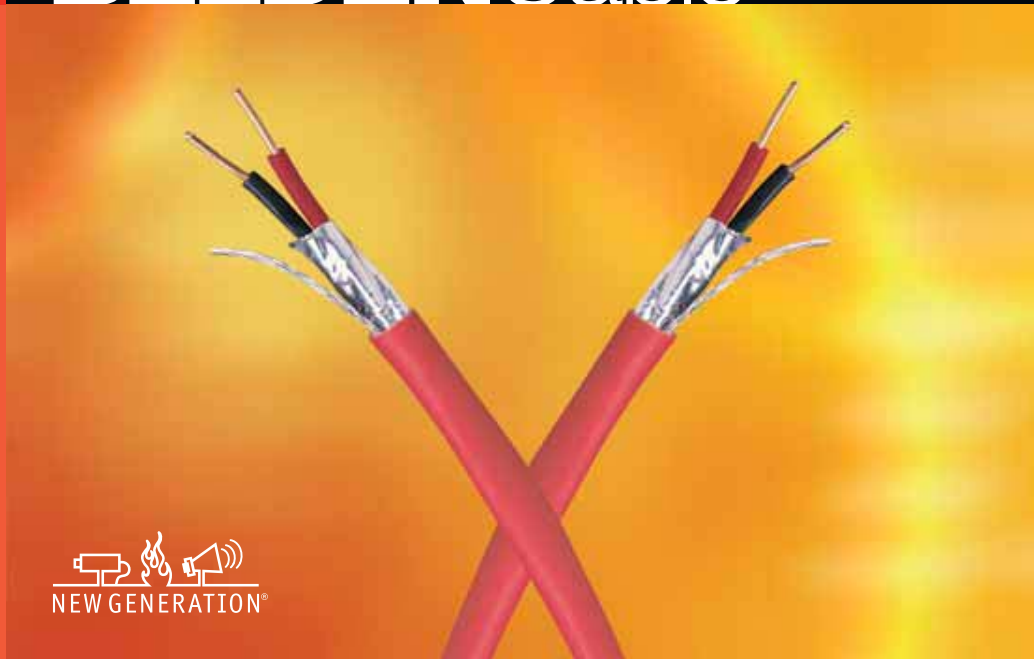
BELDEN Cable™

In case of fire or an emergency evacuation of a high-rise building, Safe-T-Line™ CI and CIC cables help ensure the continued operation of the building's emergency warning systems.



NEW PRODUCT BULLETIN

NP 205

Belden Now Offers a Full Line of New Generation® Safe-T-Line™ Cables for Circuit Integrity, CI-PLTC And Circuit Integrity in Conduit Applications

The NFPA 101® Life Safety Code® – and many local building codes – mandate Emergency Voice/Alarm Communications (EVAC) systems where immediate evacuation is difficult or impossible, such as in high-rise office buildings. EVAC systems provide either live or recorded voice instructions to building occupants in the event of a fire or other emergency. The voice messages are intended to warn occupants of the emergency and, if necessary, guide occupants out of the building in a timely and orderly way.

To do this, EVAC systems must remain operational longer than a total evacuation scenario or, as defined by code, for two hours. So the Circuit Integrity (CI) or Circuit Integrity in Conduit (CIC) cables used to connect the Fire Command Center (FCC) to the zones they serve must meet certain fire alarm code and survivability requirements.

A Complete Line of New Generation Safe-T-Line Cables

With the addition of CIC cables to the Safe-T-Line Series, Belden now offers the most complete line of CI and CIC cables available today.

Cables designated by the NEC as Circuit Integrity are riser-rated, which means they can be installed vertically and still withstand direct contact with flames. Cables designated as CIC may be installed in the area above the ceiling, but they must be contained within conduit.

Because electrical codes dictate that CI and CIC cables must not be spliced between the Fire Command Center and the zone served, Belden offers its Safe-T-Line cables in 1,000 ft lengths. Longer lengths are available on request.

