



## Description:

20 AWG stranded (7x28) .038" tinned copper conductors, polyethylene insulation, Beldfoil® (100% coverage) plus a tinned copper braid shield (55% coverage), sunlight-resistant PVC jacket.

## Physical Characteristics (Overall)

### Conductor

#### AWG:

# Pairs	AWG	Stranding	Conductor Material	Dia. (in.)
1	20	7x28	TC - Tinned Copper	.038

### Insulation

#### Insulation Material:

Insulation Material
PE - Polyethylene

### Outer Shield

#### Outer Shield Material:

Layer #	Outer Shield Trade Name	Type	Outer Shield Material	Coverage (%)
1	Beldfoil®	Tape	Aluminum Foil-Polyester Tape	100
2		Braid	TC - Tinned Copper	55

#### Outer Shield Drain Wire AWG:

AWG	Stranding	Drain Wire Conductor Material
20	7x28H	TC - Tinned Copper

### Outer Jacket

#### Outer Jacket Material:

Outer Jacket Material
PVC - Polyvinyl Chloride

### Overall Cabling

Overall Nominal Diameter: 0.238 in.

### Pair

#### Pair Color Code Chart:

Number	Color
1	Clear & Blue

## Mechanical Characteristics (Overall)

Operating Temperature Range:	-40°C To +80°C
UL Temperature Rating:	80°C (UL AWM Style 2464)
Bulk Cable Weight:	36 lbs/1000 ft.
Max. Recommended Pulling Tension:	48 lbs.
Min. Bend Radius (Install)/Minor Axis:	2.500 in.

## Applicable Specifications and Agency Compliance (Overall)

### Applicable Standards & Environmental Programs

CEC/C(UL) Specification: CM

AWM Specification:	UL Style 2464 (300 V 80°C)
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):	01/01/2005
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
PMSHA Specification:	P-7K-SC-182141
Customer Part Number Reference Specification:	Allen Bradley P/N 1770-CD

### Flame Test

UL Flame Test:	UL1685 UL Loading
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### Suitability

Sunlight Resistance:	Yes
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### Plenum/Non-Plenum

Plenum Number:	89463
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## Electrical Characteristics (Overall)

### Nom. Characteristic Impedance:

Impedance (Ohm)

78

### Nom. Inductance:

Inductance (µH/ft)

0.12

### Nom. Capacitance Conductor to Conductor:

Capacitance (pF/ft)

19.7

### Nom. Capacitance Cond. to Other Conductor & Shield:

Capacitance (pF/ft)

36

### Nominal Velocity of Propagation:

VP (%)

66

### Nominal Delay:

Delay (ns/ft)

1.54

### Nom. Conductor DC Resistance:

DCR @ 20°C (Ohm/1000 ft)

9.5

### Nominal Outer Shield DC Resistance:

DCR @ 20°C (Ohm/1000 ft)

4.1

### Nom. Attenuation:

Freq. (MHz) Attenuation (dB/100 ft.)

1	0.6
10	2.1
50	5.0
100	7.5
200	11.0

400	16.0
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**Max. Operating Voltage - UL:**

<b>Voltage</b>
300 V RMS (UL AWM Style 2464)

**Other Electrical Characteristic 1:**

DC Resistance Unbalanced: .77 Ohms/1000 ft Max

**Put Ups and Colors:**

Item #	Putup	Ship Weight	Color	Notes	Item Desc
9463 J22U1000	1,000 FT	38.000 LB	BLUE, STRONG		78 OHM TWINAX
9463 J22U500	500 FT	19.500 LB	BLUE, STRONG		78 OHM TWINAX
9463 J22100	100 FT	4.400 LB	BLUE, STRONG		78 OHM TWINAX
9463 J221000	1,000 FT	39.000 LB	BLUE, STRONG	C	78 OHM TWINAX
9463 J22500	500 FT	18.000 LB	BLUE, STRONG		78 OHM TWINAX
9463 J226000	6,000 FT	234.000 LB	BLUE, STRONG	C Z	78 OHM TWINAX
9463 0011000	1,000 FT	39.000 LB	BROWN		78 OHM TWINAX
9463 00110000	10,000 FT	380.000 LB	BROWN	C Z	78 OHM TWINAX
9463 0016000	6,000 FT	234.000 LB	BROWN	C Z	78 OHM TWINAX
9463 0031000	1,000 FT	39.000 LB	ORANGE	C	78 OHM TWINAX
9463 00310000	10,000 FT	380.000 LB	ORANGE	C Z	78 OHM TWINAX
9463 0036000	6,000 FT	234.000 LB	ORANGE	C Z	78 OHM TWINAX
9463 0071000	1,000 FT	39.000 LB	VIOLET	C	00 OHM TWINAX
9463 0076000	6,000 FT	234.000 LB	VIOLET	C Z	78 OHM TWINAX

**Notes:**

C = CRATE REEL PUT-UP.

