

# DIGITAL BUILDING SOLUTIONS

Your pathway to smart buildings



# DIGITAL BUILDING SOLUTIONS



Buildings are increasingly expected to deliver high-quality environments with minimal energy use that actively support wellbeing.

Future buildings will be zero emission carbon in use with temperature controlled, optimally ventilated and perfectly lit spaces, capable of accommodating climate change and capitalising on technological developments that we can only imagine.

Prysmian, the world's leading innovator in the design and manufacture of multi-functional cable products, introduces its Digital Building Solutions portfolio to enable this vision.

DBS provides an open protocol internal DC grid with smart environmental sensors, energy efficient lighting and emergency lighting plus a Bluetooth and EnOcean enabled IoT Gateway. This hardware, with a recommended Cat6a copper data cabling infrastructure, can be used in conjunction



Decarbonise your buildings



Create safe and healthy environments



Reduce operational costs

with Prysmian software for a complete solution or can be integrated with existing building management systems, supporting the growing need for energy usage data and effective workplace management.

The standout feature is the use of Power over Ethernet (PoE) technology to establish an internal direct current (DC) grid. This single change, eliminating the energy losses associated with converting AC to DC, can reduce the total energy use of a building by up to 25%, significantly lowering operational costs and contributing to reduced carbon emissions.

Building on this infrastructure, the DBS environmental sensors provide exceptionally detailed real-time data of CO2 levels, occupancy rates, daylight and multiple additional environmental factors. This data, communicated in open protocol language MQTT, can be integrated into

existing building management systems which allows for dynamic optimisation for all building services.

This degree of monitoring and control supports the most exacting environmental building standards such as WELL Building, LEED, BREEAM and NABERS.

Building technology is a rapidly advancing field and is best implemented in buildings equipped with robust internal DC grids. These grids will accommodate increasingly intelligent devices.

Whether for new build or refurbishment projects, Prysmian DBS provides immediate benefits combined with the capacity to support future technological advances. The pathway to truly smart buildings is a DC infrastructure.

# POWERING SMART BUILDINGS WITH PoE

**Digital Building Solutions uses Power over Ethernet (PoE) technology to create an internal DC power grid, eliminating the need to convert AC to DC, resulting in reduced energy consumption. There are many benefits to adopting a DC grid, primarily the significant energy savings which lead to lower operating costs and lower carbon emissions.**



The technological advances of PoE over the last 20 years enable a single cable to efficiently deliver DC power to many different applications and receive data back from those devices. These advances in PoE technology mean it can deliver an output of 90 watts over a distance of up to 100 metres. Combining power and communication in one cable takes up less space and reduces installation costs as fewer cables are required.

PoE is the ideal infrastructure to enable digital building solutions to come to life. It powers devices such as access points,

IP cameras, VoIP phones, LED lighting, emergency lighting, IoT gateways, and wellbeing sensors. This integration of IT and operational technology supports data collection and data analysis, enabling the centralised management of all building systems.

PoE is software agnostic and PoE networks communicate in a common language. This allows easy connection, configuration, and integration of different systems and devices. Open protocols simplify master system integration and scalability in smart buildings.

## SOLUTION PORTFOLIO OVERVIEW

### Management layer



Control Software

### Infrastructure



PoE Cable  
Technology



Connectivity

### Applications



PoE Lighting



PoE Emergency  
Lighting



IoT Devices



# PoE MAIN APPLICATIONS

Digital Building Solutions from Prysmian, delivered through PoE, provide limitless potential applications for buildings serving commercial, healthcare, education, industrial, retail and residential sectors.