Safe-T-Line™ CI and CIC Cables Perform to Code

Belden's New Generation Safe-T-Line cables meet the following electrical requirements:

- Article 760 of the National Electrical Code for Fire-Alarm CI and CIC
- NFPA 72 requirements for survivability which mandates that a fire in one zone cannot cause loss of communications to another zone for at least two hours.
- UL Standard 1424 – Cable for Power-Limited Fire Alarm Circuits
- Article 725 of the NEC and UL Standard 13 – Power limited Tray Cable. Cables in this Product Bulletin, and higher pair/triad counts, are available by special order with Black jackets and are dual listed as PLTC.

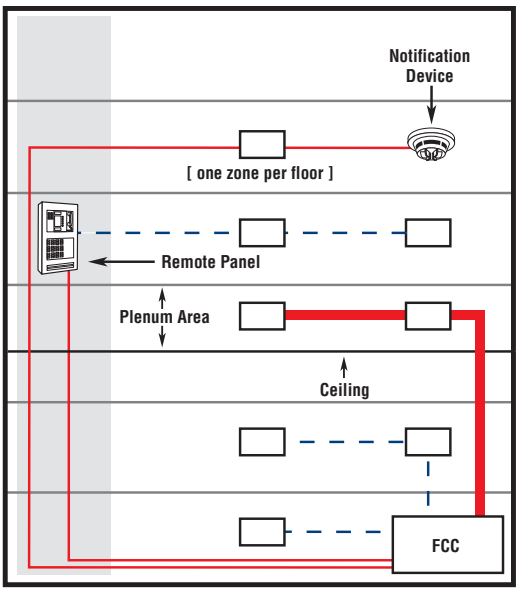
UL Standard 2196 Circuit Integrity Two-hour Flame Test

To ensure optimal safety and comply with applicable and emerging codes, it is critical to understand the difference between CI and CIC cables and their installation requirements.

Safe-T-Line CI cables have been tested to and passed the 2-hour UL 2196 Flame Test without the use of conduit, which includes fire exposure of up to 1850°F for two hours with an immediate wash down. These CI cables can therefore be used in all applications mandating CI specifications. CI cables cannot, however, be deployed in conduit and still maintain their 2-hour rating therefore they are riser-rated only.

Safe-T-Line CIC cables have been tested to and passed the 2-hour UL 2196 Flame Test while installed in EMT conduit according to the Electrical Circuit Protective System (FHIT) #30 of the UL Fire Resistance Directory, which defines all of components used within the cabling system, as well as their installation requirements. Designated for use in plenum installations, CIC cables cannot be deployed in a 2-hour application outside of conduit.

Circuit Integrity Diagram for Notification Devices



Innovation in Design and Materials Makes the Difference

When it comes to engineering and construction, Belden cables are unequalled and our New Generation Safe-T-Line series is no exception. To ensure their respective 2-hour compliance ratings, the CI and CIC cables feature a thermoset elastomer insulation and flame-retardant, low smoke, zero halogen polyolefin jackets.

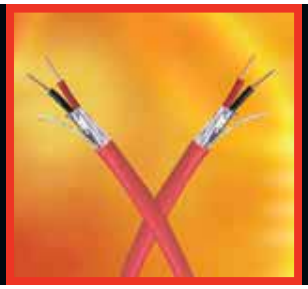
Belden Safe-T-Line cables are offered in solid, stranded, shielded, or unshielded in various AWG sizes as listed in the product tables on pages 3 and 4. Other constructions are available in 6 to 8 conductors by special request.

Belden offers improved flexibility compared to other products in the marketplace:

- Beldfoil® shielding
- Insulation and jacket materials
- No additional mica tape

In the shielded cables, the Beldfoil shield tape offers excellent flexibility and bending radius when installed in narrow enclosures and features a lightweight corrosion-resistant aluminum with a tinned copper drain wire and an overall tape thickness of less than .002". This reinforced tape construction provides performance advantages over bare copper tapes, including improved isolation of the shield from conductors to reduce the likelihood of conductor-to-shield shorts during fire conditions.

In addition, Safe-T-Line CI and CIC cables are extremely flexible and easy to install and terminate with no special fittings required. When compared with alternatives such as compartment construction or mineral insulated cables, which are difficult to work with and require special termination techniques, it's easy to see why New Generation Safe-T-Line cables offer the most cost-effective and labor-saving EVAC system solution.



