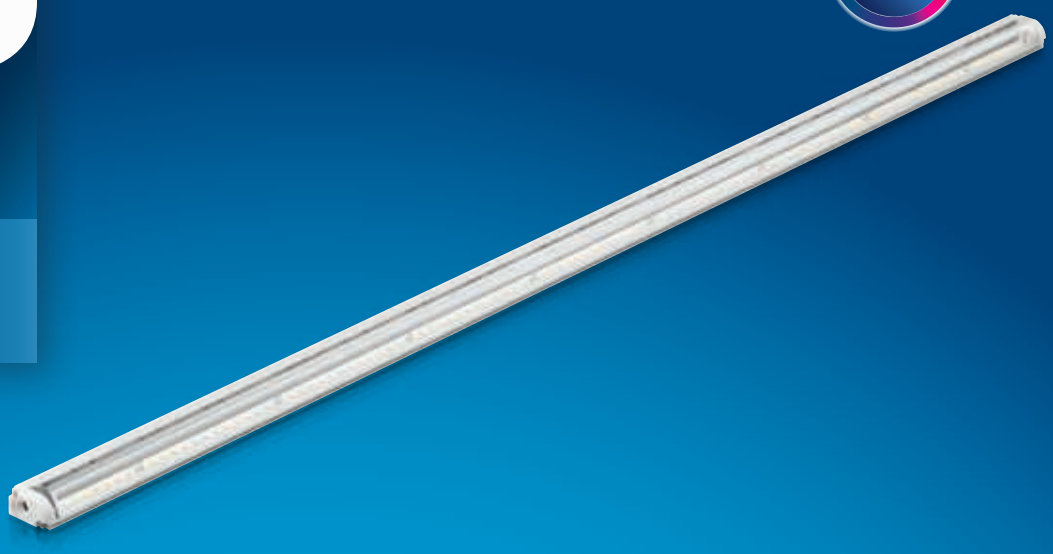
PHILIPS

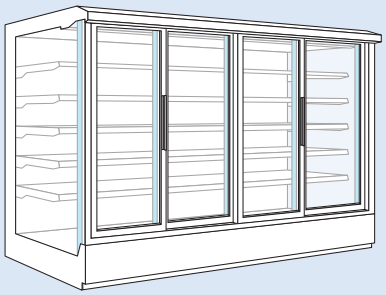
InteGrade

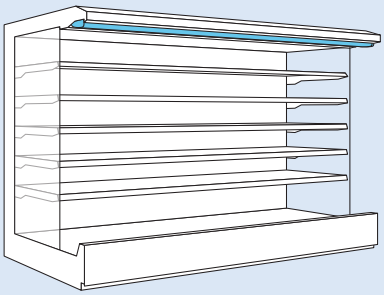
LED engine system HF



Quick Installation Guide EU

Cooler lighting for vertical and canopy installation





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April 2019

Important

Please take the time to read this installation guide before you install this Philips LED product and driver.
The guide contains important information regarding installation and operation.

Warranty

Warranty only applies when the appropriate Philips LED driver and Philips cabling (as described in this guide and leaflets) are used.
Please visit our website www.philips.com/ledrefrigeration or contact your local sales office for more information.

Warnings

- This LED Engine requires a heatsink.
- The installation guide does not supersede local or (inter)national regulations for electrical installations.
- This Philips LED product and LED driver must be installed by a professional electrician in accordance with the applicable and
- appropriate electrical codes and the instructions provided by Philips.
- Please note that the driver should be built into an enclosure (Tcase max. 80 °C / 176 °F). Ensure that the mains cable to the driver is not accessible.
- This Philips LED product is designed to be connected to a circuit from a class 2 power source (Philips Xitanium LED power driver)
- with energy-limited supply.
- This is a 24 V DC product. Please ensure proper routing of the cable to avoid cable damage.
- Do not connect this LED product to mains voltages.
- To allow for variance in the installation, it is not recommended to load the power driver beyond 90% of its rated maximum power.
- Before installation, maintenance or cleaning, always first switch off or disconnect the power and follow the appropriate safety procedures.
- Before removing any lens covers or fluorescent lamps, always first switch off or disconnect the mains power to the lighting system.
- Take care not to damage the existing (heating) wiring if the LED product is installed in a freezer.
- To ensure that the InteGrade products remain securely in position when doors open and close, you can use extra tape or Velcro between the mounting surface and the fixture.
- Please note that the colors of the wires in existing designs, such as refrigeration systems or cabinets, may differ. The position of the
- (original) ballast may also differ.
- Do not make sharp bends with electrical wires.
- CAUTION: To reduce the risk of fire, do not install in a compartment smaller than 3 inches (76.2 mm) by 1.5 inches (38.1 mm) by length of luminaire.
- Avoid contact between cables and sharp edges.
- Due to the variety of designs and brands in which the Philips LED products can be installed, you may need to use customized mounting accessories to fit the specific design you are using. If you require further support, please contact your local Philips sales organization.
- Do not install the module in compression-type appliances with unprotected cooling systems which use flammable refrigerants.
- To prevent unwanted tripping caused by the inrush current of the LED driver, an MCB (mini circuit breaker) / fuse (slow blow) of at least 6 A must be installed.
- Philips advises using a zero-crossing/switching solid-state relay to reduce the inrush current peak.
- This product is designed for damp and dry locations only.
- WWR products are intended for use in refrigerators; Not suitable for ordinary lighting in household room illumination.

