

**THORN**  
LIGHTING



# WATERPROOF SOLUTIONS

AQUAFORCE PRO, AQUAFORCE, FORCELED, ESCORT

**WE  
MAKE  
LIGHT  
WORK**

# LIGHT FOR DEMANDING ENVIRONMENTS

Whether it's for a refurbishment project or new lighting installation, Thorn has a family of durable waterproof luminaires that are designed to perform in demanding environments, across multiple applications. The range comprises of: Aquaforce Pro, Aquaforce, ForceLED and Escort.

The IP66 rating throughout ensures protection from ingress of water, steam, insects, dust and dirt. Advanced LED chip sets are specified to provide an excellent extended lifetime of up to 100 000 hours and high energy efficiency.

The waterproof family has optional inter-luminaire connectivity, powered by basicDIM Bluetooth® wireless technology. These smart controls allow the luminaires to be easily commissioned and once active, they can intelligently talk to each other to help with presence detection and dimming, providing additional energy savings.

Ease of installation is a standard feature of the range. Thorn waterproofs are all designed to be simple to wire and quick to mount onto walls and ceilings, saving time on installation.



Industry



Manufacturing



Logistics



Food Processing



Car Parks



Plant / Roof Areas



Entrances



Storerooms



Back of House



# AQUAFORCE PRO

## THE VERSATILE WATERPROOF AND IMPACT RESISTANT LUMINAIRE WITH WIRELESS CONNECTIVITY

With Aquaforce Pro, you can rely on unprecedented performance and versatility. The IP66-rated fitting is available in a choice of wide and medium beam light distributions tailored for demanding environments. Its diffuser ensures best light quality and is perfectly adapted for the DIN 67528 parking standard.

Moreover, Aquaforce Pro features DALI dimming and a built-in corridor function, using a presence detector to dim down and turn off automatically when circulation areas are not in use. Aquaforce Pro is your ideal choice for retrofit and refurbishment projects. With an efficacy as high as 167 lm/W, the potential savings are significant. Unlike some LED luminaires that struggle to match the light output of conventional products on a one-for-one basis, Aquaforce Pro delivers the performance you need with up to 10 000 lumens.



### TAILORED LIGHT DISTRIBUTION

Cutting-edge light transmission technology: a combination of refraction prisms and scattering agents distribute the light over a wide angular range. It provides uniform light without sharp edges, and a high level of light transmission, for maximum efficacy.



### RESISTANT TO WATER, DUST, DIRT, EXTREME TEMPERATURES AND IMPACT

This robust polycarbonate (PC) luminaire is resistant to the elements, with its high IP66 and IK08 rating. Built to resist extreme ambient temperatures ranging from  $-20^{\circ}\text{C}$  to  $45^{\circ}\text{C}$ . The polymethyl methacrylate (PMMA) version is designed for chemical and UV resistance at ambient temperatures of  $-10^{\circ}\text{C}$  to  $35^{\circ}\text{C}$ . Its clever drip-edge design avoids dust depositing on the light output surface.

## THORN WATERPROOF CONNECTED FAMILY

Aquaforce Pro, ForceLED and Escort all have optional smart connectivity. This enables wireless communication between luminaires thanks to the basicDIM modules and controller app built on Bluetooth® mesh technology.

15 m

Maximum  
spacing between  
luminaires

20 m

Maximum distance  
between luminaire  
and mobile devices  
running app

250

Maximum nodes  
on one network

∞

Maximum number  
of networks:  
unlimited



## SIMPLE MOUNTING

Aquaforce Pro is simple to install, use and maintain. Technical features such as mounting sliders, EasyClick diffuser system and the 10 conduit entry points all provide a high level of installation flexibility often required on site. Aquaforce Pro is suitable for wall mounting, both vertically and horizontally, and allows a tool-free installation on trunking systems.

## INSTALLATION



Positioning



Fixing



Mounting sliders



EasyClick

# AQUAFORCE PRO

## THE PRODUCT AT A GLANCE

Aquaforce Pro is available in two materials:

**PC:** UV and high impact resistance; chemical resistance to alcohol, ethanol and water.

**PMMA:** High lighting transmission; resistant to shocks, weather influences and UV radiation; minimised risk of stress cracking; chemical resistance to a wide range of acids.



### DRIP-EDGE EFFECT

Unique design with drip-edge effect to avoid dirt build up on the main surface of the luminaire

### EASYCLICK

Patented snap-on mechanism for clipless mounting of diffuser



### SENSOR CONTROL

Aquaforce Pro is configurable with a range of sensor and control options including Microwave presence sensor (MWS), basicDIM Bluetooth Wireless (BC), Microwave presence sensor and basicDIM Bluetooth Wireless (MWBC) and Microwave presence sensor and basicDIM Bluetooth Wireless with Corridor Function (MWCFCB)



### OPERATING TEMPERATURES

–20 °C up to 45 °C (PC)  
–10 °C up to 35 °C (PMMA)