Circuit Integrity (CI) Fire Alarm Cable

Flame Retardant, Low Smoke, Zero Halogen Jacket, Riser-Rated

Description	Part No.	No. of Cond.	Stranding	Standard Lengths		Standard Unit Weight		Insulation Thickness		Nominal OD		Nominal Capacitance		Nominal DC Resistance Ω/Mft.
				Ft.	m	Lbs.	kg	Inch	mm	Inch	mm	pF/Ft.	pF/m	
Unshielded Multi-conductor • Thermoset Elastomer Insulation • Polyolefin Red Jacket • PLTC Rated in Black Only														
	18 AWG													
NEC: FPLR-CI UL Standard 2196	**5320UM**	2	solid	1000	304.8	40	18.14	.034	.86	.31	7.87	17	56	6.5
	5322UM	4	solid	1000	304.8	65	29.48	.034	.86	.35	8.89	17	56	6.5
	**5324UM**	6	solid	1000	304.8	95	43.09	.034	.86	.42	10.67	17	56	6.5
	5326UM	8	solid	1000	304.8	120	54.43	.034	.86	.45	11.43	17	56	6.5
	16 AWG													
	5220UM	2	solid	1000	304.8	49	22.23	.034	.86	.33	8.38	19	62	4.1
	5222UM	4	solid	1000	304.8	81	36.74	.034	.86	.38	9.65	19	62	4.1
	14 AWG													
	5120UM	2	solid	1000	304.8	71	32.21	.034	.86	.36	9.14	21	69	2.5
	5122UM	4	solid	1000	304.8	121	54.88	.034	.86	.41	10.41	21	69	2.5
	12 AWG													
	5020UM	2	solid	1000	304.8	100	45.36	.034	.86	.39	9.91	23	75	1.6
	5022UM	4	solid	1000	304.8	168	76.20	.034	.86	.45	11.43	23	75	1.6
Shielded Multi-conductor • Thermoset Elastomer Insulation • Beldfoil® Shield • Polyolefin Red Jacket • PLTC Rated in Black Only														
	18 AWG													
NEC: FPLR-CI UL Standard 2196	**5320FM**	2	solid	1000	304.8	45	20.41	.034	.86	.31	7.87	27	89	6.5
	5322FM	4	solid	1000	304.8	70	31.75	.034	.86	.35	8.89	27	89	6.5
	**5324FM**	6	solid	1000	304.8	100	45.36	.034	.86	.42	10.67	27	89	6.5
	5326FM	8	solid	1000	304.8	125	56.70	.034	.86	.45	11.43	27	89	6.5
NEC: FPLR-CI UL Standard 2196	**5300FM**	2	stranded	1000	304.8	47	21.32	.034	.86	.32	8.13	27	89	6.6
	5302FM	4	stranded	1000	304.8	72	32.66	.034	.86	.36	9.14	27	89	6.6
	**5304FM**	6	stranded	1000	304.8	104	47.17	.034	.86	.44	11.18	27	89	6.6
	5306FM	8	stranded	1000	304.8	130	58.97	.034	.86	.48	12.19	27	89	6.6
	16 AWG													
NEC: FPLR-CI UL Standard 2196	**5220FM**	2	solid	1000	304.8	55	24.95	.034	.86	.33	8.38	31	102	4.1
	5222FM	4	solid	1000	304.8	88	39.92	.034	.86	.38	9.65	31	102	4.1
														
NEC: FPLR-CI UL Standard 2196	**5200FM**	2	stranded	1000	304.8	58	26.31	.034	.86	.35	8.89	31	102	4.1
	5202FM	4	stranded	1000	304.8	93	42.18	.034	.86	.40	10.16	31	102	4.1
														
	14 AWG													
NEC: FPLR-CI UL Standard 2196	**5120FM**	2	solid	1000	304.8	81	36.74	.034	.86	.36	9.14	33	108	2.6
	5122FM	4	solid	1000	304.8	131	59.42	.034	.86	.41	10.41	33	108	2.6
														
NEC: FPLR-CI UL Standard 2196	**5100FM**	2	stranded	1000	304.8	83	37.65	.034	.86	.38	9.65	33	108	2.6
	5102FM	4	stranded	1000	304.8	133	60.33	.034	.86	.44	11.18	33	108	2.6
														

