



# New Data, New Insights

## 10BASE-T1L Connected Edge Sensors Improve Outcomes

### What Is 10BASE-T1L?

The IEEE 802.3cg™-2019 standard governs 10BASE-T1L connectivity. It is a single-pair Ethernet (SPE) media standard, providing for 10 megabits per second communication and enables both power and data over single twisted pair cabling up to 1 km.

### Why 10BASE-T1L Technology?

Long reach, single-pair Ethernet, 10BASE-T1L physical layer devices are proving a game changer on the road to realizing the Industry 4.0 vision of seamless connectivity. By extending Ethernet connectivity to edge nodes in remote and distant locations, this technology is enabling new data streams, additional process variables, and auxiliary measurements to be communicated. The 10 Mbps of bandwidth now available provides new information on asset health parameters and actionable insights to control and automation engineers, revolutionizing decision making. Direct IP addressability means each device can be configured and reconfigured from a central control unit, transforming device commissioning and upgrade practices. 10BASE-T1L connectivity promises to extend the benefits of IIoT to the remote corners of factories, building and process plants, and even into hazardous locations where sensors and other endpoints had, until now, limited connectivity.

### Application-Level Value



**Lower cost single twisted pair cabling.** Lighter, lower cost, and smaller size than standard CATx cables, these cables are also often easier to install. 10BASE-T1L technology will enable the reuse of some existing single twisted pair cabling infrastructure.



**Long 1 km reach.** Field sensors are often deployed in remote locations, and existing Ethernet physical layer technologies are typically limited to 100 meters. The longer transmission distance enables longer distance device connectivity.



**New insights with 10 Mbps.** This significant bandwidth increase over technologies like 4 mA to 20 mA or Fieldbus provides the ability to transfer new insights from remote nodes.



**Power and data on two wires.** Field sensors require power, and the ability to deliver power over the cable is critical for remote locations. The standard helps deliver up to 500 mW of power within intrinsically safe applications and 60 W within non-intrinsically safe applications. This is cable dependent.



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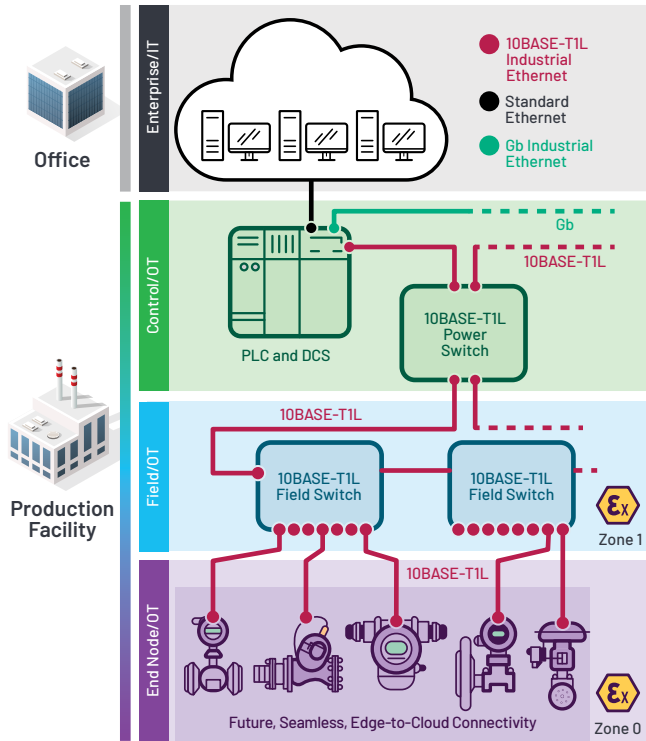
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# Applications Use Cases

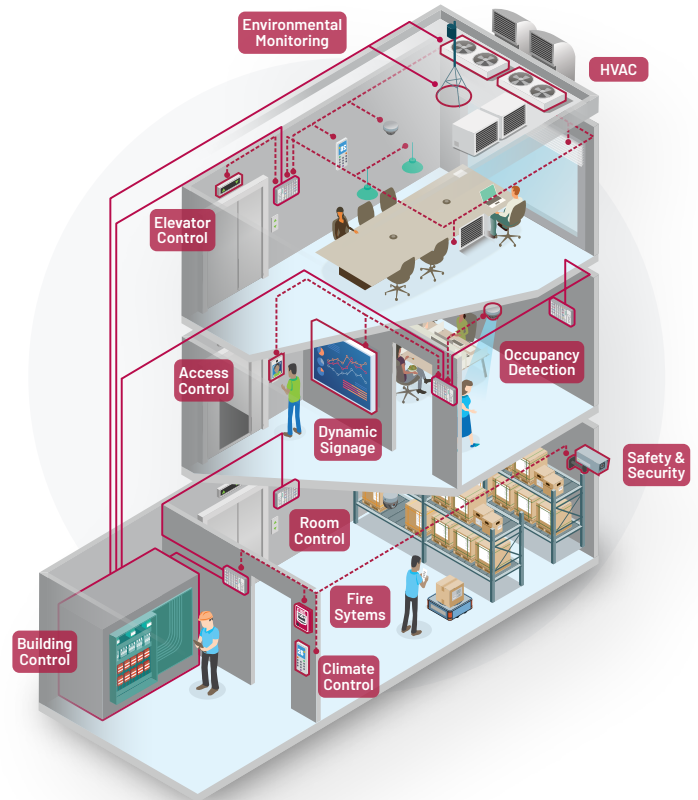
## Process Control

10BASE-T1L connectivity creates new insights from previously inaccessible field sensors in process control environments, allowing for operational improvements across the process. It enables use in explosion-proof (Ex) systems located within intrinsically safe locations and meets stringent maximum energy requirements. Ethernet Advanced Physical Layer (APL) specifies the details of the application for each communication sensor and actuator in hazardous areas. It is driven by several leading process automation vendors and will be published as an IEC specification.







## Building Automation

Building automation systems based on 10BASE-T1L technology enable more sensor nodes to be deployed, giving greater control of building parameters and driving savings and efficiency. It provides connectivity from edge devices to the cloud-based central management system, enabling new insights and optimized building management. HVAC systems, IP cameras, building access controls, elevator controls, and fire safety systems can now benefit from higher data bandwidth and being directly IP addressable. This allows for any building edge node to be reconfigured or interrogated directly from the central control system.



## Ultra Low Power Consumption Physical Layer Solutions

	Type	Bandwidth	Interface	Distance	Power	Package	Temperature Range
 ADIN1100	PHY	10 Mbps	MII/RMII/RGMII	1700 m	39 mW*	40-lead LFCSP	-40°C to +105°C
 ADIN1110	MAC PHY	10 Mbps	SPI	1700 m	42 mW*	40-lead LFCSP	-40°C to +105°C
 ADIN1200	PHY	10 Mbps/100 Mbps	MII/RMII/RGMII	180 m	139 mW	32-lead LFCSP	-40°C to +105°C
 ADIN1300	PHY	10 Mbps/100 Mbps/1 Gbps	MII/RMII/RGMII	150 m	330 mW	40-lead LFCSP	-40°C to +105°C

\*1 V amplitude—1.8 V and 1.1 V dual supply.



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