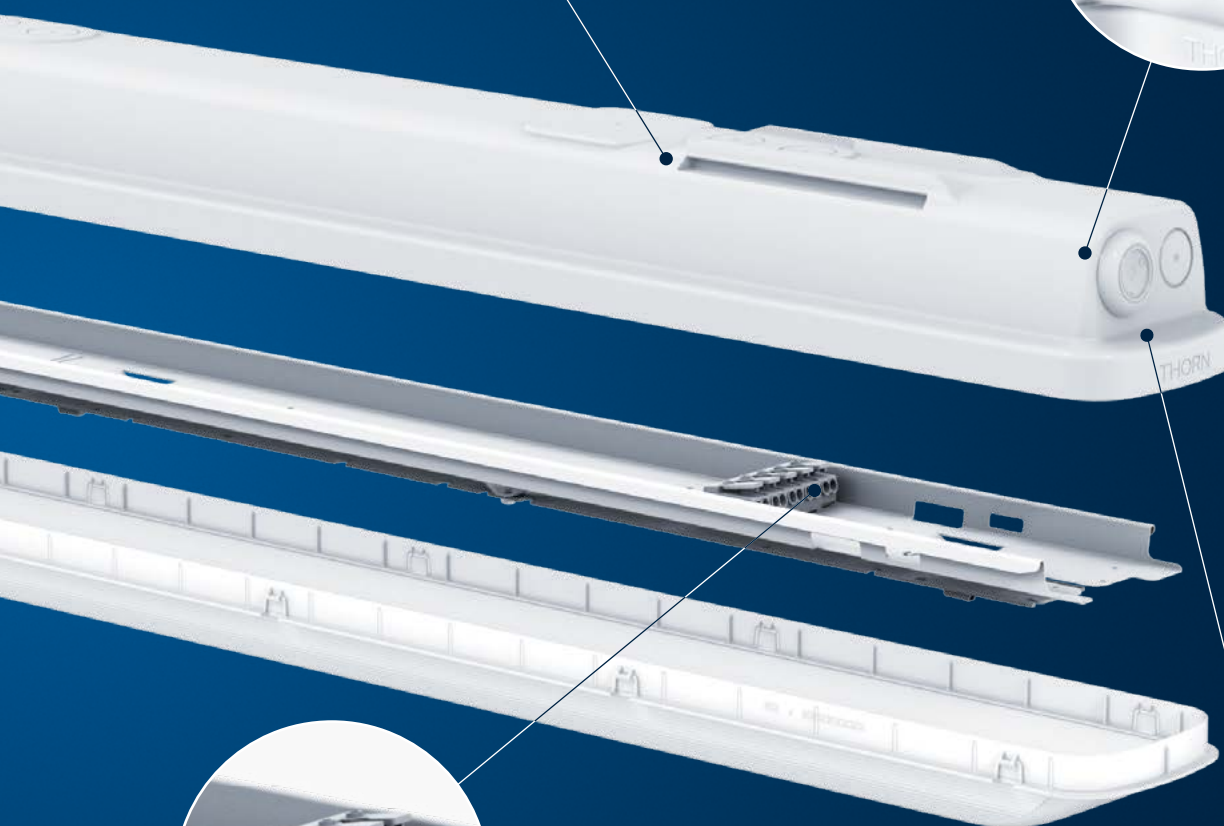


## SIMPLE MOUNTING

Long mounting sliders offer high flexibility during installation

## QUICK-CONNECT

Equipped with quick-fit electrical connection (PC version only)



## SCREWLESS CABLE TERMINAL

For faster wiring

## TWO LENGTHS

1100 or 1600 mm versions



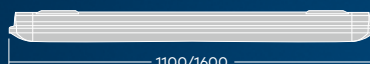
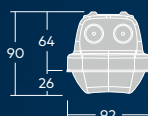
## DRILL HOLES FOR CABLE ENTRIES

10 cable entry options at 5 different positions for through-wiring

DISCOVER

www.thornlighting.com/AQUP

# AQUAFORCE PRO



PC

PMMA



**DALI dimmable**  
S: 2900 lm, 4300 lm, 5200 lm  
L: 4300 lm, 6400 lm, 8000 lm, 10 000 lm



Up to 167 lm/W



3000 K / 4000 K



> 80



IK08

IK03

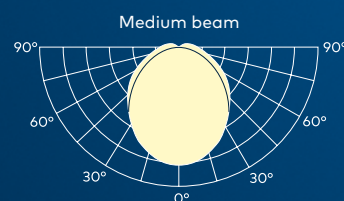
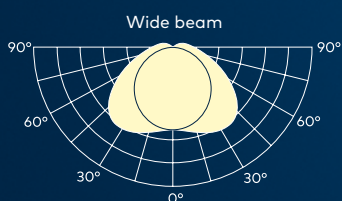


-20 °C to 45 °C

-10 °C to 35 °C



100 000 h L80 @ 25 °C



Fixed output (HF), DALI (HFI), Microwave Presence Sensor (MWS),  
Microwave Presence Sensor with Corridor Function (MWCF), basicDIM Bluetooth® Wireless (BC),  
Microwave Presence Sensor and basicDIM Bluetooth® Wireless (MWBC) and  
Microwave Presence Sensor and basicDIM Bluetooth® Wireless with Corridor Function (MWCFCB)



3 hr manual test, NiMH battery (E3)  
3 hr addressable self-test, NiMH battery (E3D, E3DUK)





# MATERIALS

## CHOOSING THE RIGHT MATERIAL FOR THE APPLICATION



Lighting in the food industry requires strong task illumination and uncompromising standards of hygiene. The working areas can be damp, corrosive and laden with oil and fat vapours. Specialised cleaning agents are used, which could damage or inhibit the performance of the luminaires. Aquaforce Pro with its PMMA body and diffuser overcome these issues and meet the tough regulations set by the HACCP and BRC food standards guidelines.



The challenge when mounting luminaires in racking or mezzanine areas are the dangers from moving vehicles, such as forklift trucks, that can collide with fittings and cause potentially disruptive vibration. Aquaforce Pro with its tough polycarbonate diffuser and body will resist a direct impact of up to IK08 and still perform.

# CHEMICAL RESISTANCE OVERVIEW

Aquaforce Pro is available in PC & PMMA, Aquaforce in PC.

|                                | PC | PMMA |                                                              | PC | PMMA |
|--------------------------------|----|------|--------------------------------------------------------------|----|------|
| Acetic acid <10 %              | ■  | ■    | Hydrogen peroxide <10 %                                      | ■  | ■    |
| Acetic acid >10 %              | —  | □    | Hydrogen peroxide >10 % <30 %                                | ■  | ■    |
| Acetone                        | —  | —    | Hydrogen sulphide                                            | —  | —    |
| Aliphatic hydrocarbons         | ■  | ■    | Isopropyl alcohol                                            | ■  | —    |
| Ammonia <25 %                  | —  | ■    | Ketones                                                      | —  | —    |
| Aniline                        | —  | —    | Lime milk                                                    | □  | ■    |
| Aromatic hydrocarbons          | —  | —    | Methanol                                                     | —  | —    |
| Beer                           | ■  | ■    | Methylene chloride                                           | —  | —    |
| Benzene                        | —  | ■    | Nitric acid <10 %                                            | ■  | ■    |
| Benzine (cleaning spirit)      | ■  | ■    | Nitric acid >10 % <20 %                                      | □  | ■    |
| Blood                          | ■  | ■    | Nitric acid >20 %                                            | —  | —    |
| Bromic acid                    | —  | —    | Petroleum ether                                              | □  | ■    |
| Carbon dioxide gas             | ■  | ■    | Phenol                                                       | —  | —    |
| Carbon monoxide gas            | ■  | ■    | Potassium hydroxide <30 %                                    | —  | ■    |
| Carbon tetrachloride           | —  | ■    | Pyridine                                                     | —  | —    |
| Chloroform                     | —  | —    | Regular petrol                                               | —  | —    |
| Chlorphenol                    | —  | —    | Seawater                                                     | ■  | ■    |
| Cresol                         | —  | —    | Saline solution                                              | ■  | ■    |
| Diesel fuel                    | —  | —    | Soapsuds                                                     | ■  | ■    |
| Dioxane                        | —  | —    | Soda (sodium carbonate)                                      | ■  | ■    |
| Ethanol <30 %                  | ■  | □    | Sodium hydroxide solution <10 %                              | —  | ■    |
| Ethanol >30 %                  | ■  | —    | Spirit of turpentine                                         | ■  | ■    |
| Ether                          | —  | —    | Sulphuric acid (H <sub>2</sub> SO <sub>4</sub> ) <30 %       | ■  | ■    |
| Ethyl acetate                  | —  | —    | Sulphuric acid (H <sub>2</sub> SO <sub>4</sub> ) >30 % <50 % | ■  | —    |
| Fats: animal                   | —  | ■    | Sulphuric acid (H <sub>2</sub> SO <sub>4</sub> ) >50 %       | —  | —    |
| Fats: mineral                  | —  | ■    | Toluene                                                      | —  | —    |
| Fats: vegetable                | —  | ■    | Trichloroethane                                              | —  | —    |
| Fuel oil                       | —  | —    | Water up to 60 °C                                            | ■  | ■    |
| Glycerol                       | □  | ■    | Xylene                                                       | —  | —    |
| Glycol                         | ■  | ■    |                                                              |    |      |
| Hydrochloric acid (HCL) <10 %  | ■  | ■    |                                                              |    |      |
| Hydrochloric (HCL) >10 % <20 % | ■  | ■    |                                                              |    |      |