Circuit Integrity (CI) Fire Alarm Cable

Flame Retardant, Low Smoke, Zero Halogen Jacket, Riser-Rated

Description	Part No.	No. of Cond.	Stranding	Standard Lengths		Standard Unit Weight		Insulation Thickness		Nominal OD		Nominal Capacitance		Nominal DC Resistance Ω/Mft.
				Ft.	m	Lbs.	kg	Inch	mm	Inch	mm	pF/Ft.	pF/m	
Shielded Multi-conductor • Thermoset Elastomer Insulation • Beldfoil® Shield • Polyolefin Red Jacket • PLTC Rated in Black Only														
	12 AWG													
NEC: FPLR-CI UL Standard 2196	**5020FM**	2	solid	1000	304.8	114	51.71	.034	.86	.39	9.91	37	121	1.6
	**5022FM**	4	solid	1000	304.8	182	82.55	.034	.86	.45	11.43	37	121	1.6
NEC: FPLR-CI UL Standard 2196	**5000FM**	2	stranded	1000	304.8	116	52.62	.034	.86	.42	10.67	40	131	1.6
	**5002FM**	4	stranded	1000	304.8	185	83.91	.034	.86	.48	12.19	40	131	1.6

Circuit Integrity (CIC) Fire Alarm Cable

Flame Retardant, Low Smoke, Zero Halogen Jacket, Riser-Rated

Description	Part No.	No. of Cond.	Stranding	Standard Lengths		Standard Unit Weight		Insulation Thickness		Nominal OD		Nominal Capacitance		Nominal DC Resistance Ω/Mft.
				Ft.	m	Lbs.	kg	Inch	mm	Inch	mm	pF/Ft.	pF/m	
Unshielded Multi-conductor • Thermoset Elastomer Insulation • Polyolefin Red Jacket														
	16 AWG													
NEC: FPLR	**5220UZ**	2	solid	1000	304.8	57	25.85	.035	.89	.35	8.89	15	49	4.1
	5200UZ	2	stranded	1000	304.8	61	27.67	.035	.89	.37	9.40	16	52	4.1
	14 AWG													
	**5120UZ**	2	solid	1000	304.8	71	32.21	.035	.89	.38	9.65	17	56	2.5
	5100UZ	2	stranded	1000	304.8	78	35.38	.035	.89	.40	10.16	18	59	2.5
	12 AWG													
	5020UZ	2	solid	1000	304.8	93	42.18	.035	.89	.42	10.67	19	62	1.6
	5000UZ	2	stranded	1000	304.8	99	44.91	.035	.89	.44	11.18	19	62	1.6
Shielded Multi-conductor • Thermoset Elastomer Insulation • Beldfoil® Shield • Polyolefin Red Jacket														
	16 AWG													
NEC: FPLR	**5220FZ**	2	solid	1000	304.8	63	28.58	.035	.89	.36	9.14	20	66	4.1
	5222FZ	4	solid	1000	304.8	102	46.27	.035	.89	.41	10.41	16	52	4.1
	5200FZ	2	stranded	1000	304.8	67	30.39	.035	.89	.37	9.40	22	72	4.1
	**14 AWG**													
	5120FZ	2	solid	1000	304.8	81	36.74	.035	.89	.38	9.65	23	75	2.5
	5122FZ	4	solid	1000	304.8	133	60.33	.035	.89	.44	11.18	18	59	2.5
	5100FZ	2	stranded	1000	304.8	88	39.92	.035	.89	.41	10.41	26	85	2.5
	12 AWG													
	5020FZ	2	solid	1000	304.8	108	48.99	.035	.89	.42	10.67	27	89	1.6
	5022FZ	4	solid	1000	304.8	180	81.65	.035	.89	.48	12.19	20	66	1.6
	5000FZ	2	stranded	1000	304.8	114	51.71	.035	.89	.44	11.18	27	89	1.6

Note: all 2-conductor versions are color-coded black and red. 4 or more conductor versions are all black and numbered.

For More Information: **www.belden.com**

Belden CDT Electronics Division Technical Support **1-800-BELDEN-1** or **1-800-BELDEN-3**