Cleaning

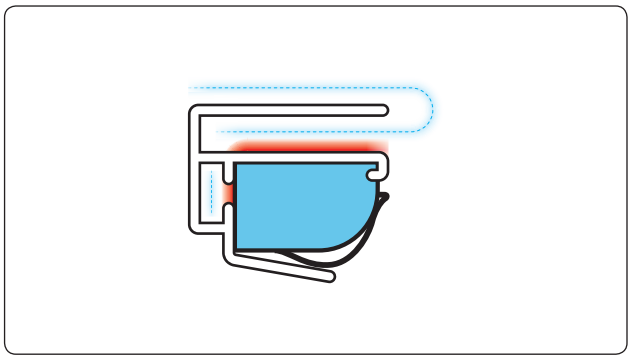
- Use a damp cloth and a mild cleaning agent. Do not wipe the LED product with a dirty or very wet dishcloth or towel
- because they may leave residue that can damage the LED product.
- Do not use abrasive cleaners, scouring pads, bleach or cleaners containing chlorine because they can scratch and damage
- the LED product.

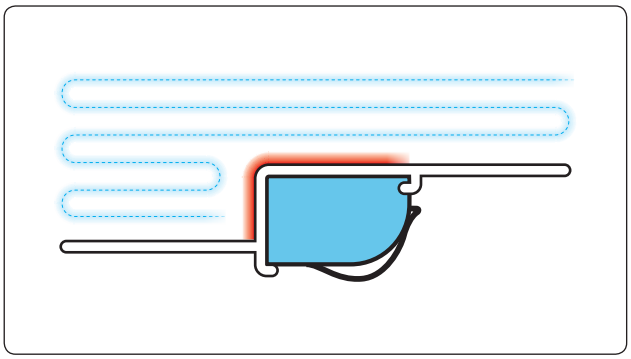
Allowed drivers

	12nc
LED Power Driver 20W-24V *	929000654006
LED Power Driver 80W-24V *	929001669406
LED Power Driver 100W-24V *	929001669506
LED Power Driver 150W 24VDC 120-240V*	929002101980
LED Power Driver 240W 24VDC 120-240V*	92900210208

* The InteGrade LED engine system powered by this driver is Compliant to IEC 60335 standard (Household and similar electrical appliances)

Thermal design





Attention needs to be paid to thermal design-in for LED-modules and drivers to ensure optimum performance and life time of the luminaire. The critical thermal management items for the LED module are set out in this chapter in order to facilitate the design-in. If these thermal items are taken into account, this will help to ensure optimum performance and lifetime of the LED system.

Relevant definitions are explained along with guidance on how and where to measure the temperatures.

Key Definitions:

Module temperature: This is the temperature measured at the specified Tcase or Tc point of the module. This temperature is directly related to the LED junction temperature, which is the critical parameter for operation. Alternatively a Tsense or Tp point is defined on some of our module types which is easier to reach from the top side.

Ambient temperature: This is the temperature of the air surrounding the luminaire in the test environment or application. The module and driver temperature increase, by approximation, linearly with the ambient temperature. This relation can be used to predict module and driver temperatures at a different ambient temperature.

Tc nominal: This is the module temperature at which the performance is specified.

