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## System architecture

Architecture FLX - Multisite

## Lesson review | System architecture

In this lesson, you will learn:

- Why the PDDEG-S gateway is required
- How the cloud connection can be achieved.
- Which BMS integration possibilities are available.
- Which tools have been developed to facilitate store installations.



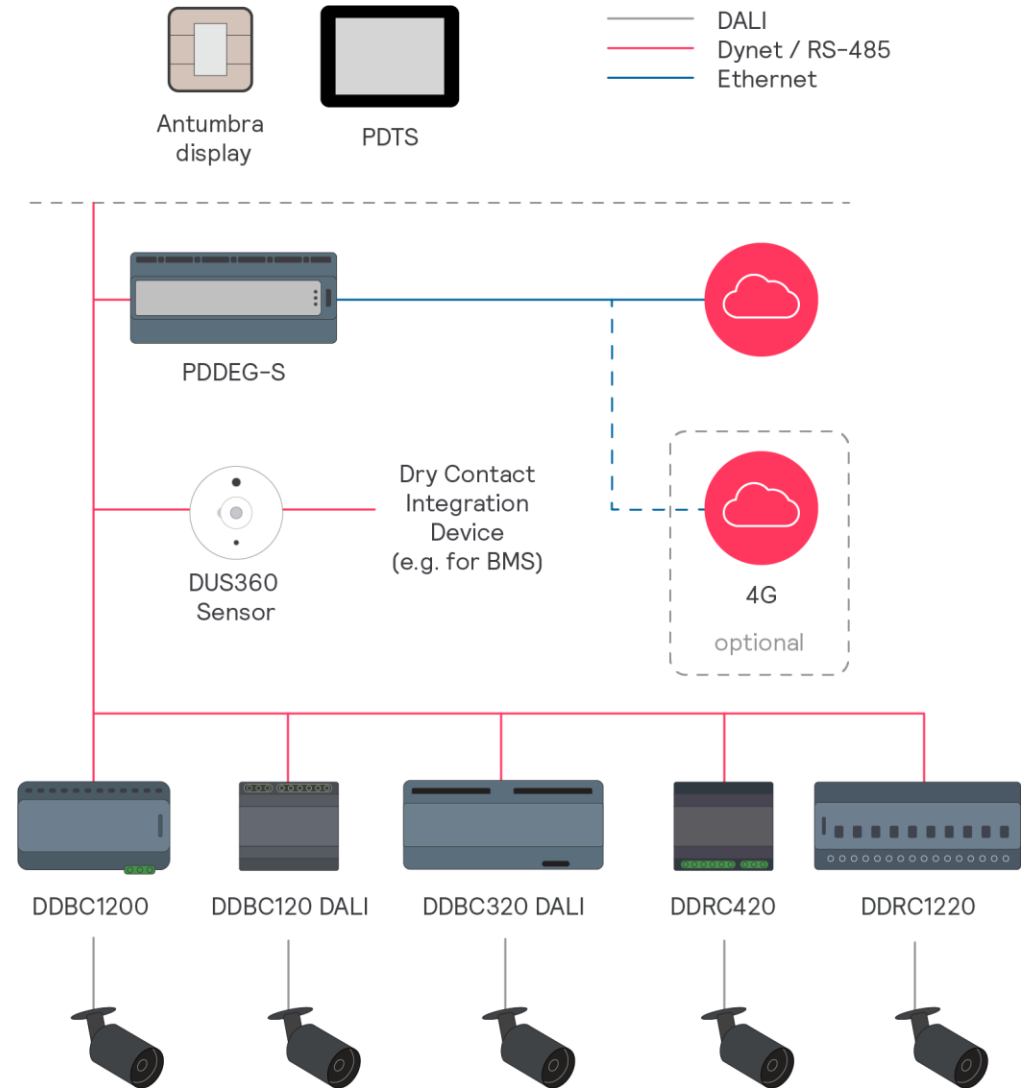
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Diagram illustrating the cloud-based connected sites and secured data flow for the PDDEG-S system.

The system architecture includes:

- Dashboard:** Represented by a red circle with a lightbulb icon, connected to the cloud.
- Cloud:** Represented by a red circle with a cloud icon, acting as the central hub for data flow.
- PDDEG-S:** A central processing unit connected to the cloud and the lighting installation.
- Lighting installation:** Represented by a red circle with a lightbulb icon, connected to the PDDEG-S unit.
- Map of Europe:** Shows the geographical distribution of connected sites, marked by red location pins.

A dashed line labeled "Cloud-based connected sites and secured data flow" indicates the secure communication path between the cloud and the dashboard, and between the cloud and the various sites across Europe.



