

November 2020

Single Pair Ethernet: Your Last Fieldbus

Single Pair Ethernet (SPE) is an evolution of Ethernet technology that is set to revolutionize data accessibility and device control. It enables TCP/IP communications to the last sensor on the network through powerful simplification of the Ethernet physical layer from 4 pair cabling to a single twisted pair.

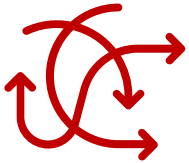
Here is why it is the last fieldbus you will need:

Ethernet is already the communication system of choice for higher layers of OT networks



- Ethernet provides greater bandwidth and larger address space than fieldbus, which enables distributed control across an expanding, automated operation
- Ethernet enables an open ecosystem with more options for future upgrades
- Simplified Ethernet over 2 wires provides an option to replace existing 2-wire serial protocols for low-level device communications

Single Pair Ethernet will simplify networks to reduce gateway conversion of data from serial protocols



- Most data today is initially sent over analog or serial interfaces
- These interfaces require gateways that add additional initial cost and on-going support expense to make edge data available to servers
- SPE allows you to maintain common OT topologies, since the standards provide for both multi-drop and point-to-point architectures

Single Pair Ethernet provides 10x distance, 80x bandwidth, 2x power to enable Digital Transformation



- Legacy industrial control protocols are serial, slow and do not support power delivery, requiring a separate DC power source - Single Pair Ethernet delivers 10Mb/s for distances up to 1km and delivers PoE-like power (called PoDL) to the end devices
- The value in IIoT lies in collecting and analyzing rich data that was not made available through legacy systems → An open connection via Ethernet simplifies access to this untapped data

Single Pair Ethernet helps bridge the gap in institutional knowledge for the incoming workforce



- The pool of workforce knowledge in industrial control networks is getting smaller; Ethernet is familiar for the incoming and current workforce, and extends to SPE
- SPE reduces future dependence on specialized expertise needed today to support aging and siloed technologies
- SPE reduces the challenge of sourcing components for aging fieldbus systems

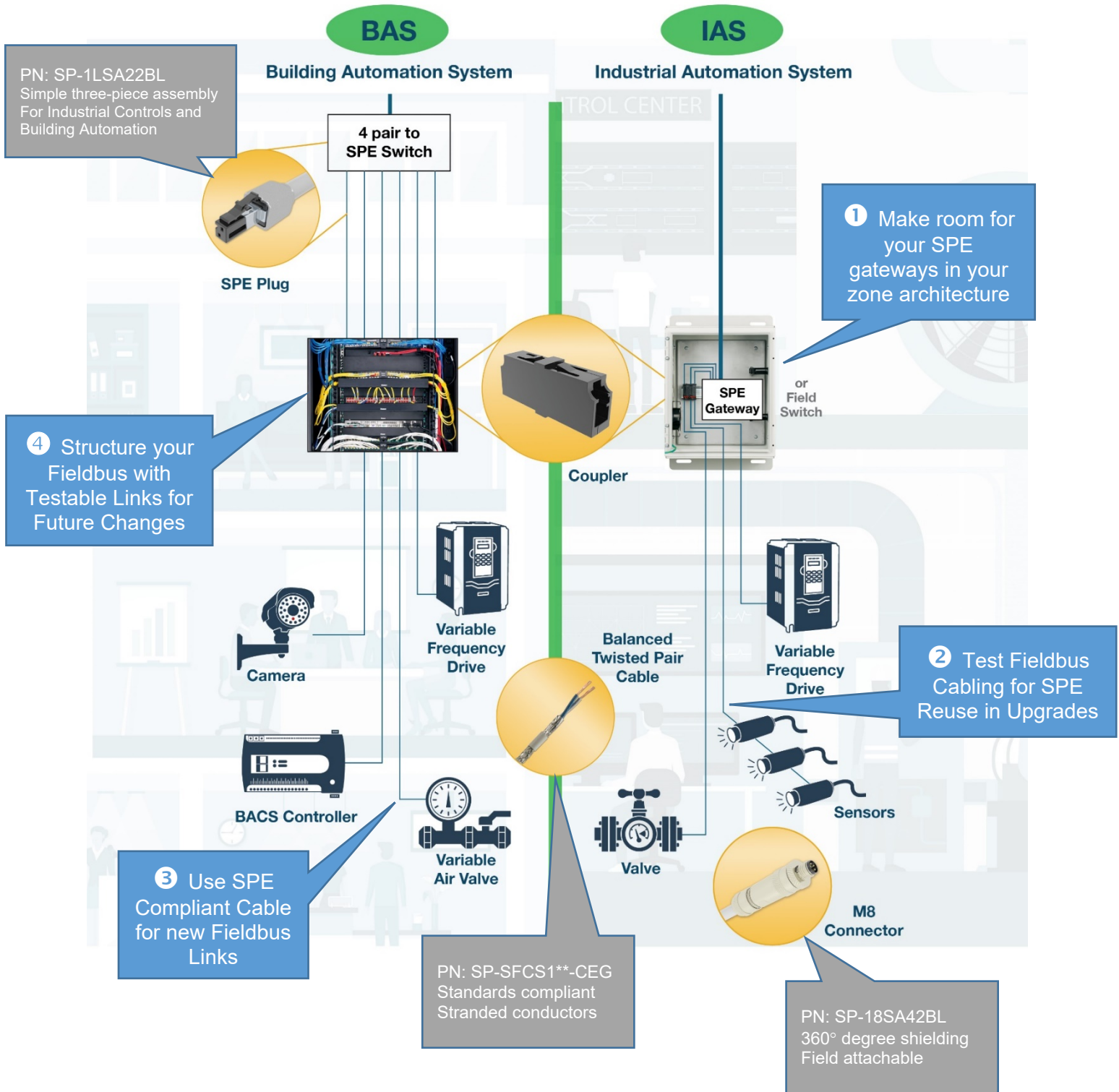
Single Pair Ethernet infrastructure can support legacy technologies and enable migration to the future



- Potential to re-use existing cabling to enable the IT/OT network to operate on installed OT infrastructure
- Extends manageability, standardization and testability of Structured cabling allowing customers a roadmap for deployment, simplified management, and reduced cost for future upgrades

Make your Network Compliant for SPE to the Last Device

Technology is changing constantly. Prepare your network for the next evolution of IoT by making your physical infrastructure ready for the future of building and industrial fieldbus technology.



For more information about Single Pair Ethernet, visit www.panduit.com/singlepairethernet.