Tc life: This is the module or driver temperature (equal or higher than Tc nominal) at which the lifetime of the module (e.g. lumen maintenance of LxxByy) is specified.

Tc max: This is the maximum module or driver temperature (equal or higher than Tc life) to stay within safety limits. This temperature must not be exceeded, even in case of fan failure. The specified Tc nominal, Tc life, and Tc max are listed in the relevant datasheets that can be found on our website www.philips.com/technology

Test Requirements

Temperature, light output and power measurements can be considered reliable once the luminaire is thermally stable, which may take between 0.5 and 2 hours, and is defined as at least 3 readings of light output and electrical power over a period of 30 minutes, taken 15 minutes apart with a variation of less than 0.5%. The stabilization time depends on the heat capacity of the luminaire (see also the relevant clauses in IEC 60598-1). and ANSI/UL 8750.

Module Tcase point location

The Tcase point of the InteGrade module is located on the reverse side of the module. Please refer to the datasheet for the exact location Driver Tcase point location. The Tcase point on the driver is indicated by a point or an asterisk with the Tc caption. Please refer to the driver datasheet for the exact location. The thermocouple can be attached with a high temperature glue or Kapton tape.

Cooling

The InteGrade modules have a relatively small footprint in relation to their electrical and thermal power. A good thermal contact via a thermal interface material to an adequate heat sink, either integrated in the luminaire head or separate, is a necessity for a good luminaire. The module surface and the heat sink surface must be smooth and free of burrs to obtain optimal contact by only a thin layer of the thermal interface material. The heat sink should not be locked up in a confined space. It should be in contact with the ambient air for optimal heat transfer to the ambient.

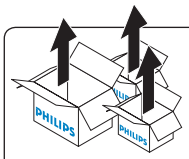
Drivers

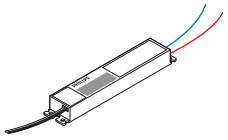
If placed in the luminaire drivers are preferably placed as far away as possible from the modules to prevent it being heated by the modules. If placed in a separate driver compartment they are preferably mounted on the inner surface of the compartment. Do not place the driver on a heat sink that is used for cooling the modules. If so, it will be heated by the thermal losses of the LED –modules.

To warrant the lifetime of the products, two parameters are key:

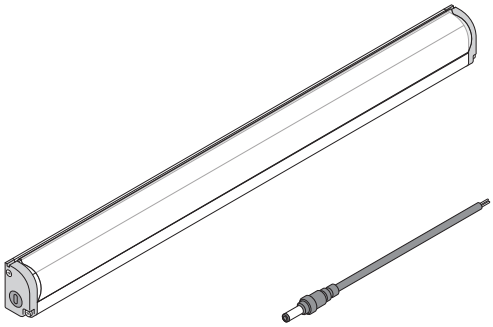
1. Ambient operating temperature. The ambient operating temperature is given in the product datasheet.
2. Tc life: The temperature measured at the Tcase point of the InteGrade module located on the reverse side of the module. Please refer to the datasheet for the exact location Driver Tcase point location and Tc life value.

Products and tools





Philips
LED Power Driver
(20 W, 80 W or
100 W 24 Vdc)

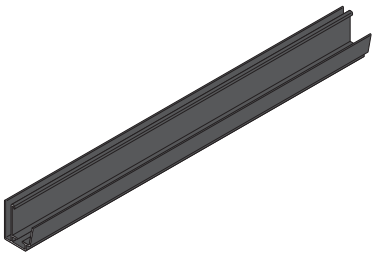


InteGrade LED
engine system HF

InteGrade
cable

InteGrade
connector

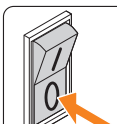
InteGrade
inline lock



Heatsink profile

Phillips H0 screw driver

Start



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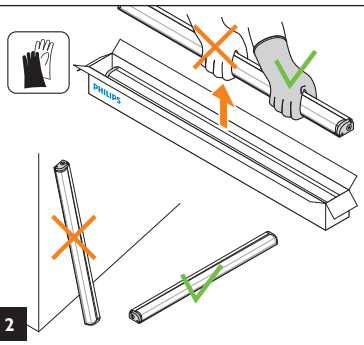