## CLEANING AGENTS, DISINFECTANTS AND COOLANTS

|                                                                           | PC | PMMA |
|---------------------------------------------------------------------------|----|------|
| ACMOSIL 37-5504                                                           | —  | —    |
| Coolants QUAKERCOOL 7200 HBF                                              | —  | □    |
| Coolants QUAKERCOOL 7200 BFF                                              | —  | □    |
| Coolants QUAKERCOOL 7100 HD                                               | —  | □    |
| GORAPUR LI 2920-40 E                                                      | —  | —    |
| MV Quartacid plus from Schülke                                            | ■  | ■    |
| MV Quartasept plus from Schülke                                           | □  | ■    |
| MV perform classic alcohol IPA from Schülke                               | ■  | ■    |
| P3-topactive OKTO (disinfectant; acid solution with peroxide) from ECOLAB | □  | ■    |
| P3-topax 66 (cleaner/disinfectant; alkaline with chlorine) from ECOLAB    | —  | ■    |
| P3-topactive 200 (cleaner, alkaline with tenside) from ECOLAB             | □  | ■    |
| P3-topactive 500 (cleaner, acid solution with tenside) from ECOLAB        | □  | ■    |
| P3-topax 990 (neutral disinfectant; basic alkylaminacetat) from ECOLAB    | □  | ■    |
| PU-5408H, PU-1706M, PU-5421H, PU-4111M from Chem-Trend                    | —  | —    |
| PU-HS-Antiblock 6291/21, A-PU-Antiblock 6/428-5 from Bomix                | —  | —    |

DISCLAIMER: our recommendations concerning the chemical resistance of the materials are based upon information from material suppliers, careful examination of available published documents and our experience in different industry applications. However, since the resistance of metals, plastics and elastomers can be affected by the concentration, temperature, presence of various chemicals and other factors, the above datasheet should be considered as a general guide rather than an unqualified guarantee. Ultimately, the customer must determine the suitability of the luminaires in various solutions and applications.

■ Resistant    □ Conditioned resistant    — Not resistant

# AQUAFORCE

## THE FLEXIBLE WATERPROOF AND IMPACT RESISTANT LUMINAIRE FOR CHALLENGING AREAS

A great solution for refurbishment projects and new lighting schemes, Aquaforce is ideal when an IP66 waterproof luminaire is required for your project. Tough on the outside and efficient on the inside, with options for sensors, wide or medium beam optics.



## HIGH EFFICIENCY WITH DALI DIMMING

Aquaforce is an efficient luminaire delivering up to 148 lm/W. Compatible with DALI control systems, allowing dimming patterns to be set. Energy efficiency can be further enhanced with the use of optional microwave presence sensors.

## SWITCHABLE LUMEN OUTPUT

One luminaire, four lumen outputs offer maximum flexibility during installation and efficient stockholding at wholesalers.

Configured through adjusting two dip-switches on the driver (HFLS – fixed output lumen switchable) the following lumen outputs are available:

|                 | AQF S4300 | AQF L6400 |
|-----------------|-----------|-----------|
| Default value   | 4300 lm   | 6400 lm   |
| 1: ON – 2: OFF  | 3700 lm   | 5500 lm   |
| 1: OFF – 2: ON  | 3200 lm   | 4600 lm   |
| 1: OFF – 2: OFF | 2600 lm   | 3700 lm   |



## RESISTANT TO WATER, DUST, DIRT AND IMPACT

This robust polycarbonate (PC) luminaire is resistant to the elements, with its high IP66 and IK08 rating. Featuring a clever drip-edge design to avoid dust and dirt depositing on the light output surface.

## SIMPLE MOUNTING

Aquaforce is simple to install, use and maintain. Technical features such as mounting sliders, EasyClick diffuser system and the 10 conduit entry points all provide a high level of installation flexibility often required on site. In addition to ceiling mounting, Aquaforce is suitable for wall mounting, both vertically and horizontally, and allows a tool-free installation on trunking systems.

## INSTALLATION



Positioning



Fixing



Mounting sliders

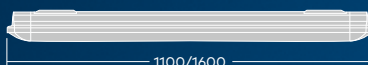
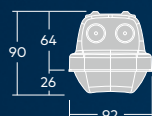


EasyClick

## DISCOVER

[www.thornlighting.com/AQUF](http://www.thornlighting.com/AQUF)

# AQUAFORCE



PC

### Switchable lumen output

Small: 4300 lm, 3700 lm, 3200 lm & 2600 lm / Large: 6400 lm, 5500 lm, 4600 lm & 3700 lm

**DALI dimmable**

Small: 4300 lm / Large: 6400 lm

Up to 148lm/W

4000 K

> 80

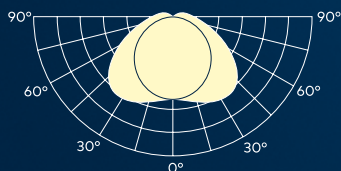
IP66

IK08

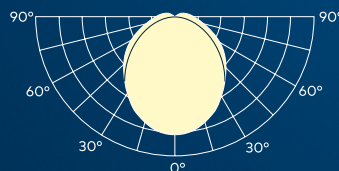
0 °C to 40 °C

50 000 h L80 @ 25 °C

Wide beam



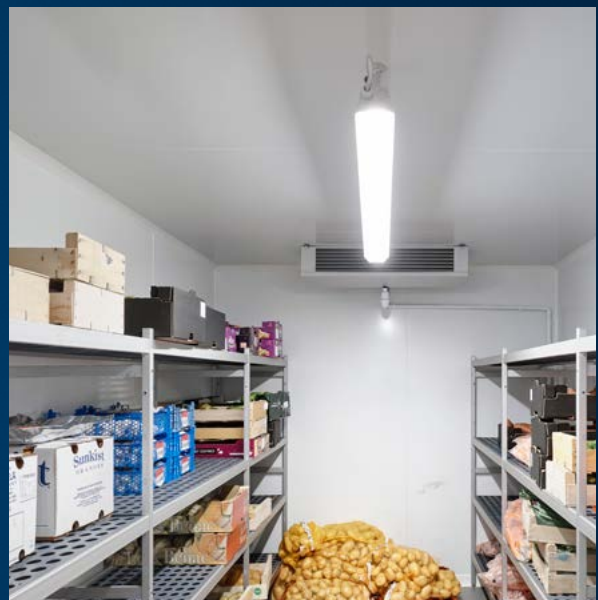
Medium beam



Fixed Output Lumen Switchable (HFLS),  
DALI (HFI), Microwave Presence Sensor (MWS) and  
Microwave Presence Sensor with Corridor Function (MWCF)

### 3 hr manual test, NiMH battery (E3)





# FORCELED

## A TOUGH, IMPACT RESISTANT WATERPROOF LUMINAIRE WITH WIRELESS CONNECTIVITY

A robust water, dust, dirt and shock-proof luminaire. Featuring a lightweight aluminium body with a UV stabilised polycarbonate diffuser with linear prisms. Flexible mounting options with BESA, suspended mounting and outdoor wall mounting.