## Security

- CCTV
- Access control
- Intruder alarms
- Lift controls

## ICT

- AV Systems
- WAPs
- VoIP phones
- Thin clients

## Building automation & control

- Lighting
- Parking Management Systems
- Room Controllers
- Automated Blinds
- Variable air volume units

## Sensors

- Presence
- Movement
- Temperature
- Lux levels
- Humidity
- Air quality
- Water leakage

## Retail

- Digital signage & kiosks
- Point of sale terminals
- Self checkout machines
- People counter and direction detection

## Industrial

- DC motors
- RFID
- Human Machine Interfaces
- PoE clocks
- Industrial PoE switches

# PoE EMERGENCY LIGHTING

The Prysmian PoE Emergency Lighting system offers many advantages over a conventional mains voltage system. One major benefit is remote monitoring and control of emergency luminaires including exit signs. This is achieved via a centralised software control solution. There is also a full self-test capability allowing for automated reporting and fault diagnosis.

This remote operation facility allows for out of hours testing – removing inconvenience and any risks from contractors being in your building during office hours. It also allows for centralised remote monitoring of multiple sites and locations.

Benefit from up to 50% reduction in installation costs with the Prysmian PoE Emergency Lighting system which includes exit signs and spotlights.

As with all other PoE applications, installation is straightforward and does not require an electrician, with components including illuminated exit signs and emergency spotlights easily installed. This can reduce installation costs by up to 50%.

The PoE Emergency Lighting system is versatile and can be used for refurbishments, standalone setups, or integrated systems. It provides an efficient, legally compliant solution with cost-effective installation, maintenance and operation and allows building owners to incorporate emergency lighting into their smart building pathway.



# ENVIRONMENTAL SENSOR

Environmental conditions such as temperature, lighting conditions, and air quality influence the productivity and ultimately the health of building occupants. PoE can be used to install a sensor network that ensures optimal working conditions through environmental monitoring, to improve employee satisfaction, wellness and work performance.

The Prysmian Environmental Sensor benefits from a 360-degree detection range and allows advanced daylight harvesting. This single device enables any intelligent building to precisely measure and control a variety of essential environmental parameters including:

The Prysmian Environmental Sensor boasts advanced movement detection with up to 6 metre coverage.



Occupancy



VOC gases



Temperature



Flicker



CO<sub>2</sub> control



Occupation noise



Humidity



# IoT GATEWAY

The IoT Gateway is a crucial component in an IoT ecosystem, serving as an intermediary between IoT sensors and central control software. As part of the PoE infrastructure it facilitates the communication, management, and security of data generated from a portfolio of over 3,000 building monitoring sensors using EnOcean and Bluetooth wireless protocols. For example: blind controls, automatic window controls and radiator valve controls.

Increasing the number of data points within IoT-enabled buildings (BIoT) enhances the variety and volume of information that can be collected and communicated by leveraging the number

of sensors and IoT components. The implementation of the IoT gateway allows for speedy integration of additional devices and sensors, supporting the journey of a premises towards the goal of being a fully digital smart building.

A PoE infrastructure can greatly facilitate the deployment and operation of IoT gateways and their connected devices by providing a reliable, cost-effective, and flexible solution for both power and data connectivity. The more connected a building's systems, the greater the variety, volume, and velocity of data generation, offering greater potential for intelligent decision-making.

The Prysmian IoT Gateway seamlessly integrates into Building Management Systems or intelligent building solutions without complex wiring.



# PoE LIGHTING

For buildings of all sizes, PoE Lighting can be used as a flexible and sustainable solution. Compared to conventional lighting systems, this smart concept offers easier installation, maintenance and operation, as well as reduced energy consumption and CO2 emissions.

Traditional AC systems require electrical cables with power distributed to local drivers within each individual luminaire. 64 percent of these traditional LED drivers fail at the AC/DC conversion stage within 6,000 hours of life.

In contrast, a PoE infrastructure uses structured data cabling that operates on

centralised power units and LED drivers connected to the PoE switch. Conversion adapters for AC/DC are not required which reduces energy consumption. Since only a low voltage infrastructure is used, PoE eliminates the need for standard electrical wiring, resulting in cost efficient installation and commissioning, increased safety and lower operating costs.

The Digital Building Solutions portfolio of sensors, LED drivers and an intelligent commissioning system offers users an attractive and optimised solution.