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## Interact Multisite System Manager (MSM)



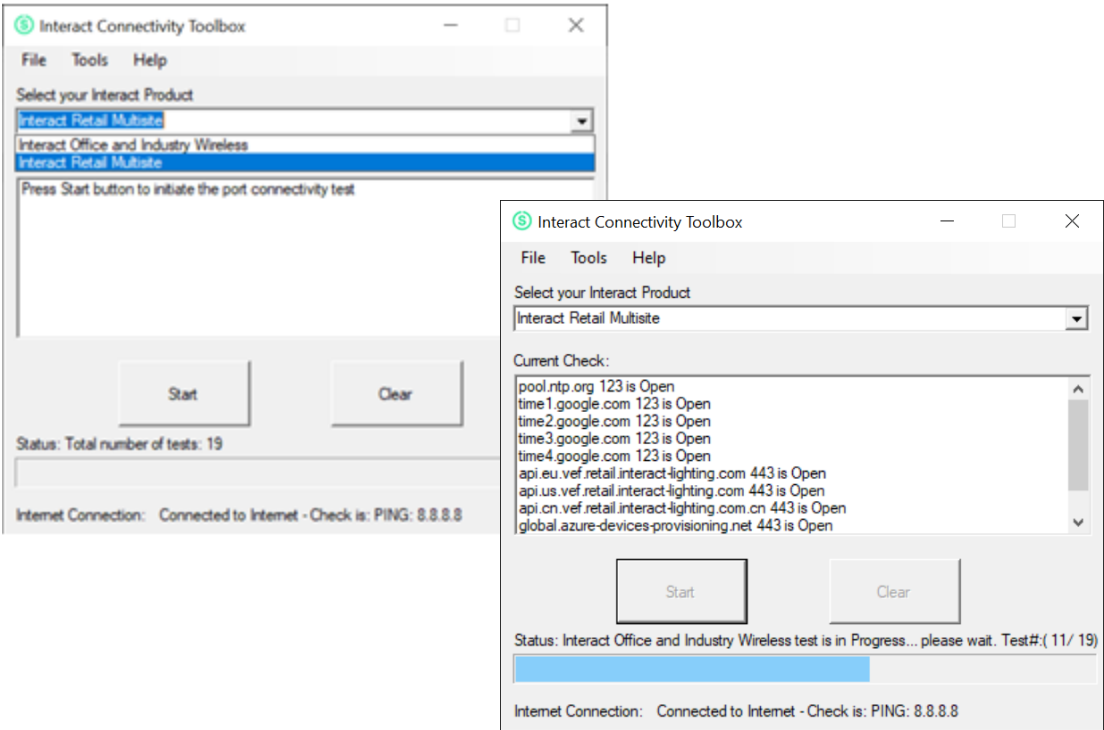
IT requirements – customer IT

- Connectivity provided by customer/retailer:
- ☐ Fully available and functioning @ day of installation
  - ☐ Secure internet connection 24/7
  - ☐ Open ports for outbound communication (details in table below)
    - ☐ Optionally we provide list of endpoints that need to be whitelisted on the Firewall → Security Statement document, Appendix A
  - ☐ NTP (network time protocol) enabled
  - ☐ Provide DHCP server (also static IP supported)
  - ☐ Firewall preventing inbound connection
  - ☐ MDNS discovery enabled (local at store), (only for System builder)
  - ☐ No proxy
  - ☐ No 802.1x network access control
  - ☐ Access to DNS service available
  - ☐ Network protocol: we support both: ipv4 & ipv6 (default: ipv4)
  - ☐ Nice to have: Provide separate VLAN for lighting
  - ☐ Expected traffic per site: up to 1GB / month

Device	Port & Protocol
PDDEG-S	<ul style="list-style-type: none"><li>• 53 DNS (outbound only)</li><li>• 123 NTP (outbound only)</li><li>• 443 HTTPS (outbound only)</li><li>• 5671 AMQP (outbound only)</li><li>• 8883 MQTT (outbound only)</li></ul>

IT connectivity test tool

- This tool simplifies the audit of the IT infrastructure of a customer, validating if it is ready to install Multisite.
- It can be used by both the customer and the installer.





Lighting management

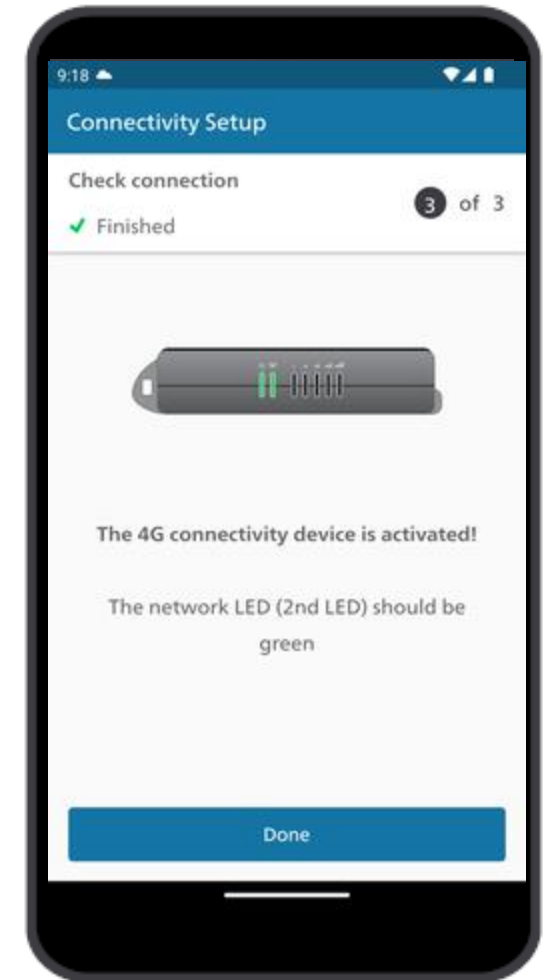
## 4G mobile connectivity

In case fixed line connectivity is not possible, we can offer powerful wireless connectivity from the day of commissioning