Z = FINAL PUT-UP LENGTH MAY VARY (+ OR -) 10% FOR SPOOLS OR REELS AND(+ OR -) 5% FOR UNREEL CARTONS FROM LENGTH SHOWN.

## Industrial Data Solutions® — Industrial Twinax

### Belden® Blue Hose® Selection Guide for PLC and DCS Applications

Part No.	Description	Specifications
9463	<b>Blue Hose Standard Data Highway Cable</b> A Standard Data Highway Cable that is sometimes referred to as Blue Hose. Designed to be used in light industrial environments. Available in Blue, Brown or Orange up to 10,000 ft. special lengths.	1-pair, 20 AWG stranded (7x28) tinned copper, polyethylene insulation (color coded Blue, Clear), Beldfoil® + 55% tinned copper braid and drain wire, Blue sunlight-resistant PVC jacket. Nominal diameter: .238".
3072F	<b>600V Data Highway Cable — UL Type TC</b> A DataTray® cable designed for cable tray use in industrial applications. Cable can occupy same tray or conduit as 600V power cables.	1-pair, 18 AWG stranded (7x26) tinned copper, flame-retardant polyolefin insulation (color coded Blue, White), Beldfoil + 55% tinned copper braid and drain wire, Blue sunlight-resistant PVC jacket. Nominal diameter: .324". UL-1277 600V TC/PLTC/ITC/CMG.
9463F	<b>High-Flex Cable</b> A highly flexible version of the standard Blue Hose cable. The cable also has heavier braid coverage for better noise immunity.	1-pair, 20 AWG stranded (42x36) tinned copper, polyethylene insulation (color coded Blue, Clear), Beldfoil + 85% tinned copper braid, Blue sunlight-resistant PVC jacket. Nominal diameter: .243".
YR28826*	<b>Dual Blue Hose Cable</b> Dual Data Highway/Remote I/O cable has two Twinax pairs individually shielded with an overall braid. Designed for use in daisy chain applications or applications requiring two Blue Hose cables.	2-pair, 20 AWG stranded (7x28) tinned copper, polyethylene insulation (color coded Blue, Clear), each pair Beldfoil shielded (1 pair Blue tape and 1 pair Green tape), 85% tinned copper braid and drain wire, Blue PVC jacket. Nominal diameter: .382".
YC39151*	<b>Dual Armored Data Highway Cable</b> Features two twinax pairs individually shielded with an overall braid, an inner PVC jacket, aluminum interlocked armor, with an outer PVC jacket. Designed for use in daisy chain applications or applications requiring two Blue Hose cables, with the extra mechanical protection and electrical shielding provided by the armor.	2-pair, 20 AWG stranded (7x28) tinned copper, polyethylene insulation (color coded Blue, Clear), each pair Beldfoil shielded, 55% tinned copper braid and drain wire, Blue PVC inner jacket, aluminum interlocked armor, Blue sunlight-resistant PVC outer jacket. Nominal diameter: .820".
9463DB	<b>Gel-Filled Direct Burial Cable</b> A gel-filled Blue Hose cable featuring a low-density polyethylene (LDPE) jacket. Especially suited for high-moisture environments and burial applications.	1-pair, 20 AWG stranded (7x28) tinned copper, polyethylene insulation (color coded Blue, Clear), Beldfoil + 55% tinned copper braid and drain wire, CoreGuard® flooding compound, Blue sunlight-resistant low density polyethylene jacket. Nominal diameter: .240".
