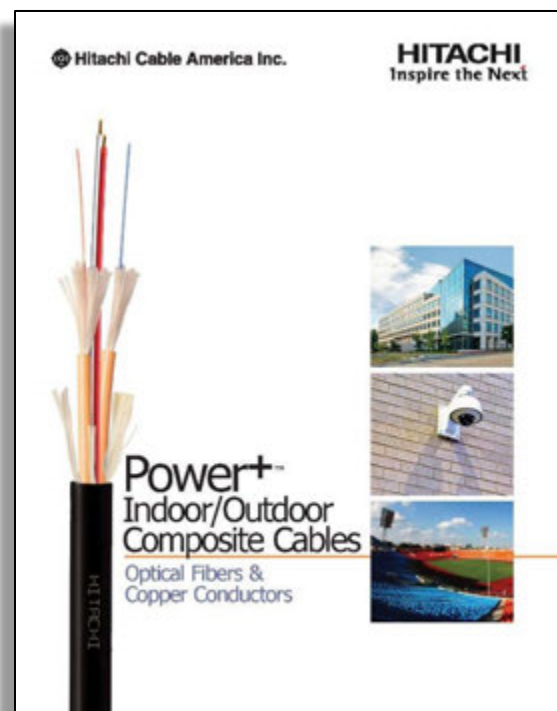


Maximum Distances for Powered Devices Over 1 Pair of Copper

The Internet of Things (IoT) movement has seen more and more electronic devices connected to an enterprise network or directly to the internet. The devices, such as sensors, Closed Circuit Television (CCTV) cameras or Wireless Access Points (WAPs) not only require a link to the internet or a network, but power as well. These devices generally get their power from copper Ethernet cables, such as Category 6 or Category 6A cables. This power is delivered via Power over Ethernet (PoE) electronics that can deliver power (DC) and transmit and receive Ethernet data packs. For these PoE powered devices, industry standards, such as IEEE 802.3af, at and bt and ANSI/TIA-568-C, limit the distance between the Power Sourcing Equipment (PSE) and the Powered Device (PD) to less than 100 meters. It is often the case, however, that powered devices need to be located a significant distance from the network electronics. In these cases, optical fibers with AC power near the device has been a solution. Depending on the desired location for the device, however, running power to it could be very expensive. This is often the case for CCTV locations. However, as cable manufacturing technology evolves, so have the cable designs that are now available.

Hitachi's Power+™ Composite cables utilize optical fibers for signal and a pair of copper conductors for power. The combination of power and signal in one cable allows for the placement of devices well beyond the 100m limit of the standards. With Hitachi's Power+ composite cables, the optical fibers can be singlemode or multimode and the pair of copper conductors are available between 12 and 22 AWG. The charts below can be used to determine how far a specific load (watts) can be supported with a powered device. It is necessary to know how much power your PSE provides and how much power your PD requires. We have included two charts that can be utilized to determine how far you can go with the cable and support the power needs of the device. We have provided distances for both 48v and 56v power supplies.



Safety Extra Low Voltage (SELV) 48Vdc PSE / 43Vdc PD

		Powered Device at Load (Watts)				
		6.49 W	12.95 W	25.5 W	51 W	71 W
AWG	Remote Power Distance (feet)					
22	990	496	252	126	90	
20	1,574	789	401	200	144	
18	2,500	1,253	636	318	229	
16	3,974	1,992	1,011	506	363	
14	6,339	3,177	1,613	807	579	
12	10,047	5,035	2,557	1,279	918	

Safety Extra Low Voltage (SELV) 56Vdc PSE / 48Vdc PD

		Powered Device at Load (Watts)				
		6.49W	12.95W	25.5 W	51W	71W
AWG	Remote Power Distance (feet)					
22	1,833	919	467	233	168	
20	2,915	1,461	742	371	266	
18	4,630	2,320	1,178	589	423	
16	7,359	3,688	1,873	936	673	
14	11,740	5,883	2,988	1,494	1,073	
12	18,606	9,325	4,735	2,368	1,701	