- ✓ Hassel free installation and commissioning
- ✓ Includes a secure 4G IoT router delivered in partnership with Vodafone
- ✓ Managed data bundle
- ✓ Broad EU/US coverage: 30 countries



- |                  |               |                  |
|------------------|---------------|------------------|
| • Austria        | • Greece      | • Poland         |
| • Belgium        | • Hungary     | • Portugal       |
| • Bulgaria       | • Ireland     | • Romania        |
| • Croatia        | • Italy       | • Slovakia       |
| • Cyprus         | • Latvia      | • Slovenia       |
| • Czech Republic | • Lithuania   | • Spain          |
| • Denmark        | • Luxembourg  | • Sweden         |
| • Estonia        | • Malta       | • Switzerland    |
| • Finland        | • Netherlands | • United Kingdom |
| • France         | • Norway      | • United States  |
| • Germany        |               |                  |

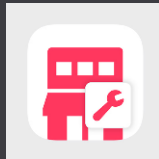
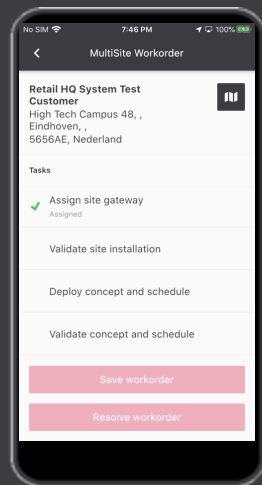


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## Installation and maintenance made easy

### Installer based commissioning

We prepare the digital twin of the lighting system upfront, simplifying the on-site commissioning effort so it can be done by your installer. We provide the installer with an easy-to-use app that guides him step by step through commissioning and validation.



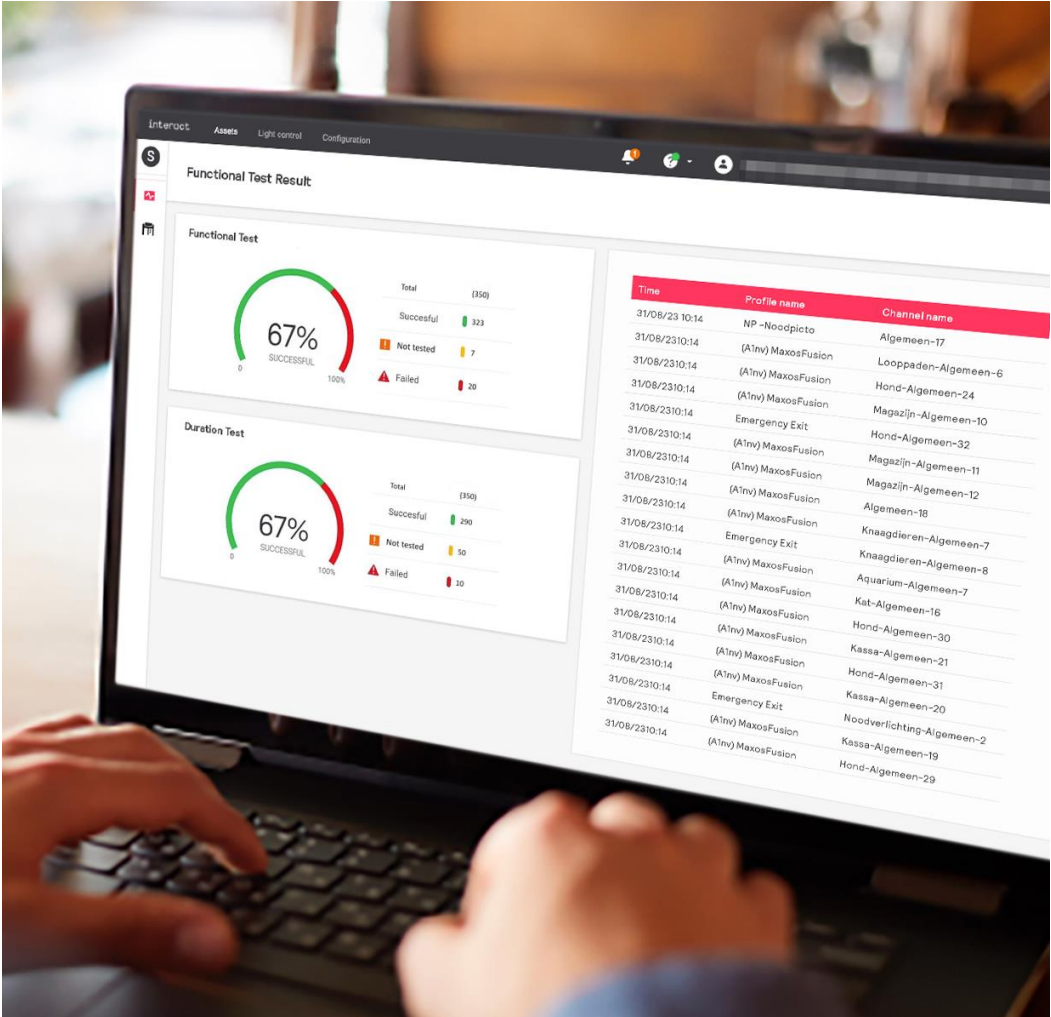
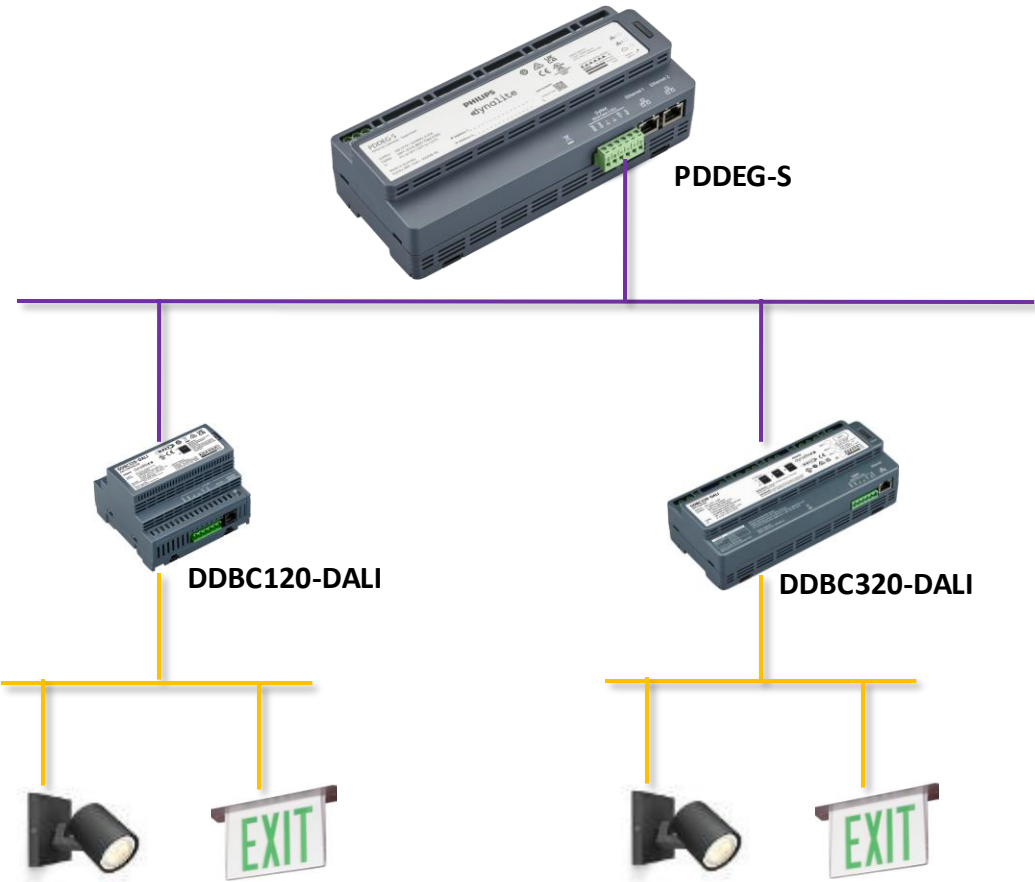
### Self healing