89463	<b>Plenum Cable</b> A plenum, 200°C grade cable that is suitable for installations where high and low temperatures, as well as corrosive environments, are encountered.	1-pair, 20 AWG stranded (7x28) tinned copper, FEP insulation (color coded Blue, Clear), Beldfoil + 76% tinned copper braid and drain wire, Blue FEP jacket. Nominal diameter: .203".
YR28764*	<b>Thick-Wall, Heavy-Duty Cable — UL Type PLTC</b> A rugged, heavy-duty cable specially designed for abusive environments. A .069" thick jacket provides extra protection against cuts and abrasion.	1-pair, 20 AWG stranded (7x28) tinned copper, polyethylene insulation (color coded Blue, Clear), Beldfoil + 55% tinned copper braid and drain wire, Blue sunlight-resistant PVC jacket. Nominal diameter: .380".
YR41104*	<b>Low Smoke, Zero Halogen Cable</b> For applications concerned with smoke emissions, toxicity and electronic component corrosion.	1-pair, 20 AWG stranded (7x28) tinned copper, polyethylene insulation (color coded Blue, Clear), Beldfoil + 55% tinned copper braid and drain wire, Blue Haloarrest® jacket. Nominal diameter: .256".
129463	<b>Aluminum Interlocked Armor Blue Hose Cable</b> Features interlocked aluminum armor combined with a PVC jacket and is an ideal alternative to conduit installation. Provides both mechanical protection and electrical shielding. Up to 25 Data Highway cables can be bundled under one sheath.	1-pair, 20 AWG stranded (7x28) tinned copper, polyethylene insulation (color coded Blue, Clear), Beldfoil + 55% tinned copper braid and drain wire, Blue PVC inner jacket, aluminum interlocked armor, Blue PVC sunlight-resistant outer jacket. Nominal overall diameter: .563".
139463	<b>Steel Interlocked Armor Blue Hose Cable</b> Features interlocked galvanized steel armor combined with a PVC jacket. Provides mechanical protection and electrical shielding, as well as prevention against the low-frequency 60 Hz magnetic noise from power lines. Up to 25 cables can be bundled under one sheath.	1-pair, 20 AWG stranded (7x28) tinned copper, polyethylene insulation (color coded Blue, Clear), Beldfoil + 55% tinned copper braid and drain wire, Blue PVC inner jacket, steel interlocked armor, Blue sunlight-resistant outer PVC jacket. Nominal overall diameter: .563".
189463	<b>Continuously Corrugated Aluminum Armor Blue Hose Cable</b> Features continuously corrugated aluminum armor combined with a PVC jacket. Provides mechanical protection, electrical shielding and is impervious to moisture.	1-pair, 20 AWG stranded (7x28) tinned copper, polyethylene insulation (color coded Blue, Clear), Beldfoil + 55% tinned copper braid and drain wire, Blue PVC inner jacket, continuously corrugated aluminum armor, Blue sunlight-resistant PVC outer jacket. Nominal overall diameter: .500".
YR29565*	<b>Colored Blue Hose</b> When your application calls for multiple Blue Hose cables you can rest assured that Belden has the solution. This special construction is available in Red, Yellow, Green, White or Pink.	1-pair, 20 AWG stranded (7x28) tinned copper, polyethylene insulation (color coded Blue, Clear), Beldfoil + 55% tinned copper braid and drain wire, sunlight-resistant PVC jacket. Nominal diameter: .238".

