONDUCTOR         Wat Ups and Colors:       Item #       Puta Na Pola Na Color Notes Item Desc	60 11.6	_					
90         16.4           100         17.6           Wax. Operating Voltage - UL:         Voltage           300 V RMS         Voltage           Wax. Recommended Current:         Voltage of the second of the s	70 13.1	_					
100         17.6           Wax. Operating Voltage - UL:           Voltage 300 V RMS           Wax. Recommended Current:           Current 1 Amp per conductor @ 20°C           Dielectric Withstand Voltage:         2,000 V RMS           Typical Unbalanced Crosstalk:           Poscription         Pulse Rise Time (NS) (MHz) Near End % (MHz) Far End % (MHz) 10 ft. sample length 3         4.3         6.7           10 ft. sample length 3         4.3         6.7         10	80 14.2						
Max. Operating Voltage - UL: Voltage 300 V RMS Max. Recommended Current: Current 1 Amp per conductor @ 20°C Dielectric Withstand Voltage: 2,000 V RMS Typical Unbalanced Crosstalk: Description Vulse Rise Time (NS) (MHz) Near End % (MHz) Far End % (MHz) 10 ft. sample length 3 4.3 6.7 10 ft. sample length 5 3.8 3.4 10 ft. sample length 7 3.6 2.5 Notes: GSG=Ground-Signal-Ground Mode Totarity Identification: ELACK POLARITY STRIPE ON #1 CONDUCTOR Polarity Identification: ELACK POLARITY STRIPE ON #1 CONDUCTOR tut Ups and Colors:	90 16.4						
Voltage 300 V RMS         Wax. Recommended Current:         Current 1 Amp per conductor @ 20°C         Delectric Withstand Voltage:       2,000 V RMS         Typical Unbalanced Crosstalk:         Poscription       Pulse Rise Time (NS) (MHz). Near End % (MHz)         10 ft. sample length 3       4.3         10 ft. sample length 5       3.8         10 ft. sample length 7       3.6         2.5       Corrent 3.6         Notes: GSG=Ground-Signal-Ground Mode         BLACK POLARITY STRIPE ON #1 CONDUCTOR         Polarity Identification:         BLACK POLARITY STRIPE ON #1 CONDUCTOR	100 17.6						
Voltage 300 V RMS         Wax. Recommended Current:         Current 1 Amp per conductor @ 20°C         Delectric Withstand Voltage:       2,000 V RMS         Typical Unbalanced Crosstalk:         Poscription       Pulse Rise Time (NS) (MHz). Near End % (MHz)         10 ft. sample length 3       4.3         10 ft. sample length 5       3.8         10 ft. sample length 7       3.6         2.5       Corrent 3.6         Notes: GSG=Ground-Signal-Ground Mode         BLACK POLARITY STRIPE ON #1 CONDUCTOR         Polarity Identification:         BLACK POLARITY STRIPE ON #1 CONDUCTOR	Max. Operating Voltage - UL:						
Max. Recommended Current: Current 1 Amp per conductor @ 20°C Dielectric Withstand Voltage: 2,000 V RMS Typical Unbalanced Crosstalk: Description Pulse Rise Time (NS) (MHz) Near End % (MHz) Far End % (MHz) 10 ft. sample length 3 4.3 6.7 10 ft. sample length 7 3.6 2.5 Notes: GSG=Ground-Signal-Ground Mode Notes: GSG=Ground-Signal-Ground Mode Polarity Identification (Overall) Polarity Identification: BLACK POLARITY STRIPE ON #1 CONDUCTOR tut Ups and Colors:							
Current       1 Amp per conductor @ 20°C         Delectric Withstand Voltage:       2,000 V RMS         System       2000 V RMS         Description       Pulse Rise Time (NS) (MHz) Near End % (MHz) Far End % (MHz)         10 ft. sample length 3       4.3       6.7         10 ft. sample length 5       3.8       3.4         10 ft. sample length 7       3.6       2.5         otes: GSG=Ground-Signal-Ground Mode         BLACK POLARITY STRIPE ON #1 CONDUCTOR         et ut Ups and Colors:         tetm #       Putup       Ship Weight       Color       Notes       Item Desc	300 V RMS						
Current       1 Amp per conductor @ 20°C         Dielectric Withstand Voltage:       2,000 V RMS         Synical Unbalanced Crosstalk: <ul> <li></li></ul>	Max. Recommended Current:						
Dielectric Withstand Voltage:       2,000 V RMS         Typical Unbalanced Crosstalk: <ul> <li></li></ul>							
Poscription Pulse Rise Time (NS) (MHz) Near End % (MHz)   10 ft. sample length 3 6.7   10 ft. sample length 5 3.8   10 ft. sample length 7 3.6   Otess (Overall) Notes: GSG=Ground-Signal-Ground Mode   olarity Identification (Overall)   Polarity Identification:   BLACK POLARITY STRIPE ON #1 CONDUCTOR   ut Ups and Colors:   tem #   Putup Ship Weight   Color   Notes   tem Desc	1 Amp per conductor @ 20°C						