# CONTROL SOFTWARE

Prysmian enables smart buildings: sophisticated control software creates interoperable solutions that connect building services. These solutions transform buildings into intelligent spaces by integrating with multiple building protocols, allowing connectivity with Building Management Systems (BMS) and IoT devices.

The vendor-agnostic software is compatible with many types of product controls, supporting system integration and providing insights. It enables interoperability with other devices and building systems.

Prysmian DBS is very flexible so it can be applied to wider smart building solutions. Systems and devices can be connected within buildings, collecting and aggregating data and creating custom dashboards, allowing data to be utilised in real-time.

The system improves safety and security, detects its own maintenance requirements, analyses occupancy and space, and delivers advanced health and comfort for the occupants. This software, communicating directly with IP based devices, reduces commissioning and installation times.

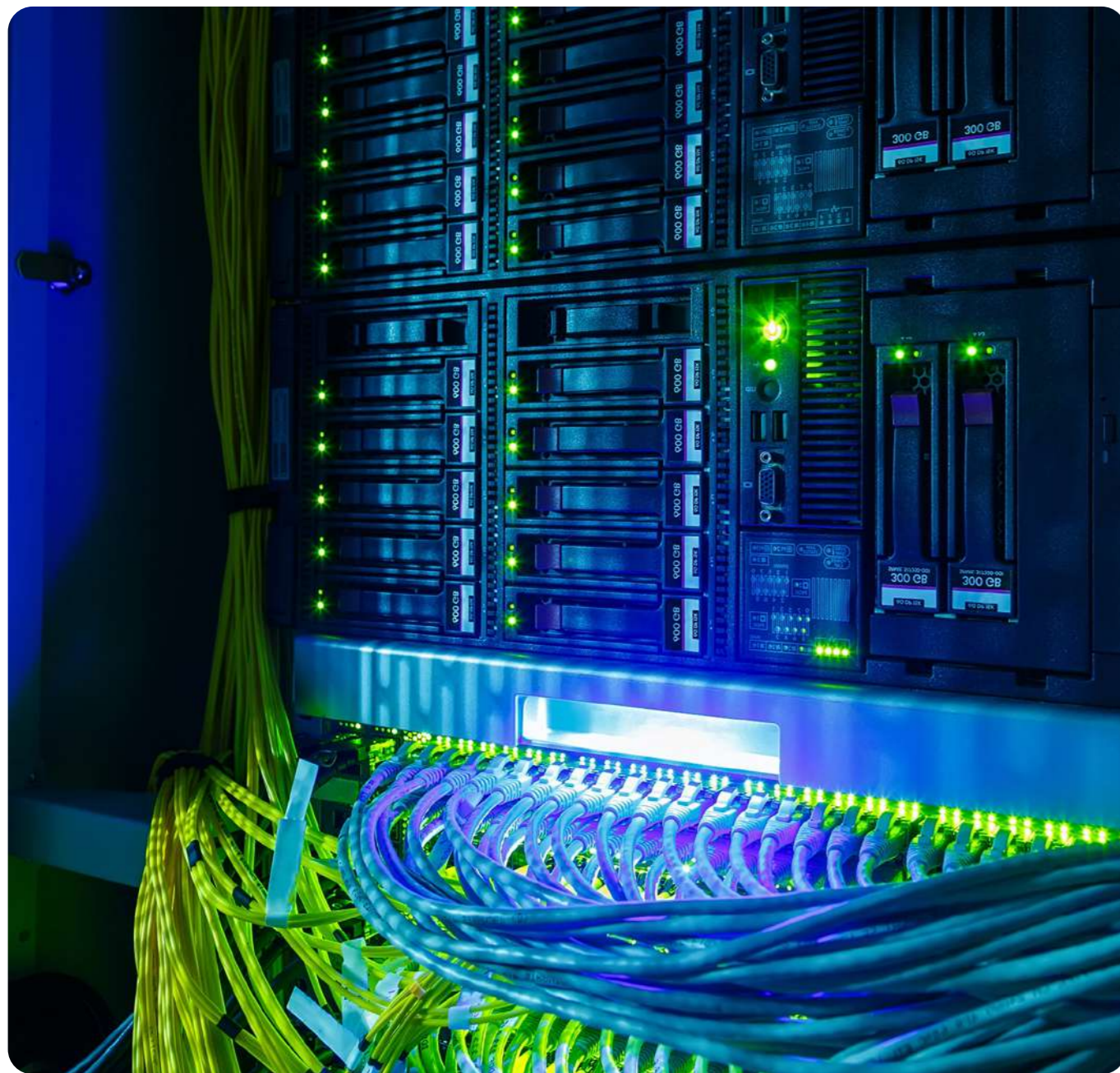
The advanced analytics platform analyses the data to deliver actionable insights. It is user-friendly, with easy-to-use dashboards and common-sense commands to link a wide range of systems and devices in one unifying platform. It also retains compatibility with other protocols such as BACNet, MODBUS, KNX and LONWorks. By uniting devices with the structured cable backbone of Power over Ethernet (PoE) network, Prysmian provides superior bandwidth, reliability, security, and scalability.



