

NP 243

DeviceBus® Cables

Belden® introduces two new DeviceBus cables with TPE Jackets along with adding Red jackets to some cables to designate DeviceNet™ Safety.



Belden Offers An Extensive Line Of DeviceBus Cables For DeviceNet Applications

About DeviceNet

DeviceNet is an ODVA device-level communication protocol for industrial automation. A DeviceNet network is an open, low-cost system link between industrial devices such as sensors and actuators and higher-level devices such as programmable logic controllers and PCs. DeviceNet networks use the network-independent protocol called Common Industrial Protocol (CIP) to provide its control, configure and data collection capabilities. Additional flexibility is offered via the network's ability to work with devices from multiple vendors.

Other DeviceNet system benefits include:

- Eliminates the expense associated with hardwiring and traditional "homerun" cabling practices
- Gives users the ability to use device-level diagnostics
- Allows users to configure many products in real time; they can even replace devices on a live network
- Offers a boost in overall system performance (because DeviceNet is able to provide both event-based and timer-based options).

Features of DeviceNet Networks

A DeviceNet network can support up to 64 nodes and the network end-to-end distance is variable, based on network speed. At 125 Kb/s, the maximum network distance is up to 500m. At the highest speed, 500 Kb/s, the maximum network distance is up to 100m. The bus topology is a trunkline-dropline linear bus.

A feature unique to DeviceNet is the ability to add a power tap at any point (with a maximum power pair ampacity of 8 amps), allowing for redundant power supplies.

The Red-jacketed cables designate DeviceNet Safety. The DeviceNet Safety standard allows users to place safety devices on the same network as their standard controls.

DeviceNet typically uses data and power conductors from the same cable, such as Product No. 3082A. In the DeviceBus line, Product No. 3082KP is the exception to the data/power pair rule since it has four power conductors.

DeviceBus cables are typically designated as either Class 1 (600V) or Class 2 (300V) "Thick," "Thin," or "Mid" cable and they can be used for either trunk or drop applications, dependent on the system speed and overall end-to-end distance. (See Communications Rate Table.)

DeviceNet Communications Rate Table

Communications Rate	Maximum Distance													
	7897A		7896A		7900A		3082A		3082F		1345F		3083A	
	Ft.	m	Ft.	m	Ft.	m	Ft.	m	Ft.	m	Ft.	m	Ft.	m
125 Kbps	1640	500	1378	420	328	100	1640	500	1640	500	1640	500	1640	500
250 Kbps	820	250	656	200	328	100	820	250	820	250	820	250	820	250
500 Kbps	328	100	328	100	328	100	328	100	328	100	328	100	328	100

Communications Rate	Maximum Distance									
	3084A		3084F		1346F		3085A		7895A	
	Ft.	m	Ft.	m	Ft.	m	Ft.	m	Ft.	m
125 Kbps	328	100	328	100	328	100	328	100	984	300
250 Kbps	328	100	328	100	328	100	328	100	820	250
500 Kbps	328	100	328	100	328	100	328	100	328	100

Features and Benefits

Belden DeviceBus cables provide the following features and benefits:

- Fully compliant with ODVA specifications
- TC-ER and PLTC-ER ratings are applicable on certain cables
- Data and power functionality in one cable
- Reduced cable and installation costs
- Noise resistant
- New Red jackets on products designating DeviceNet Safety
- Fully compliant with ROHS Directive