## WHEN THE GOING GETS TOUGH

ForceLED has an IP66 rating, this means it is resistant to ingress of water, dust and dirt. The luminaire's strong casing has been designed to offer protection from heavy impacts, certified to the highest level of impact resistance (IK10). From freezing to high heat environments (-20 °C to 55 °C), ForceLED can be installed in the most demanding areas including outdoor locations.

## ENDURANCE AND LOW MAINTENANCE

You can rely on ForceLED. With its 100 000 hour extended lifetime, this is a true "fit and forget" luminaire that delivers day after day. ForceLED's long lifetime is twice as long as many typical waterproof luminaires.

## HIGH EFFICIENCY

ForceLED offers up to 150 lm/W efficiency and is available with a choice of 4000, 7000 or 10 000 lumens.



## THORN WATERPROOF CONNECTED FAMILY

ForceLED, Aquaforce Pro and Escort all have optional smart connectivity. This enables wireless communication between luminaires thanks to the basicDIM modules and controller app built on Bluetooth® mesh technology.

15 m

Maximum  
spacing between  
luminaires

20 m

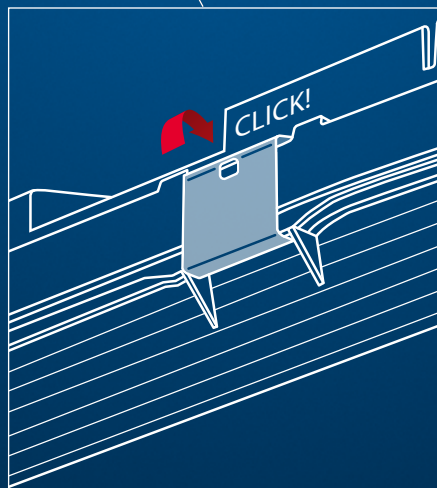
Maximum distance  
between luminaire  
and mobile devices  
running app

250

Maximum nodes  
on one network

∞

Maximum number  
of networks:  
unlimited



## INSTALLATION AND MOUNTING

For surface, suspended and BESA mounting. Quick-fix installation brackets are supplied with each luminaire for surface mounting and optional accessory kits are available to assist with other mounting options.

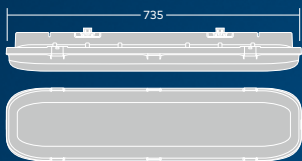
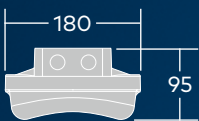


Quick-fix brackets

DISCOVER

www.thornlighting.com/FORL

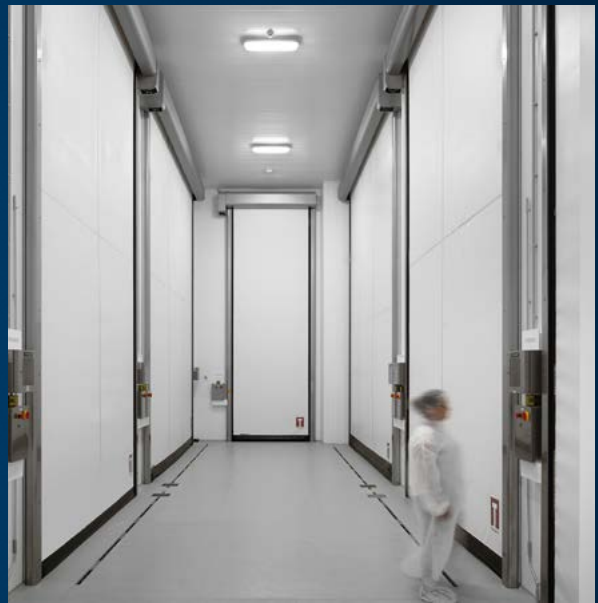
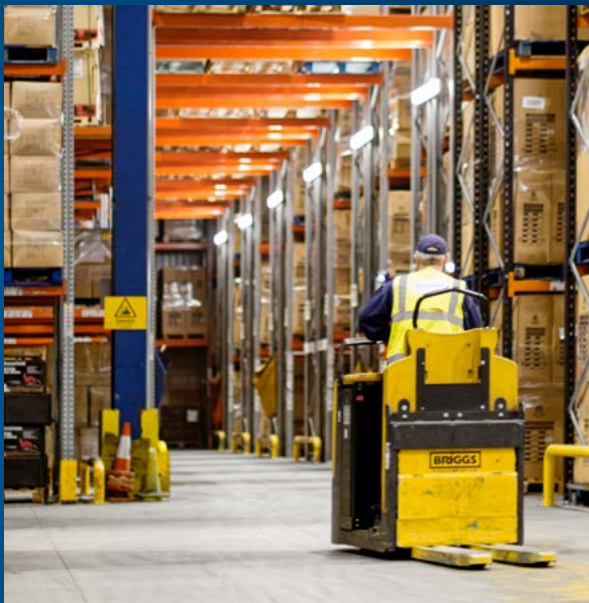
# FORCELED



PC

|            |                                                                                                                                                                                                                                                                                                                                                                |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            | <b>DALI dimmable</b><br>4000 lm, 7000 lm, 10 000 lm                                                                                                                                                                                                                                                                                                            |
|            | up to 150 lm/W                                                                                                                                                                                                                                                                                                                                                 |
|            | 4000 K                                                                                                                                                                                                                                                                                                                                                         |
| <b>CRI</b> | > 80                                                                                                                                                                                                                                                                                                                                                           |
|            | IP66                                                                                                                                                                                                                                                                                                                                                           |
|            | IK10                                                                                                                                                                                                                                                                                                                                                           |
|            | -20 °C to 55 °C<br>(4000 lm)                                                                                                                                                                                                                                                                                                                                   |
|            | up to L95 @ 100 000 hours                                                                                                                                                                                                                                                                                                                                      |
|            | <p>Wide Beam</p>                                                                                                                                                                                                                                                                                                                                               |
|            | Fixed output (HF), DALI (HFI), Microwave Presence Sensor (MWS),<br>Microwave Presence Sensor with Corridor Function (CORM), Corridor Function (COR),<br>basicDIM Bluetooth® Wireless (BC), Microwave Presence Sensor and basicDIM Bluetooth® Wireless (MWBC) and<br>Microwave Presence Sensor and basicDIM Bluetooth® Wireless with Corridor Function (CORMBC) |
|            | 3 hr manual test, LiFePO <sub>4</sub> battery (E3)<br>3 hr addressable self-test, LiFePO <sub>4</sub> battery (E3D)                                                                                                                                                                                                                                            |





# ESCORT

## A COMPACT AND IMPACT RESISTANT WATERPROOF LUMINAIRE WITH WIRELESS CONNECTIVITY

Escort is a robust luminaire with a discreet and very compact design ideal for wayfinding in demanding environments. Options include wireless connectivity, controls, sensors, and lithium iron phosphate emergency batteries.