Our Multisite solution has an addressable infrastructure that automatically detects a driver or luminaire replacement and swaps the DALI address from old to new.



Connected Emergency Light Testing | Supported controllers

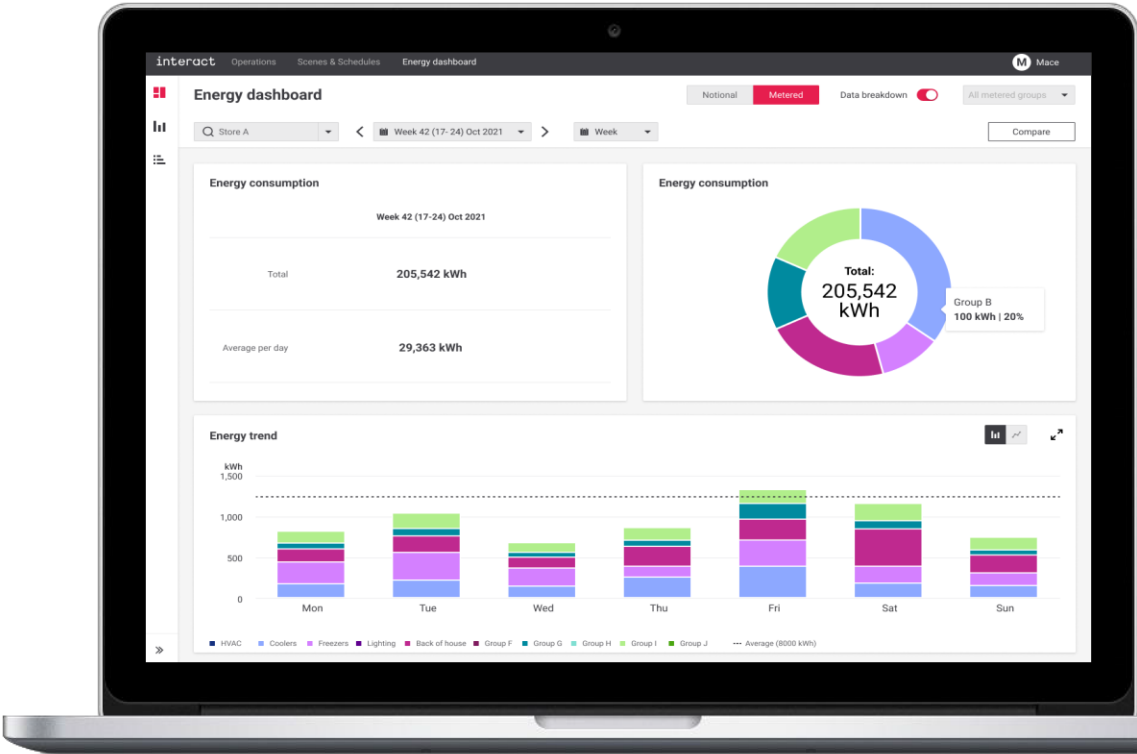
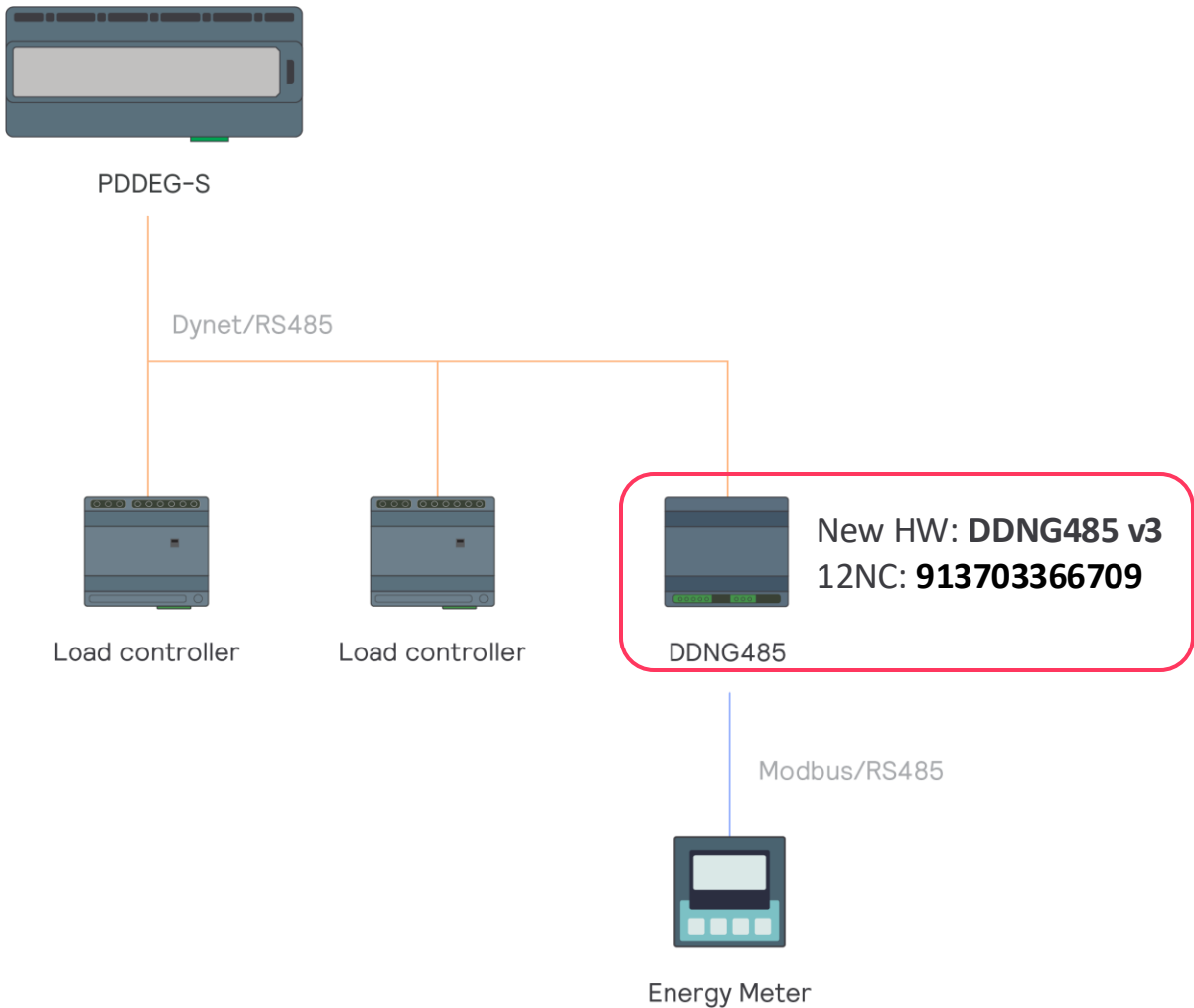
Emergency Light Testing