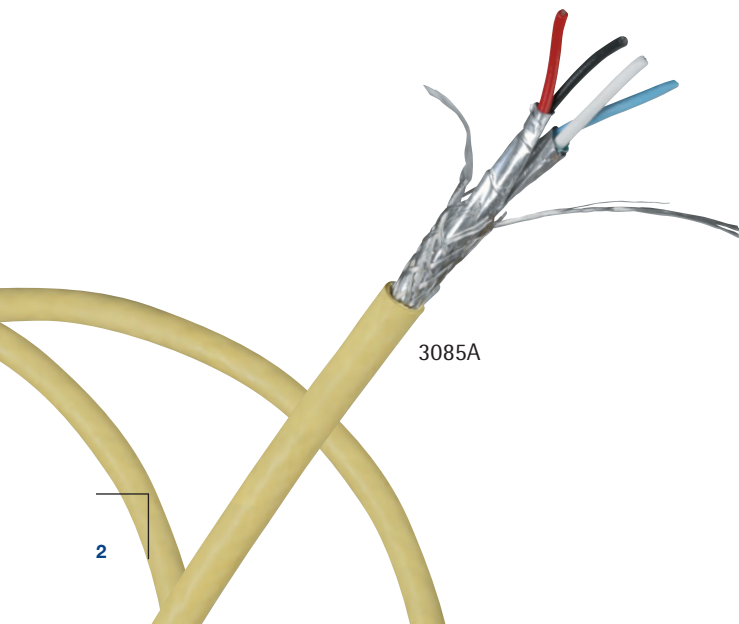
Most DeviceBus cables have heavy-duty, sunlight- and oil-resistant PVC-jacketed constructions. Two Class 2 cables – Product Nos. 3083A and 3085A – are offered with Yellow CPE jackets for extremely harsh industrial environments.

New Products, 1345F and 1346F with TPE jackets, provide flexible performance at low temperatures, along with excellent oil, solvent and abrasion resistance in harsh environments.

In the paired cables, the power pairs have PVC or PVC/nylon insulation; the data pairs have either FEP or F-R Polypropylene insulation. Class 1 Product Nos. 7896A, 7897A and 7900A are designated for cable tray use and are able to occupy the same tray or conduit as 600-Volt cables.

Class 2 Thick Product Nos. 3082A, 3082F, 1345F and 3083A are designated for power limited tray use and are able to occupy the same tray or conduit as 300-Volt cables.

Belden has long been a leader in the manufacture of DeviceNet cables and in conjunction with its active membership in ODVA, Belden spearheads the development of many innovative cabling solutions. Be sure to contact Belden about other DeviceNet cabling options.





3085A

Industrial Data Solutions® – Industrial Data

DeviceBus for ODVA DeviceNet



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

600V Class 1 Thick • 15 and 18 AWG Stranded Tinned Copper • 100% Individually Foil Shielded + Overall 65% TC Braid • Drain Wire*

PVC/Nylon Insulation (Power) • FEP Insulation (Data) • Gray Sunlight/Oil-resistant PVC Jacket																		
High Velocity Thick 600V 75°C 	7897A 	NEC:	500	152.4	69.5	31.6	(2)15 AWG TC	100%	Power Pair:	.460	11.70	—						
		TC-ER	1000	304.8	135.0	61.3	(19x28)	Individual	Red & Black									
		CEC:	2000	609.6	274.0	124.4	3.6Ω/M'	Foil										
		FT1					11.8Ω/km	+ Overall										
						(2)18 AWG TC	65%	Data Pair:			Data:							
						(19x30)	TC Braid	Blue & White	120	75%	12.0	39.4	.125	.13	.43			
						6.9Ω/M'	1.8Ω/M'											
						22.6Ω/km	5.9Ω/km											

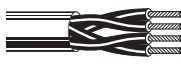

* 18 AWG stranded (19x30) tinned copper drain wire.
Meter marks on jacket to aid users in installation.
Allen-Bradley P/N 1485 CPI-A

600V Class 1 ODVA Cable V • 16 and 18 AWG Stranded Tinned Copper • 100% Individually Foil Shielded + Overall 65% TC Braid • Drain Wire*

PVC/Nylon Insulation (Power) • F-R Polypropylene Insulation (Data) • Gray Sunlight/Oil-resistant PVC Jacket																		
600V 75°C 	7896A 	NEC:	500	152.4	89.0	40.4	(2)16 AWG TC	100%	Power Pair:	.525	13.34	—						
		TC-ER	1000	304.8	168.0	76.2	(19x29)	Individual	Red & Black									
		CEC:	2000	609.6	340.0	154.2	4.9Ω/M'	Foil										
		FT1					16.1Ω/km	+ Overall										
						(2)18 AWG TC	65%	Data Pair:			Data:							
						(19x30)	TC Braid	Blue & White	120	64%	14.7	48.2	.125	.13	.43			
						6.9Ω/M'	1.8Ω/M'											
						22.6Ω/km	5.9Ω/km											