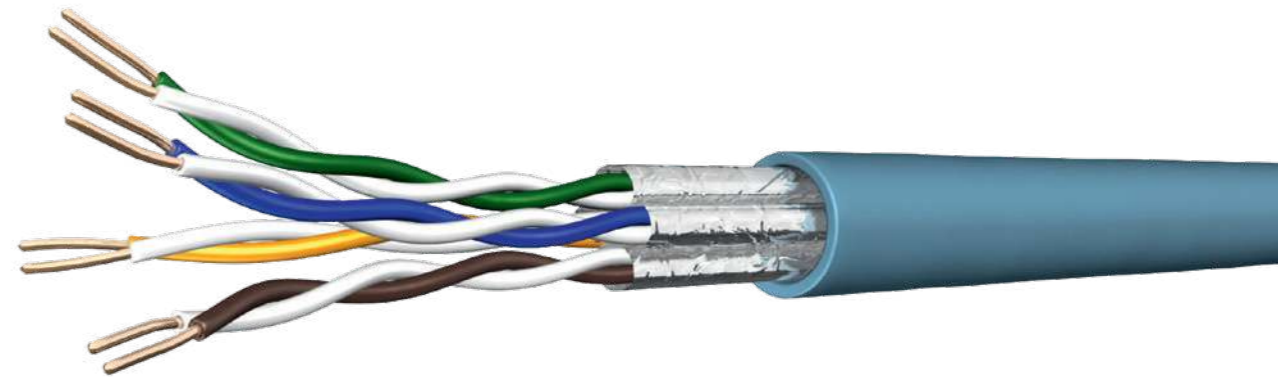


# PoE CABLES

Modern buildings are faced with a growing need to accommodate ever more sophisticated technology, requiring more power and bandwidth, so it is critical they have a network infrastructure that will support this.



Category 6A cable delivers up to 90 W of power and supports data transfer rates of up to 10 Gbps, over 100 metres.



The cable to support this network must provide a stable, highspeed infrastructure that is technology-agnostic. Category 6A (Cat6a) cable or above is the ideal choice.

Cat6a is the de-facto cable for PoE infrastructures and is well-suited for future-proofing smart building networks, ensuring they can handle increasing data demands and emerging technologies. It carries DC electrical power to any device on the network and receives data back. This cable technology will enable the creation of a practical and effective internal DC grid: essential infrastructure for the transformation of disparate building services into a smart and integrated

system of responsive devices, working together to create a truly smart building.

Cat6a cables support data transfer rates of up to 10 Gbps over 100 metres. They provide a bandwidth of up to 500 MHz and deliver up to 90 W of power.

Cat6a cables provide superior performance for the elevated power needs of PoE applications as they mitigate heat effectively with enhanced thermal dissipation. They are designed to reduce crosstalk and Shielded Cat6a cables provide enhanced protection against electromagnetic interference (EMI) and radio frequency interference (RFI) for greater data line security.





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