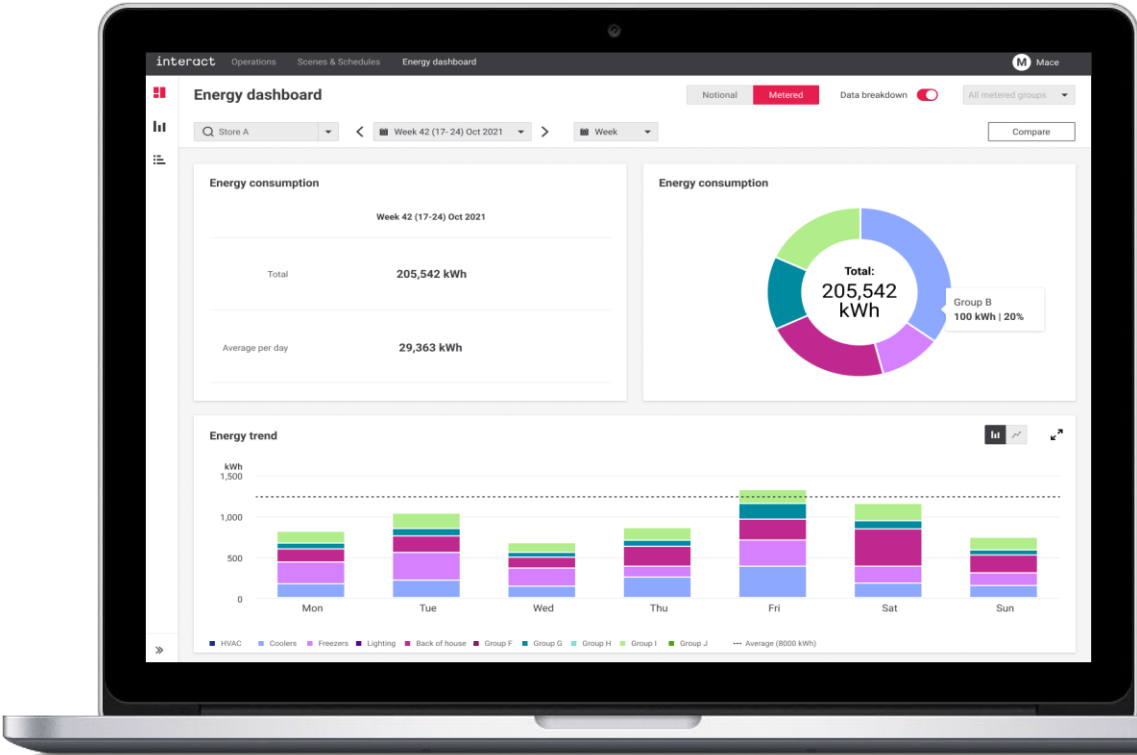
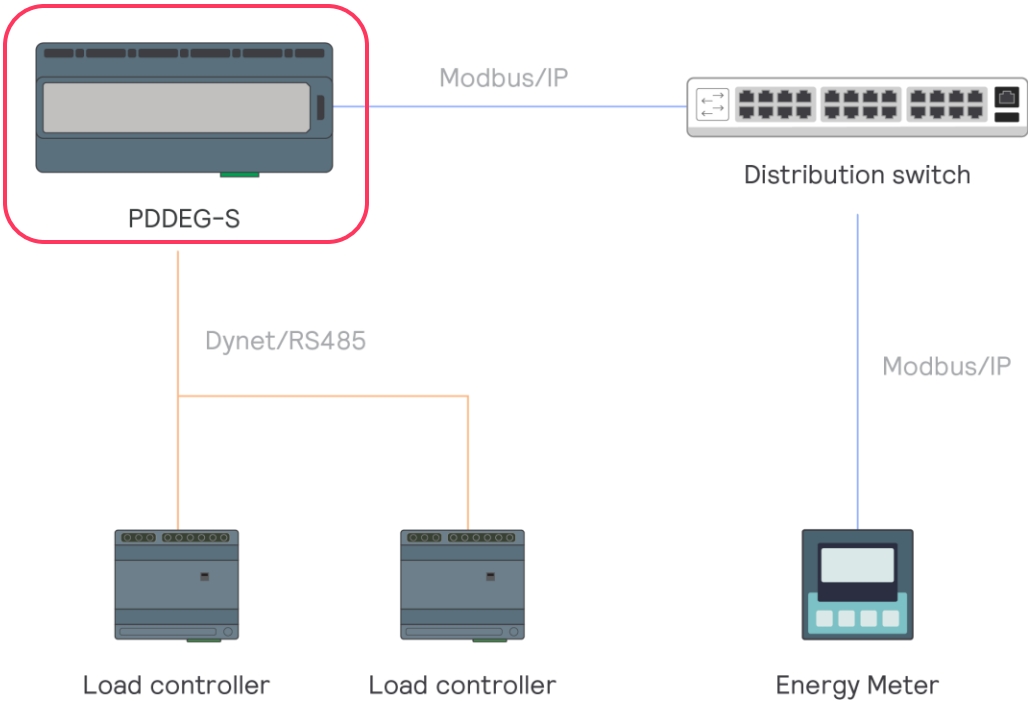
Multisite metered energy | Modbus RS485