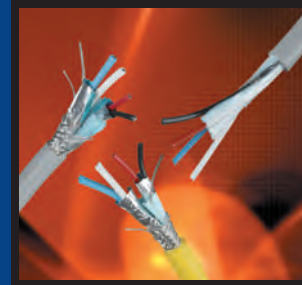
* 16 AWG stranded (19x29) tinned copper drain wire.
C(UL) AWM I/II A/B
Meter marks on jacket to aid users in installation.
Allen-Bradley P/N 1485 CPI-A

600V Class 1 ODVA Cable IV • 16 and 18 AWG Stranded Tinned Copper • Unshielded

PVC/Nylon Insulation (Power) • F-R Polypropylene Insulation (Data) • Gray Sunlight/Oil-resistant PVC Jacket																		
Drop 600V 75°C 	7900A 	NEC:	500	152.4	51.0	23.1	(2)16 AWG TC	Unshielded	Power Pair:	.430	10.92	—						
		TC-ER	1000	304.8	105.0	47.6	(19x29)		Red & Black									
		CEC:					4.9Ω/M'											
		FT1					16.1Ω/km											
						(2)18 AWG TC		Data Pair:			Data:							
						(19x30)		Blue & White	120	64%	14.7	48.2	.125	.13	.43			
						6.9Ω/M'												
						22.6Ω/km												

C(UL) AWM I/II A/B
Meter marks on jacket to aid users in installation.
Allen-Bradley P/N 1485 CPI-C

DCR = DC Resistance • FEP = Fluorinated Ethylene-propylene • F-R = Flame-retardant • TC = Tinned Copper • TC-ER = Tray Cable Exposed Run per 2005 NEC Article 336.




Industrial Data Solutions – Industrial Data

DeviceBus for ODVA DeviceNet

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

300V Class 2 Thick • 15 and 18 AWG Stranded Tinned Copper • 100% Individually Foil Shielded + Overall 65% TC Braid • Drain Wire*

PVC Insulation (Power) • FPE Insulation (Data) • Gray or Red Sunlight/Oil-resistant PVC Jacket

Thick 75°C 	3082A NEC: CMG, PLTC-ER CEC: CMG FT4	500 †	152.4	71.0	32.2	(2)15 AWG TC (19x28)	100%	Power Pair:	.480	12.19	—						
		1000	304.8	138.0	62.6	3.6Ω/M'	Individual Foil	Red & Black									
		2000 †	609.6	280.0	127.0	11.8Ω/km	+ Overall 65%	Data Pair:		Data:	120	75%	12.0	39.	.125	.13	.43
						22.6Ω/km	TC Braid 1.8Ω/M'	Blue & White							.500	.25	.82
					6.9Ω/M'	5.9Ω/km								1.000	.36	1.18	


* 18 AWG stranded (19x30) tinned copper drain wire.

† 500 ft. and 2000 ft. put-ups available in Gray only.

UL AWM 20201(600V) • C(UL) AWM I/II A

Meter marks on jacket to aid users in installation.

Allen-Bradley P/N 1485 CPI-A

High-Flex Thick 75°C 	3082F NEC: CMG, PLTC-ER CEC: CMG FT4	500 †	152.4	72.5	32.9	(2)15 AWG TC (65x33)	100%	Power Pair:	.480	12.19	—						
		1000	304.8	140.0	63.5	3.6Ω/M'	Individual Foil	Red & Black									
		2000 †	609.6	284.0	128.8	11.8Ω/km	+ Overall 65%	Data Pair:		Data:	120	75%	12.0	39.4	.125	.13	.43
						22.6Ω/km	TC Braid 1.8Ω/M'	Blue & White							.500	.25	.82
					6.9Ω/M'	5.9Ω/km								1.000	.36	1.18	

* 18 AWG stranded (65x36) tinned copper drain wire.


† 500 ft. and 2000 ft. put-ups available in Gray only.

UL AWM 20201(600V) • C(UL) AWM I/II A

Meter marks on jacket to aid users in installation.