## LONG LIFE AND ROBUST

This low voltage luminaire has a long lifetime (72 000 hours @ L80) and high impact protection certified to IK10.

## HIGH EFFICIENCY IN A SMALL BODY

Considering its compact size and low power, Escort still delivers up to 129 lm/W.



## THORN WATERPROOF CONNECTED FAMILY

Escort, Aquaforce Pro and ForceLED all have optional smart connectivity. This enables wireless communication between luminaires thanks to the basicDIM modules and controller app built on Bluetooth® mesh technology.

15 m

Maximum  
spacing between  
luminaires

20 m

Maximum distance  
between luminaire  
and mobile devices  
running app

250

Maximum nodes  
on one network

∞

Maximum number  
of networks:  
unlimited



### EASE OF INSTALLATION

With its small form factor, Escort is a practical choice for transportation and can easily be installed by one person.

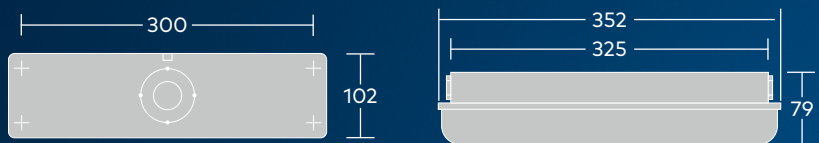
### LUMEN OPTIONS

Escort has three lumen output options. Choose from 800 lm, 1000 lm or switchable 800 / 1000 lm.

DISCOVER

[www.thornlighting.com/ESCT](http://www.thornlighting.com/ESCT)

# ESCORT



PC

|  |                                                                                                                                                                                                                                                                            |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Switchable lumen output</b><br>800 lm / 1000 lm<br><br><b>DALI dimmable</b><br>800 lm, 1000 lm                                                                                                                                                                          |
|  | Up to 129 lm/W                                                                                                                                                                                                                                                             |
|  | 4000 K                                                                                                                                                                                                                                                                     |
|  | > 80                                                                                                                                                                                                                                                                       |
|  | IP65                                                                                                                                                                                                                                                                       |
|  | 0 °C to 25 °C                                                                                                                                                                                                                                                              |
|  | IK10                                                                                                                                                                                                                                                                       |
|  | 50 000 h L90 @ 25 °C / 72 000 h L80 @ 25 °C / 100 000 h L75 @ 25 °C                                                                                                                                                                                                        |
|  |                                                                                                                                                                                                                                                                            |
|  | Fixed output (HF), DALI (HFIX), Microwave Presence Sensor (MWS),<br>basicDIM Bluetooth® Wireless (BC), Microwave Presence Sensor and basicDIM Bluetooth® Wireless (MWBC) and<br>Microwave Presence Sensor and basicDIM Bluetooth® Wireless with Corridor Function (CORMBC) |
|  | 3 hr manual test, LiFePO <sub>4</sub> battery (E3)<br>3 hr addressable self-test, LiFePO <sub>4</sub> battery (E3D)                                                                                                                                                        |





# SMART CONNECTIVITY

Thanks to the optional basicDIM Bluetooth® Wireless module, you can now wirelessly connect lighting fixtures to each other or in groups. Thorn have a range of waterproof luminaires that can be controlled individually or in groups by presence or light sensors, and luminaires can even connect to each other wirelessly, for simple control without the need to install any new cabling.



## COMMUNICATIVE

Thorn can offer basicDIM connectivity for Aquaforce Pro and our other waterproof luminaires ForceLED and Escort, plus the HiPak highbay. The luminaires can be grouped together into zones and configured to dim or simply switch on or off.

basicDIM Wireless is based on Bluetooth® Low Energy, a state-of-the-art wireless technology. basicDIM provides a Bluetooth® network where functionality is distributed across all nodes, ensuring a high level of connection reliability.

15 m

Maximum spacing between luminaires

20 m

Maximum distance between luminaire and mobile devices running application

250

Maximum nodes on one network

∞

Maximum number of networks: unlimited



## FLEXIBLE

Conveniently configure your waterproof luminaire from your smartphone or tablet via password-protected Bluetooth® connection. basicDIM allows you to define various light profiles, both individually and as a group.



## ADAPTIVE

Thorn waterproof luminaires are also available with a sensor that monitors movements over an area of 7.5 m when mounted at a height of 3 m. Via the app it is possible to adjust the sensitivity and the range.

## WIRELESS CAPABILITIES



- 1 Aquaforce Pro (with basicDIM and Microwave Presence Sensor)
- 2 Aquaforce Pro (with basicDIM)
- 3 basicDIM Bluetooth® Wireless User Interface