\*Custom made product. Minimum order quantity may apply.

# Industrial Data Solutions® — Industrial Twinax

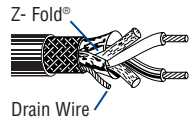
## Blue Hose® Cables

Description	Part No.	UL NEC/ C(UL) CEC Type	Standard Lengths		Standard Unit Weight		Conductor (stranding) Diameter Nom. DCR	Nominal Core OD		Shielding Materials Nom. DCR	Nominal OD		Nom. Imp. (Ω)	Nom. Vel. of Prop.	Nominal Capacitance		Nominal Attenuation		
			Ft.	m	Lbs.	kg		Inch	mm		Inch	mm			pF/Ft.	pF/m	MHz	dB/100 Ft.	dB/100m

**78 Ohm • 20 AWG** Stranded (7x28) .038" TC Conductors • Beldfoil® (100% Coverage) + TC Braid Shield (55% Coverage) • TC Drain Wire

**Polyethylene Insulation • Blue Sunlight-resistant PVC Jacket** (Color Code: Clear, Blue)

<b>Blue Hose</b>	<b>9463</b>	NEC:	100	30.5	4.2	1.9	20 AWG	.154	3.91	Beldfoil	.238	6.05	78	66%	19.7	64.6	1	.6	2.0
UL AWM		CM CL2	U-500	U-152.4	18.5	8.4	(7x28)			+55%							10	2.1	6.9
Style 2464		CEC:	500	152.4	18.5	8.4	.038"			TC Braid							50	5.0	16.4
(300V 80°C)		CM	U-1000	U-304.8	37.0	16.8	Tinned			4.1Ω/M'							100	7.5	24.6
			1000 <sup>▲</sup>	304.8	37.0	16.8	Copper			13.4Ω/km							200	11.0	36.1
			6000 <sup>▲†</sup>	1828.8	222.0	100.9	9.5Ω/M'										400	16.0	52.5
			10000 <sup>▲†</sup>	3048.0	370.0	168.0	31.0Ω/km												



CPE jacket optional.

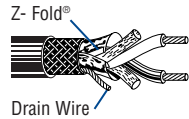
Allen-Bradley P/N 1770-CD • P-7K-SC-182141-MSHA\*

<sup>▲</sup>1000 ft. and 6000 ft. put-ups also available in Brown, Orange or Purple.  
<sup>†</sup>10000 ft. put-up available in Brown or Orange only.

<sup>†</sup>Final put-up length may vary ±10% from length shown.

**Polyethylene Insulation • Blue Sunlight-resistant LDPE Jacket** (Color Code: Clear, Blue)

<b>Flooded Direct Burial Blue Hose</b>	<b>9463DB</b>	—	1000	304.8	33.0	15.0	20 AWG	.154	3.91	Beldfoil	.240	6.10	78	66%	19.7	64.6	1	.6	2.0
300V 80°C			5000	1524.0	155.0	70.4	(7x28)			+55%							10	2.1	6.9
							.038"			TC Braid							50	5.0	16.4
							Tinned			4.1Ω/M'							100	7.5	24.6
							Copper			13.4Ω/km							200	11.0	36.1
							9.5Ω/M'										400	16.0	52.5
							31.0Ω/km												



Allen-Bradley P/N 1770-CD

**78 Ohm • 20 AWG** Stranded (42x36) .038" TC Conductors • Overall Beldfoil (100% Coverage) + TC Braid Shield (85% Coverage)

**Polyethylene Insulation • Blue Sunlight-resistant PVC Jacket** (Color Code: Clear, Blue)

<b>High-Flex Blue Hose</b>	<b>9463F</b>	NEC:	1000	304.8	42.0	19.1	20 AWG	.154	3.91	Beldfoil	.243	6.17	78	66%	19.7	64.6	1	.6	2.0
300V 60°C		CM CL2	5000	1524.0	205.0	93.1	(42x36)			+85%							10	2.1	6.9
		CEC:					.038"			TC Braid							50	5.0	16.4
		CM					Tinned			5.0Ω/M'							100	7.5	24.6
							Copper			6.4Ω/km							200	11.0	36.1
							9.5Ω/M'										400	16.0	52.5
							31.0Ω/km												

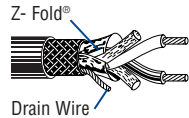


Allen-Bradley P/N 1770-CD • P-7K-SC-182141-MSHA\*

**78 Ohm • 20 AWG** Stranded (7x28) .038" TC Conductors • Overall Beldfoil (100% Coverage) + TC Braid Shield (76% Coverage) • Drain Wire

**Plenum • FEP Insulation • Blue FEP Jacket** (Color Code: Clear, Blue)

<b>High Temperature Blue Hose</b>	<b>89463</b>	NEC:	1000	304.8	34.0	15.4	20 AWG	.151	3.83	Beldfoil	.203	5.16	78	69%	19.7	64.6	1	.6	2.0
300V 200°C		CMP CL2P	2500	762.0	90.0	40.9	(7x28)			+76%							10	2.1	6.9
		CEC:					.038"			TC Braid							50	5.0	16.4
		CMP FT6					Tinned			4.1Ω/M'							100	7.5	24.6
							Copper			13.4Ω/km							200	11.0	36.1
							9.5Ω/M'										400	16.0	52.5
							31.0Ω/km												



Allen-Bradley P/N 1770-CD

DCR = DC Resistance • FEP = Fluorinated Ethylene-propylene • LDPE = Low-density Polyethylene • TC = Tinned Copper

\*Pennsylvania Department of Environmental Resources and United States Mine Safety and Health Administration Certification.