Allen-Bradley P/N 1485 CPI-A

PVC Insulation (Power) • FPE Insulation (Data) • Gray Sunlight/Oil/Weld Splatter-resistant TPE Jacket

High-Flex Thick Oil Res I 75°C 	1345F NEC: CMG, PLTC-ER CEC: CMG FT4	1000	304.8	135.0	61.3	(2)15 AWG TC (65x33)	100%	Power Pair:	.480	12.19	—						
						3.6Ω/M'	Individual Foil	Red & Black									
						11.8Ω/km	+ Overall 65%	Data Pair:		Data:	120	75%	12.0	39.4	.125	.13	.43
						22.6Ω/km	TC Braid 1.8Ω/M'	Blue & White							.500	.25	.82
					6.9Ω/M'	5.9Ω/km								1.000	.36	1.18	

* 18 AWG stranded (65x36) tinned copper drain wire.

Operating temperature: -30°C to +75°C

UL AWM 20201(600V) • C(UL) AWM I/II A

Meter marks on jacket to aid users in installation.

DCR = DC Resistance • FPE = Foam Polyethylene • PLTC-ER = Power Limited Tray Cable Exposed Run per 2005 NEC Article 725 • TC = Tinned Copper



Industrial Data Solutions — Industrial Data
DeviceBus for ODVA DeviceNet

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

300V Class 2 Thick • 15 and 18 AWG Stranded Tinned Copper • 100% Individually Foil Shielded + Overall 65% TC Braid • Drain Wire*

PVC Insulation (Power) • FPE Insulation (Data) • Yellow CPE Jacket

Thick 75°C	3083A	NEC:	1000	304.8	135.0	61.3	(2)15 AWG TC	100%	Power Pair:	.475	12.07	—						
		CMG, PLTC	2000	609.6	278.0	126.1	(19x28)	Individual	Red & Black									
		CEC:					3.6Ω/M'	Foil										
		CMG FT4					11.8Ω/km	+ Overall										
							(2)18 AWG TC	65%	Data Pair:		Data:							
							(19x30)	TC Braid	Blue & White		120	75%	12.0	39.4	.125	.13	.43	
							6.9Ω/M'	1.8Ω/M'							.500	.25	.82	
							22.6Ω/km	5.9Ω/km							1.000	.36	1.18	

* 18 AWG stranded (19x30) tinned copper drain wire.
 Operating temperature: -30°C to +75°C
 Meter marks on jacket to aid users in installation.
 Allen-Bradley P/N 1485 CPI-A

300V Class 2 Thin • 22 and 24 AWG Stranded Tinned Copper • 100% Individually Foil Shielded + Overall 65% TC Braid • Drain Wire*

PVC Insulation (Power) • FPE Insulation (Data) • Gray or Red Sunlight/Oil-resistant PVC Jacket

Thin 75°C	3084A	NEC:	500†	152.4	22.0	10.0	(2)22 AWG TC	100%	Power Pair:	.280	7.11	—						
		CL2 CMG	1000	304.8	45.0	21.3	(19x34)	Individual	Red & Black									
		CEC:	2000†	609.6	96.0	43.6	17.5Ω/M'	Foil										
		CMG FT4					57.4Ω/km	+ Overall										
							(2)24 AWG TC	65%	Data Pair:		Data:							
							(19x36)	TC Braid	Blue & White		120	75%	12.0	39.4	.125	.29	.95	
							28.0Ω/M'	3.2Ω/M'							.500	.50	1.64	
							91.9Ω/km	10.5Ω/km							1.000	.70	2.30	

* 22 AWG stranded (19x34) tinned copper drain wire.
 † 500 ft. and 2000 ft. put-ups available in Gray only.
 C(UL) AWM I/II A
 Meter marks on jacket to aid users in installation.
 Allen-Bradley P/N 1485 CPI-C

High-Flex Thin 75°C	3084F	NEC:	500†	152.4	20.5	9.3	(2)22 AWG TC	100%	Power Pair:	.275	6.99	—						
		CL2 CMG	1000	304.8	45.0	20.4	(154x44)	Individual	Red & Black									
		CEC:	2000†	609.6	90.0	40.9	17.5Ω/M'	Foil										
		CMG FT4					57.4Ω/km	+ Overall										
							(2)24 AWG TC	65%	Data Pair:		Data:							
							(105x44)	TC Braid	Blue & White		120	75%	12.0	39.4	.125	.29	.95	
							28.0Ω/M'	3.2Ω/M'							.500	.50	1.64	
							91.9Ω/km	10.5Ω/km							1.000	.70	2.30	