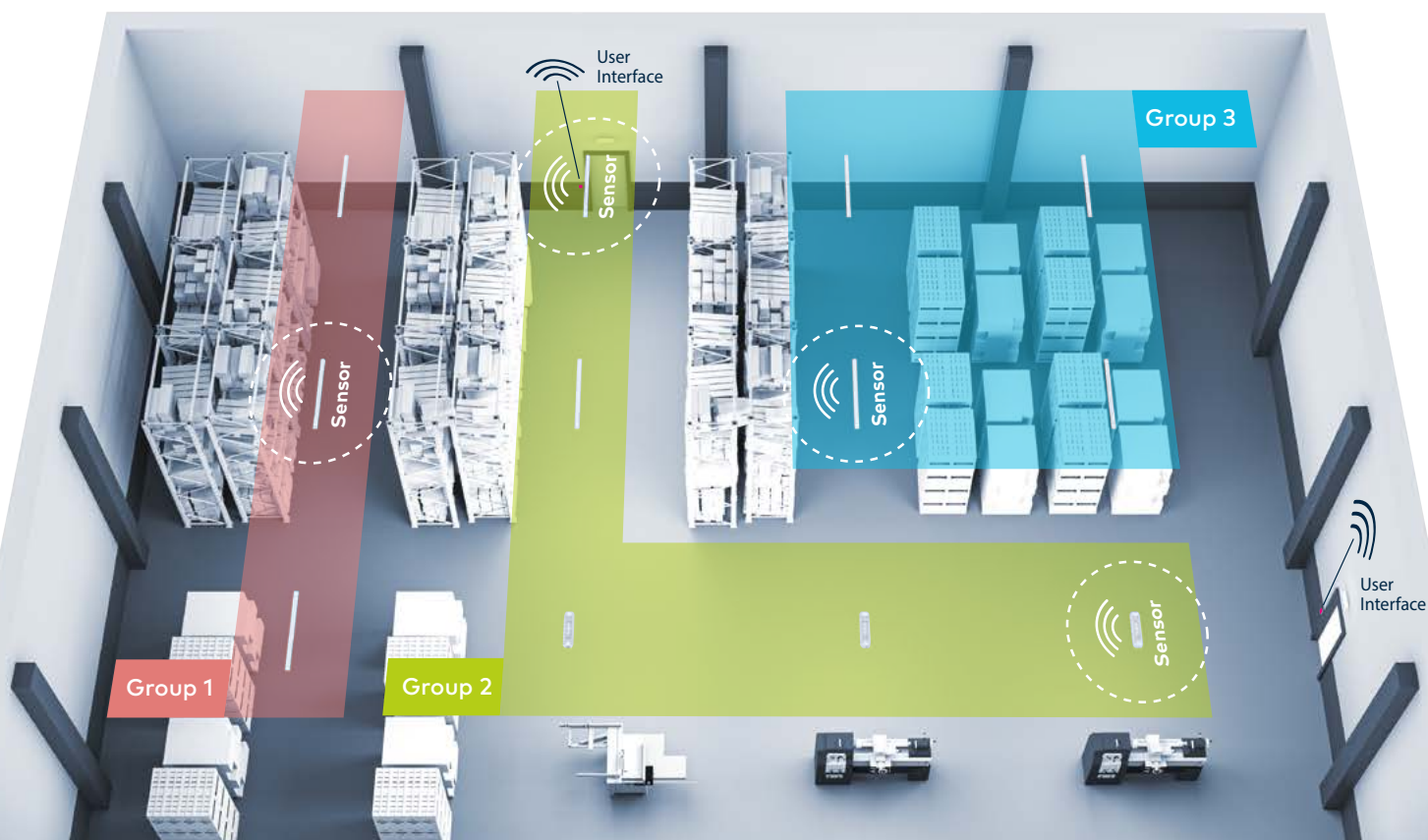
## APPLICATION EXAMPLE

### ROOM

- x9 Aquaforce Pro
- x3 ForceLED
- x2 Escort

### LIGHTING SOLUTION

- Switching on and off
- Dimming functions
- Grouping luminaires
- Integrate sensors



# COMBINED SOLUTIONS

## TO MEET THE CHALLENGE

The goods entrance of any factory can be busy with the constant movement of delivery vehicles, people and forklift trucks. The choice of lighting will determine whether an area is safe or potentially dangerous. Good lighting provides a safe environment for employees in the challenging areas of a goods entrance. Thorn have a number of solutions that will provide good reliable lighting.

ForceLED is a rugged tough luminaire suitable for a wide range of applications that are indoors or in semi-outdoor areas, designed to withstand impacts of up to IK10. In Internal racking areas or mezzanines, Aquaforce Pro will ensure you get the right light levels and light quality and maximise energy saving. Make wayfinding easy with Escort providing a guiding light also with wireless controls that are available from the Thorn waterproof options.



## KEY CONSIDERATIONS

- 01** Professionally designed lighting solutions provide safe working environments
- 02** Good lighting helps to motivate the workforce and increase productivity
- 03** In harsh and difficult environments it is important to know which luminaire to select that will perform to the highest standard
- 04** Long life options that minimise maintenance periods and avoid closing the task areas
- 05** Simple installation – minimise install time and keep the commissioning simple

Products used in the scene:



**AQUAFORCE PRO**



**FORCELED**



**ESCORT**



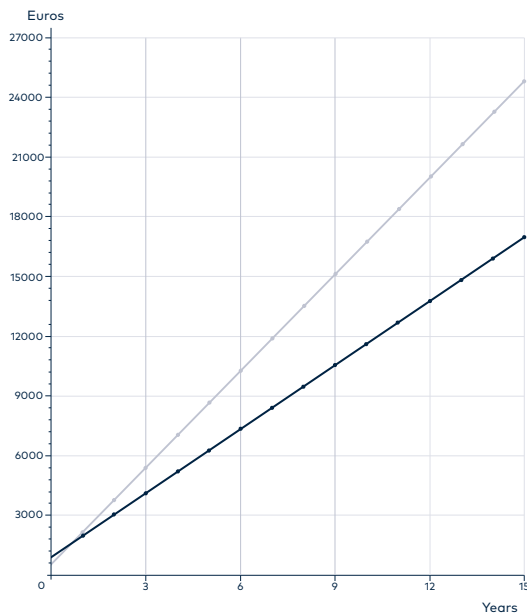
# ENERGY SAVINGS & REFURBISHMENT

## REFURBISHMENT PROJECT: UPGRADE A WAREHOUSE AREA

- Upgrade a warehouse by replacing the current T26 fluorescent fittings with Aquaforce Pro (LED)
- Improve the light quality and reduce errors in picking
- Warehouse is 10 m by 8 m with a ceiling height of 6 m
- In operation 7 days a week from 5am to 6pm
- Based on an energy cost of 26.6 (Eur/a)/kW<sup>1</sup>
- Calculations are based on a 15 year lifetime
- The upgrade will replace 9 (2 x 70 W) T26 Aquaforce II with 12 (62 W) Aquaforce Pro 8000 lm
- With an energy reduction from 1260 W to 744 W, the return on investment will be less than 10 months
- 4526 kg CO<sub>2</sub> reduction over lifetime

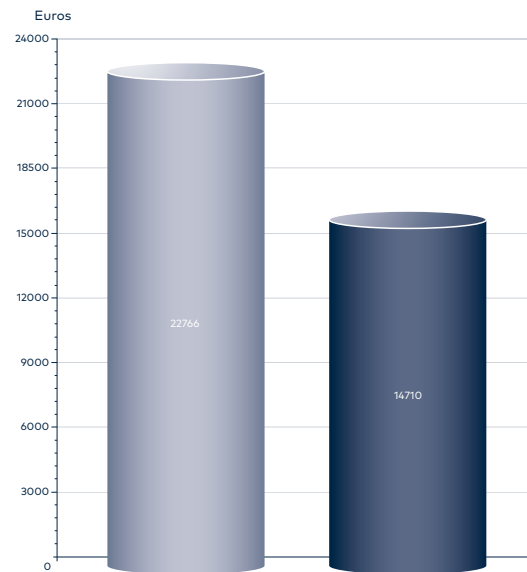
### RETURN ON INVESTMENT WITHIN 10 MONTHS

— Original T26 Solution  
— LED Solution (no controls)