Modbus RS485 - with new DDNG485



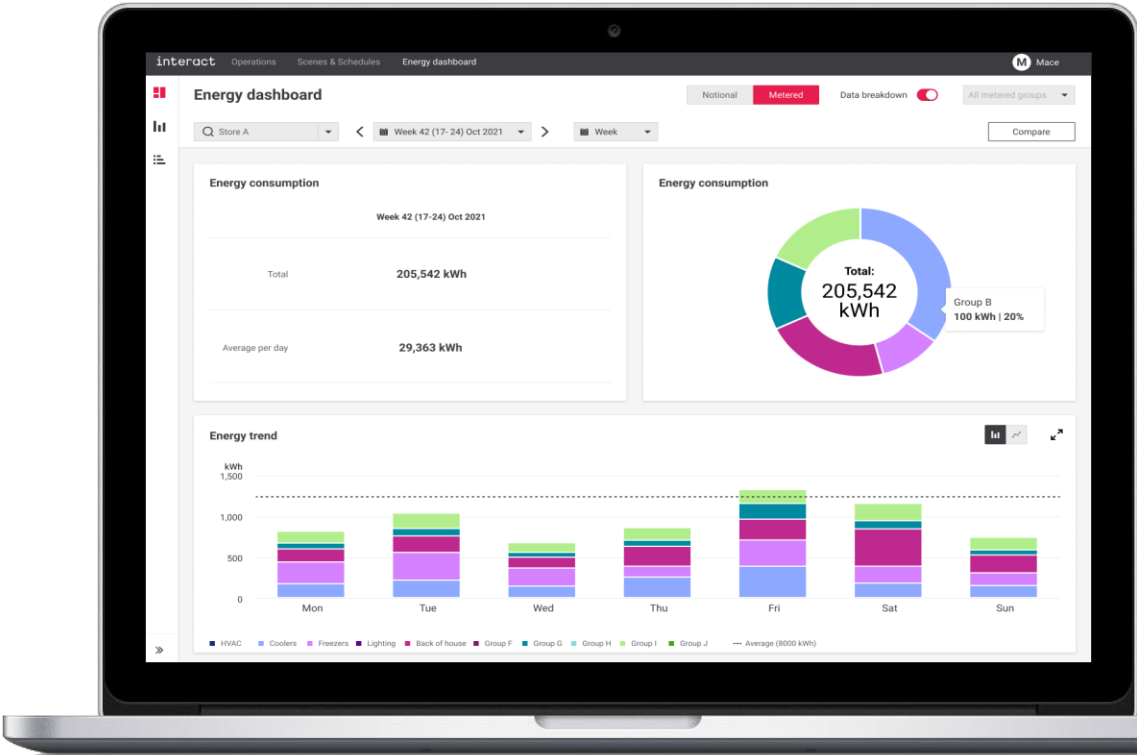
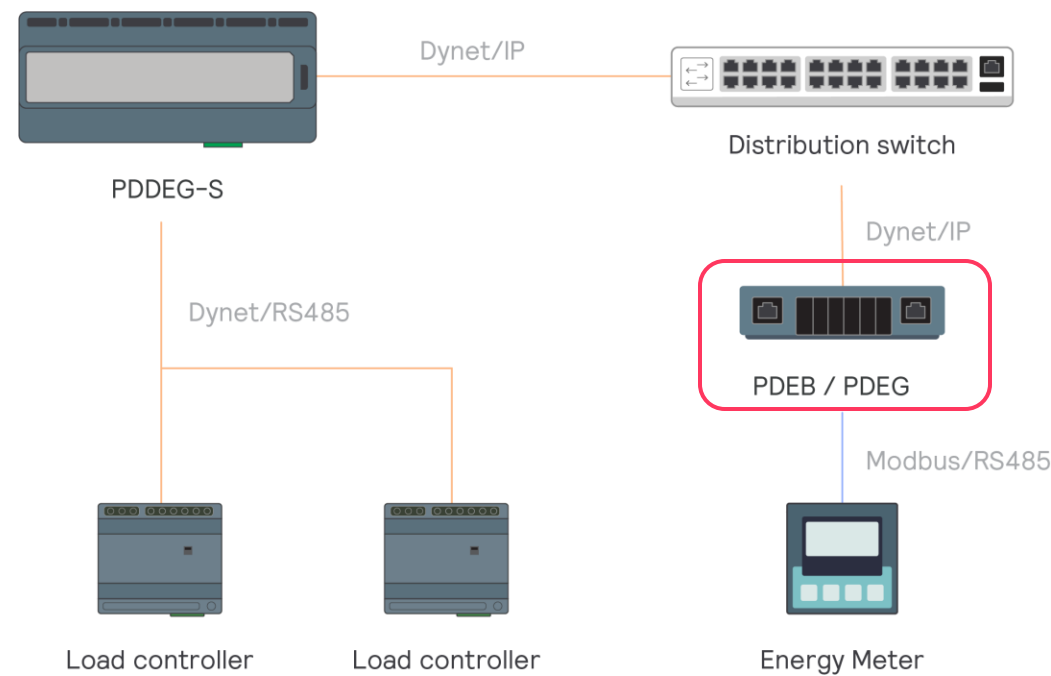
Multisite metered energy | Modbus IP