* 22 AWG stranded (26x36) tinned copper drain wire.
 † Put-ups available in Gray only.
 C(UL) AWM I/II A
 Operating temperature: -30°C to +75°C. Meter marks on jacket to aid users in installation.
 Allen-Bradley P/N 1485 CPI-C

DCR = DC Resistance • FPE = Foam Polyethylene • PLTC = Power Limited Tray Cable • TC = Tinned Copper if conductor, or Tray Cable if NEC rating.

Industrial Data Solutions – Industrial Data

DeviceBus for ODVA DeviceNet

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

300V Class 2 Thin • 22 and 24 AWG Stranded Tinned Copper • 100% Individually Foil Shielded + Overall 65% TC Braid • Drain Wire*

PVC Insulation (Power) • FPE Insulation (Data) • Gray Sunlight/Oil/Weld Splatter-resistant TPE Jacket

High-Flex Thin 75°C Oil Res I	1346F <small>new</small>	NEC:	1000	304.8	45.0	20.4	(2)22 AWG TC (154x44)	100% Individual	Power Pair: .275 6.99									
		CL2 CMG CEC: CMG FT4					17.5Ω/M' 57.4Ω/km	Foil + Overall 65%	Red & Black									
						(2)24 AWG TC (105x44)	TC Braid	Data Pair: Blue & White		Data: 120 75%	12.0	39.4	.125	.29	.95			
						28.0Ω/M' 91.9Ω/km	3.2Ω/M' 10.5Ω/km							.500	.50	1.64		
														1.000	.70	2.30		

* 22 AWG stranded (26x36) tinned copper drain wire.
C(UL) AWM I/II A
Operating temperature: -30°C to +75°C
Meter marks on jacket to aid users in installation.

PVC Insulation (Power) • FPE Insulation (Data) • Yellow CPE Jacket

Thin 75°C	3085A	NEC:	500	152.4	25.0	11.4	(2)22 AWG TC (19x34)	100% Individual	Power Pair: .280 7.11									
		CL2 CMG CEC: CMG FT4	1000	304.8	47.0	21.3	17.5Ω/M' 57.4Ω/km	Foil + Overall 65%	Red & Black									
						(2)24 AWG TC (19x36)	TC Braid	Data Pair: Blue & White		Data: 120 75%	12.0	39.4	.125	.29	.95			
						28.0Ω/M' 91.9Ω/km	3.2Ω/M' 10.5Ω/km							.500	.50	1.64		
														1.000	.70	2.30		

* 22 AWG stranded (19x34) tinned copper drain wire.
Operating temperature: -30°C to +75°C
Meter marks on jacket to aid users in installation.
Allen-Bradley P/N 1485 CPI-C

300V Class 2 ODVA Cable III • 20 and 18 AWG Stranded TC • 100% Individually Foil Shielded + Overall 65% TC Braid • Drain Wire*

PVC Insulation (Power) • FPE Insulation (Data) • Gray Sunlight/Oil-resistant PVC Jacket

Mid 75°C	7895A	NEC:	500	152.4	41.0	18.6	(2)18 AWG TC (19x30)	100% Individual	Power Pair: .378 9.60									
		CMG PLTC CEC: CMG FT4	1000	304.8	84.0	38.1	6.9Ω/M' 22.6Ω/km	Foil + Overall 65%	Red & Black									
						(2)20 AWG TC (19x32)	TC Braid	Data Pair: Blue & White		Data: 120 75%	12.0	39.4	.125	.29	.95			
						10.9Ω/M' 35.8Ω/km	3.2Ω/M' 10.5Ω/km							.500	.50	1.64		
														1.000	.70	2.30		

* 20 AWG stranded (19x32) tinned copper drain wire
UL AWM 20201(600V)
Meter marks on jacket to aid users in installation.

DCR = DC Resistance • FPE = Foam Polyethylene • PLTC = Power Limited Tray Cable • TC = Tinned Copper if conductor, or Tray Cable if NEC rating.