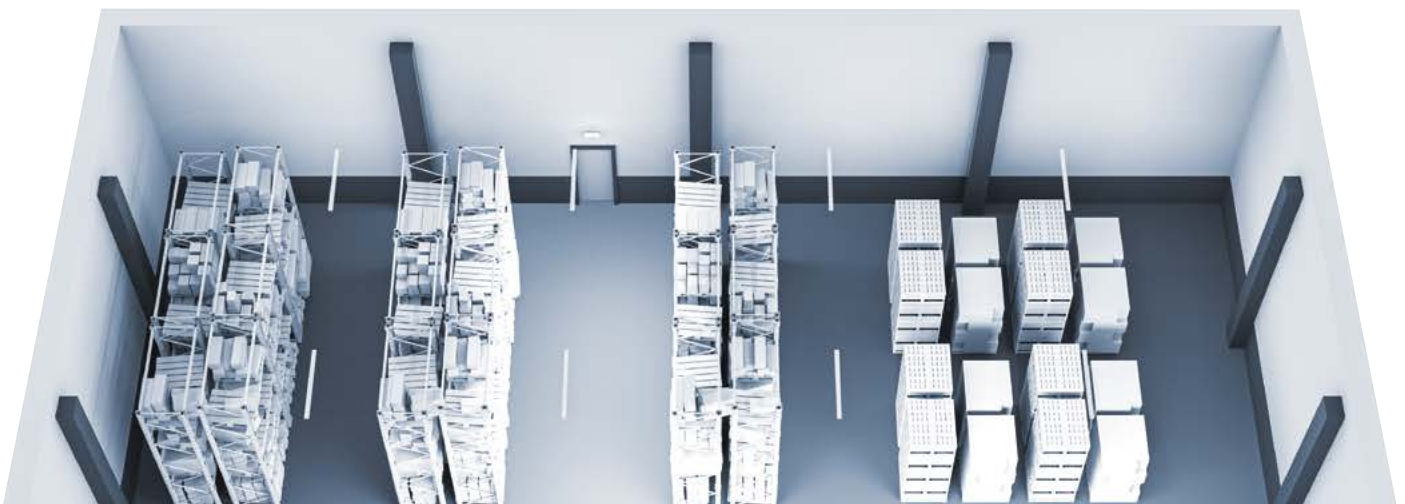
### 36 % ENERGY REDUCTION OVER LIFETIME

— Original T26 Solution  
— LED Solution (no controls)



<sup>1</sup> Calculations made using Thorn ecoCALC software

Upgrade of a warehouse by replacing the current fluorescent fittings with Aquaforce Pro

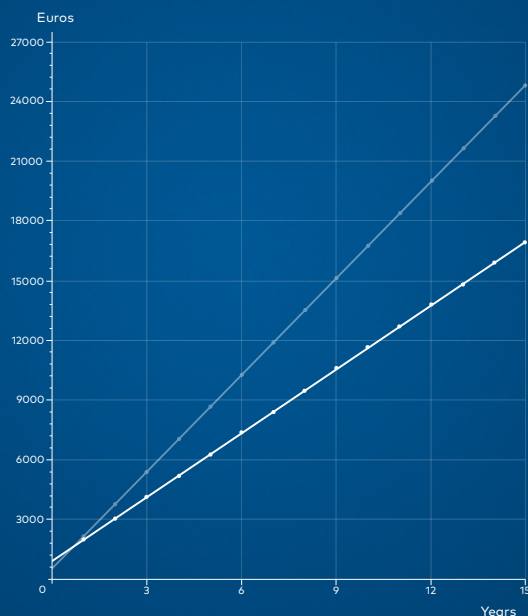


## UPGRADING THE LIGHTING SOLUTION IN A WAREHOUSE USING AQUAFORCE PRO AND BASICDIM WIRELESS CONTROLS

- A bigger energy saving can be realised if a wireless controls system is installed into the same project
- Even though the initial investment will increase, the return-on-investment period will be less than 14 months due to the amount of energy savings that can be achieved
- Configuring the task area into zones and dimming to 10 % when the sensors are not activated will save around 70 % in energy costs over the lifetime compared to the original fluorescent fittings
- With controls 70 % CO<sub>2</sub> reduction is possible (29 981 kg CO<sub>2</sub> reduction over lifetime)
- Using basicDIM wireless control means that no additional wiring is required, saving on additional investment

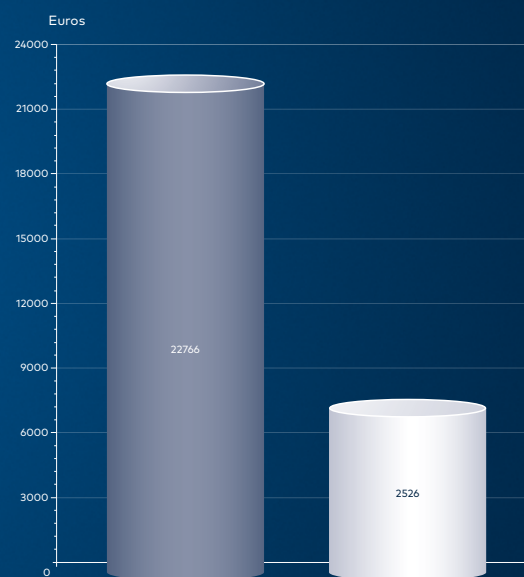
### RETURN ON INVESTMENT WITHIN 14 MONTHS

- Original T26 Solution
- LED Solution (with Wireless Controls)



### 70 % ENERGY REDUCTION OVER LIFETIME

- Original T26 Solution
- LED Solution (with Wireless Controls)



Upgrade of a warehouse by replacing the current fluorescent fittings with Aquaforce Pro and basicDIM wireless controls



# SPECIFICATIONS MATRIX

The Thorn waterproof range is designed to withstand difficult and demanding environments. Sharing the same high build quality and strong IP compliance, Thorn products such as Aquaforce, Aquaforce Pro, ForceLED and Escort continue to perform even in the most arduous wet and dusty conditions.

Selecting the right luminaire is key to a good lighting solution that provides a safe working environment:

|                         |                   | AQUAFORCE                                                                           | AQUAFORCE PRO                                                         | AQUAFORCE PRO                                                         | FORCELED                                                              | ESCORT                                 |
|-------------------------|-------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------|----------------------------------------|
| Body                    |                   | PC                                                                                  | PC                                                                    | PMMA                                                                  | Aluminium                                                             | Aluminium                              |
| Diffuser                |                   | PC                                                                                  | PC                                                                    | PMMA                                                                  | PC                                                                    | PC                                     |
| Light Distribution      |                   | Medium Beam, Wide Beam                                                              | Medium Beam, Wide Beam                                                | Medium Beam, Wide Beam                                                | Wide Beam                                                             | Medium Beam                            |
| Product Dimensions (mm) |                   | Small: 1100 x 92 x 90<br>Large: 1600 x 92 x 90                                      | Small: 1100 x 92 x 90<br>Large: 1600 x 92 x 90                        | Small: 1100 x 92 x 90<br>Large: 1600 x 92 x 90                        | 735 x 180 x 95                                                        | 352 x 102 x 79                         |
| Colour Temperature      |                   | 4000 K                                                                              | 3000 K / 4000 K                                                       | 3000 K / 4000 K                                                       | 4000 K                                                                | 4000 K                                 |
| Lumen Output (lm)       |                   | Small: 4300<br>(options 3420-2900-2300)<br>Large: 6400,<br>(options 5140-4290-3400) | Small: 2900, 4300, 5200<br>Large: 4300, 6400, 8000,<br>10 000         | Small: 2900, 4300, 5200<br>Large: 4300, 6400, 8000,<br>10 000         | 4000, 7000, 10 000                                                    | 800 (optional 1000),<br>800, 1000      |
| Efficiency              |                   | Up to 148 lm/W                                                                      | Up to 163 lm/W                                                        | Up to 163 lm/W                                                        | Up to 150 lm/W                                                        | Up to 129 lm/W                         |
| MacAdam                 |                   | 3                                                                                   | 3                                                                     | 3                                                                     | 3                                                                     | 3                                      |
| CRI                     |                   | > 80                                                                                | > 80                                                                  | > 80                                                                  | > 80                                                                  | > 80                                   |
| IP Rating               |                   | IP66                                                                                | IP66                                                                  | IP66                                                                  | IP66                                                                  | IP65                                   |
| IK Rating               |                   | IK08                                                                                | PC: IK08                                                              | PMMA:IK03                                                             | IK10                                                                  | IK10                                   |
| Corrosion Resistance    |                   | No                                                                                  | No                                                                    | Yes                                                                   | No                                                                    | No                                     |
| Temperature Range       |                   | 0 °C to 40 °C                                                                       | -20 °C to 45 °C                                                       | -20 °C to 45 °C                                                       | -20 °C to 55 °C (4000 lm)                                             | 0 °C to 25 °C                          |
| Lifetime Hours          |                   | L80 @ 50 000 h                                                                      | L80 @ 100 000 h                                                       | L80 @ 100 000 h                                                       | L95 @ 100 000 h                                                       | L80 @ 72 000 h                         |
| CONTROLS                | DALI              | Yes                                                                                 | Yes                                                                   | Yes                                                                   | Yes                                                                   | Yes                                    |
|                         | Microwave Sensor  | Yes                                                                                 | Yes                                                                   | Yes                                                                   | Yes                                                                   | Yes                                    |
|                         | Corridor Function | No                                                                                  | Yes                                                                   | Yes                                                                   | Yes                                                                   | Yes                                    |
|                         | Wireless BasicDIM | No                                                                                  | Yes                                                                   | Yes                                                                   | Yes                                                                   | Yes                                    |
|                         | lumDATA           | No                                                                                  | Yes                                                                   | Yes                                                                   | Yes                                                                   | Yes                                    |
| Installation            |                   | Ceiling, Wall, Surface,<br>BESA, Chain, Catenary                                    | Ceiling, Wall, Surface,<br>BESA, Chain, Catenary                      | Ceiling, Wall, Surface,<br>BESA, Chain, Catenary                      | Ceiling, Wall, Surface,<br>BESA, Chain, Catenary                      | Wall, Surface, BESA,                   |
| Quick Connect           |                   | Yes                                                                                 | Yes                                                                   | Yes                                                                   | Yes                                                                   | No                                     |
| Emergency Options       |                   | E3                                                                                  | E3, E3D, E3D-UK                                                       | E3, E3D, E3D-UK                                                       | E3, E3D, E3D-UK (LiFePO <sub>4</sub> )                                | E3, E3D, E3D-UK (LiFePO <sub>4</sub> ) |
| Halogen Free            |                   | Yes                                                                                 | Yes                                                                   | Yes                                                                   | Yes                                                                   | Yes                                    |
| Classifications         |                   | CE, UKCA, RCM, Class1,<br>ENEC, D-Mark, EAC, 850 °C                                 | CE, UKCA, RCM, Class1,<br>ENEC, D-Mark, EAC,<br>Food Industry, 850 °C | CE, UKCA, RCM, Class1,<br>ENEC, D-Mark, EAC,<br>Food Industry, 850 °C | CE, UKCA, RCM, Class2,<br>ENEC, D-Mark, EAC,<br>Food Industry, 850 °C | CE, UKCA, Class 1, 850 °C              |

# APPLICATION MATRIX

But not all industrial working locations are the same; each presents different challenges. Maintaining good lighting levels and a safe working environment requires the right luminaire to be selected, one that can face up to these challenges and come out on top.

| LOCATION                             | AQUAFORCE | AQUAFORCE PRO PC | AQUAFORCE PRO PMMA | FORCELED | ESCORT |
|--------------------------------------|-----------|------------------|--------------------|----------|--------|
| Abattoirs                            |           |                  | ■                  |          |        |
| Agricultural Buildings               |           |                  | ■                  |          |        |
| Beer and Wine Cellars                | ■         | ■                | ■                  |          |        |
| Breweries                            |           |                  | ■                  |          |        |
| Canopy Roofs                         |           | ■                |                    | ■        | ■      |
| Canteen Kitchens                     |           |                  | ■                  |          |        |
| Outdoor Car Park Under Canopy        |           |                  |                    | ■        | ■      |
| Car Wash                             |           |                  | ■                  |          |        |
| Changing Rooms                       | ■         | ■                |                    |          |        |
| Cheese Dairies                       |           |                  | ■                  |          |        |
| Chill Stores                         |           | ■                | ■                  |          |        |
| Factories                            | ■         | ■                | ■                  | ■        | ■      |
| Food Process Areas                   |           |                  | ■                  |          |        |
| Garage                               | ■         | ■                |                    | ■        | ■      |
| Heavy Plant Rooms (high temperature) |           |                  |                    | ■        |        |
| Industrial Warehouses                | ■         | ■                |                    | ■        | ■      |
| Kitchens                             |           |                  | ■                  |          |        |
| Lavatories                           | ■         | ■                |                    |          |        |
| Loading bays Indoor                  | ■         | ■                |                    |          |        |
| Loading Bays Outdoor                 |           |                  |                    | ■        | ■      |
| Machinery Rooms (high temperature)   |           |                  |                    | ■        |        |
| Multistorey Car Park                 |           | ■                |                    | ■        | ■      |
| Outdoor Processing Plants            |           |                  |                    | ■        | ■      |
| Pedestrian Subways                   |           |                  |                    | ■        | ■      |
| Plant Rooms                          |           | ■                |                    | ■        | ■      |
| Power Stations                       |           |                  |                    | ■        | ■      |
| Railway Platforms                    |           | ■                |                    | ■        | ■      |
| Sport stadiums                       |           | ■                |                    | ■        | ■      |
| Storage Sites                        | ■         | ■                |                    | ■        | ■      |
| Outdoor Storage Sites (covered)      |           |                  |                    | ■        | ■      |
| Subways                              |           |                  |                    | ■        | ■      |
| Textile Processing Plants            |           |                  | ■                  |          |        |
| Transport Terminals                  |           | ■                |                    | ■        | ■      |
| Underground Car parks                | ■         | ■                |                    | ■        | ■      |
| Utility Rooms                        | ■         | ■                |                    | ■        | ■      |
| Workshops                            | ■         | ■                |                    | ■        |        |

For help with your application, please contact your Thorn representative

■ Compatible

# GET IN TOUCH

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**5 YEAR  
GUARANTEE**

As a globally leading luminaire manufacturer, Thorn Lighting provides a five-year warranty for its complete product range within all European Countries.  
[thornlighting.com/guarantee](http://thornlighting.com/guarantee)

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MAKE  
LIGHT  
WORK**