Modbus IP - with PDDEG-S Site Gateway



Multisite metered energy | Modbus RS485

Modbus RS485 - with PDEG/PDEB

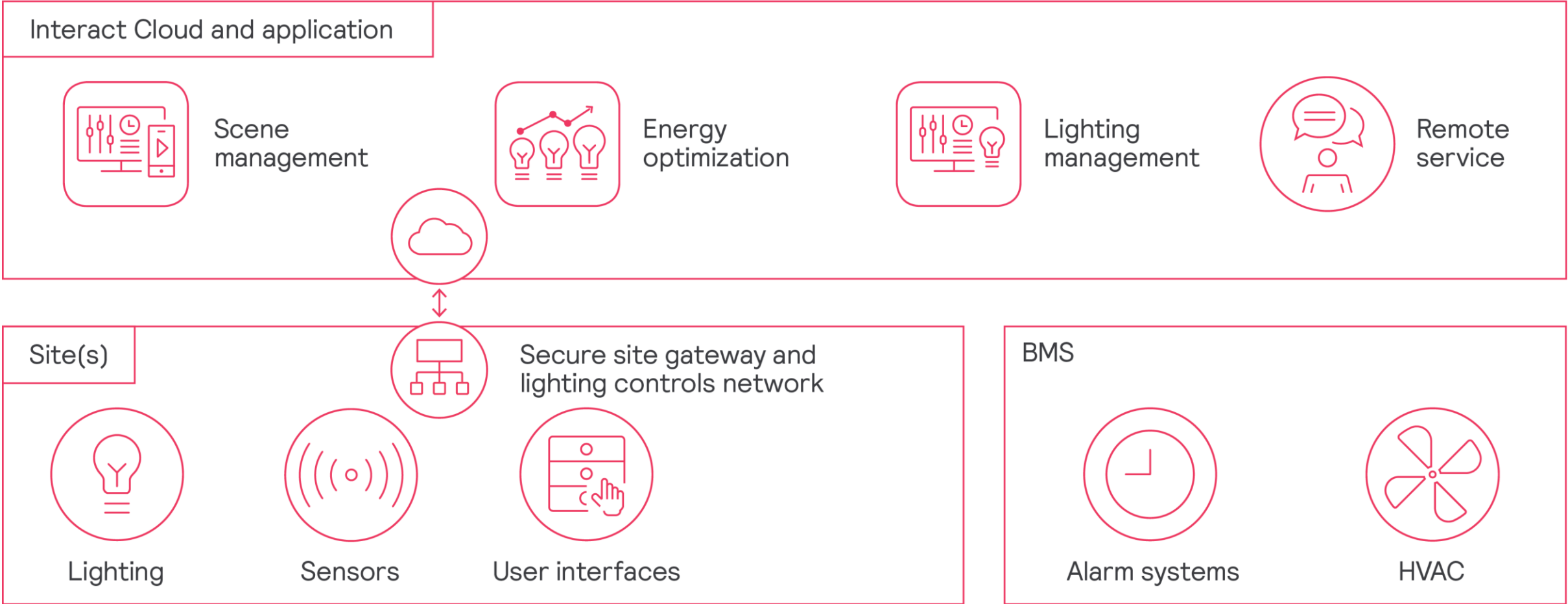




Lighting management

Integration

- ✓ Onsite integration with Alarm and BMS systems
- ✓ Large variety of local manual override options
- ✓ Support of common interfaces: Dry contact | BACnet | CGI





Store safety

## UV-C upper air disinfection

- ✓ Shoppers and employees can now feel safer thanks to Philips UV-C upper air disinfection luminaires
- ✓ Validated 99.99% effectiveness within only 10 min
- ✓ Extend lifetime of UV-C light sources by automatic schedules to operate them only during trading hours

[Proofpoint: EDEKA Clausen Germany >](#)

[Proofpoint: dm drugstore Bratislava >](#)

[Learn more on validated 99.99% effectiveness to deactivate pathogens within 10 min exposure >](#)

**“It provides me with a bit of peace of mind while shopping, knowing that they did their best to protect their clients.”**

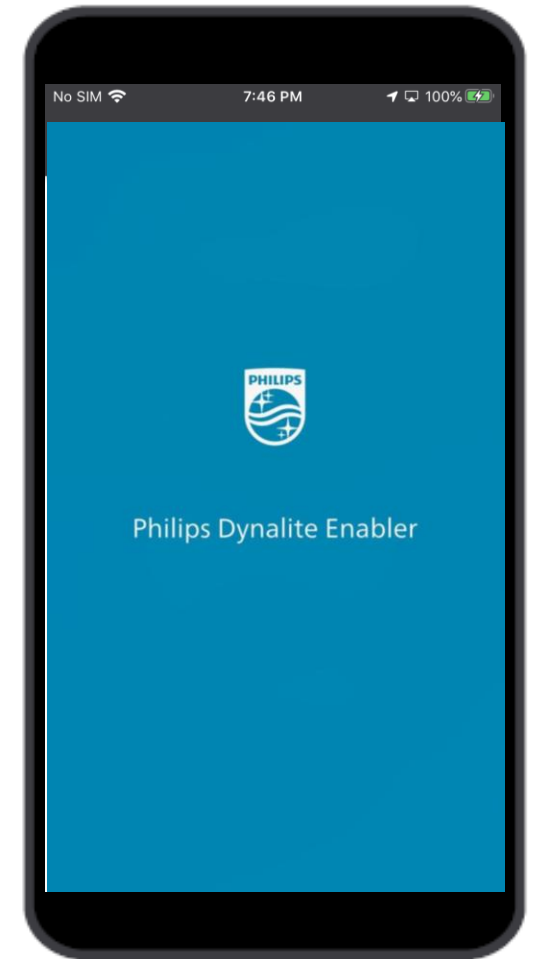


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## Lesson review | System architecture

In this lesson, you learnt that:

- Multisite is based on Dynalite with the addition of a PDDEG-S gateway.
- A test tool has been developed for testing the connectivity.
- Philips Dynalite Enabler app tool has also been developed to facilitate onsite commissioning.
- Multisite can integrate with the customer's BMS either at store level through a dry contact or a JACE box, or cloud level.



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