Poscription Pulse Rise Time (NS) (MHz) Near End % (MHz)   10 ft. sample length 3 6.7   10 ft. sample length 5 3.8   10 ft. sample length 7 3.6   Otess (Overall) Notes: GSG=Ground-Signal-Ground Mode   olarity Identification (Overall)   Polarity Identification:   BLACK POLARITY STRIPE ON #1 CONDUCTOR   ut Ups and Colors:   tem #   Putup Ship Weight   Color   Notes   tem Desc							
Description       Pulse Rise Time (NS) (MHz)       Near End % (MHz)       Far End % (MHz)         10 ft. sample length       3       6.7         10 ft. sample length       5       3.8       3.4         10 ft. sample length       7       3.6       2.5         Notes: GSG=Ground-Signal-Ground Mode         BLACK POLARITY STRIPE ON #1 CONDUCTOR         Polarity Identification:       BLACK POLARITY STRIPE ON #1 CONDUCTOR         Rutu Ups and Colors:         Notes: Mute with the mature of the ma	-		2,000 V R	MS			
10 ft. sample length       3       4.3       6.7         10 ft. sample length       5       3.8       3.4         10 ft. sample length       7       3.6       2.5    Notes: GSG=Ground-Signal-Ground Mode           Polarity Identification (Overall)       Polarity Identification:       BLACK POLARITY STRIPE ON #1 CONDUCTOR         Putup Sand Colors:       Item #       Putup       Ship Weight       Color       Notes       Item Desc							
10 ft. sample length       5       3.8       3.4         10 ft. sample length       7       3.6       2.5         Notes: GSG=Ground-Signal-Ground Mode         Polarity Identification (Overall)         Polarity Identification:       BLACK POLARITY STRIPE ON #1 CONDUCTOR         BLACK POLARITY STRIPE ON #1 CONDUCTOR         Polarity Identification:         BLACK POLARITY STRIPE ON #1 CONDUCTOR         Polarity Ups and Colors:         Item #       Putup       Ship Weight       Color       Notes       Item Desc				VIHZ)			
10 ft. sample length     7     3.6     2.5       Notes: GSG=Ground-Signal-Ground Mode       Polarity Identification (Overall)       Polarity Identification:     BLACK POLARITY STRIPE ON #1 CONDUCTOR       Putu Ups and Colors:     Ship Weight     Color     Notes     Item Desc							
Notes: GSG=Ground-Signal-Ground Mode       Polarity Identification (Overall)       Polarity Identification:       BLACK POLARITY STRIPE ON #1 CONDUCTOR       Putup Ship Weight       Color       Notes:	· · ·						
Notes: GSG=Ground-Signal-Ground Mode         Polarity Identification (Overall)         Polarity Identification:       BLACK POLARITY STRIPE ON #1 CONDUCTOR         Putu Ups and Colors:         Item #       Putup       Ship Weight       Color       Notes       Item Desc			2.0				
Notes: GSG=Ground-Signal-Ground Mode         Polarity Identification (Overall)         Polarity Identification:       BLACK POLARITY STRIPE ON #1 CONDUCTOR         Putu Ups and Colors:         Item #       Putup       Ship Weight       Color       Notes       Item Desc	otes (Overall)						
olarity Identification (Overall)         Polarity Identification:         BLACK POLARITY STRIPE ON #1 CONDUCTOR         ut Ups and Colors:         Item #       Putup         Ship Weight       Color       Notes         Item Desc		und Mede					
Polarity Identification:     BLACK POLARITY STRIPE ON #1 CONDUCTOR       ut Ups and Colors:     Each Polarity Stripe On #1 Conduction       tem #     Putup     Ship Weight     Color     Notes     Item Desc	Notes: GSG=Ground-Signal-Gro						
ut Ups and Colors: tem # Putup Ship Weight Color Notes Item Desc	olarity Identification (Overa	all)					
tem # Putup Ship Weight Color Notes Item Desc			BLACK PO	DLARITY STRIP	E ON #1 CONDU	JCTOR	
Item # Putup Ship Weight Color Notes Item Desc	ut Ups and Colors:						
	-	Putun	Shin Weight	Color	Notes	Item Desc	
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## **Detailed Specifications & Technical Data**



#### 2L28050 Flat - Gray Ribbon 2L280XX Series

Revision Date: 10-15-2012 Revision Number: 2

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