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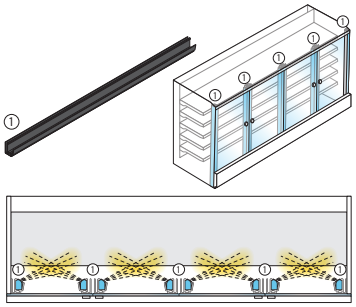
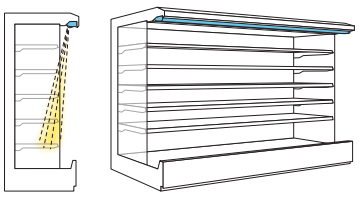
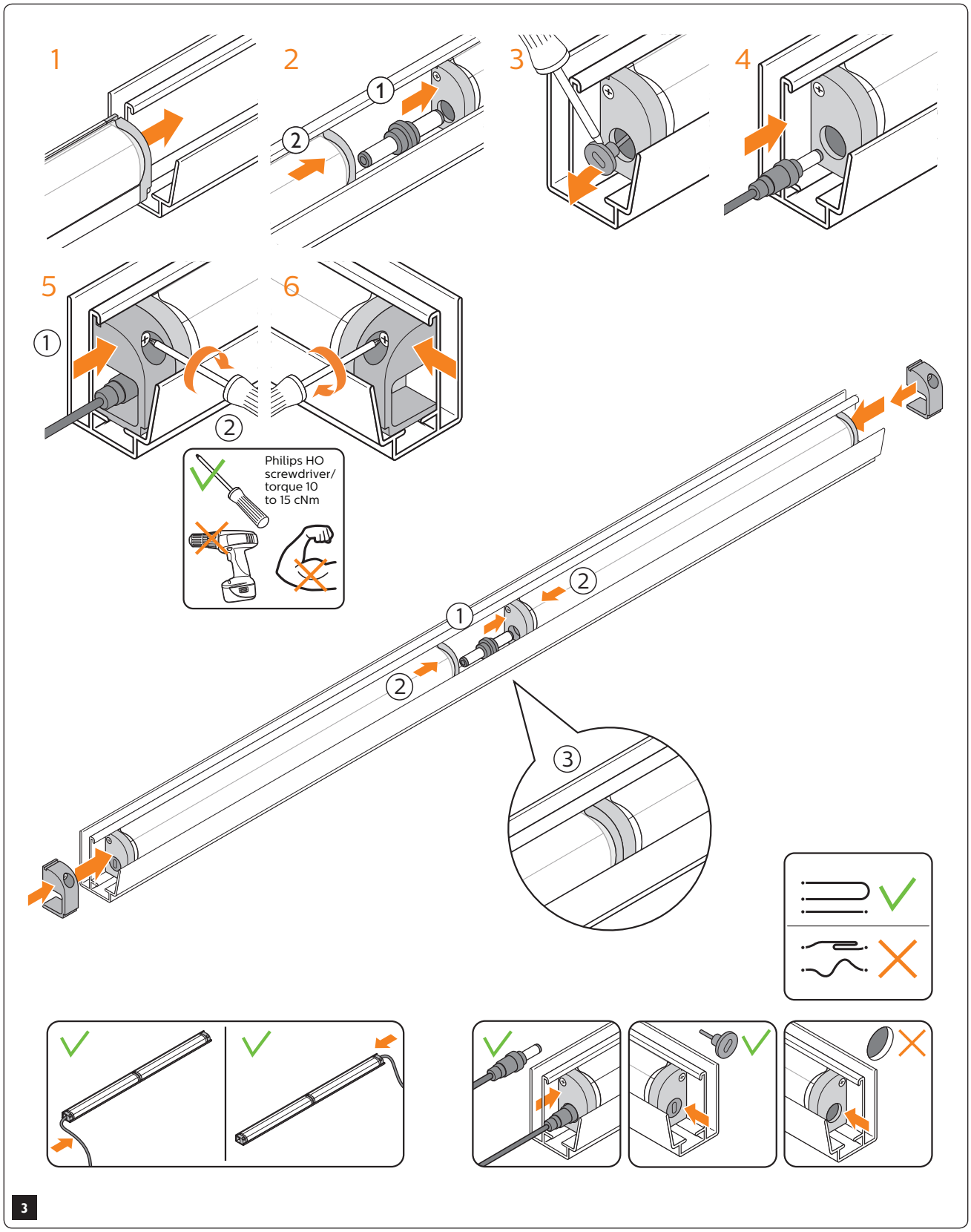
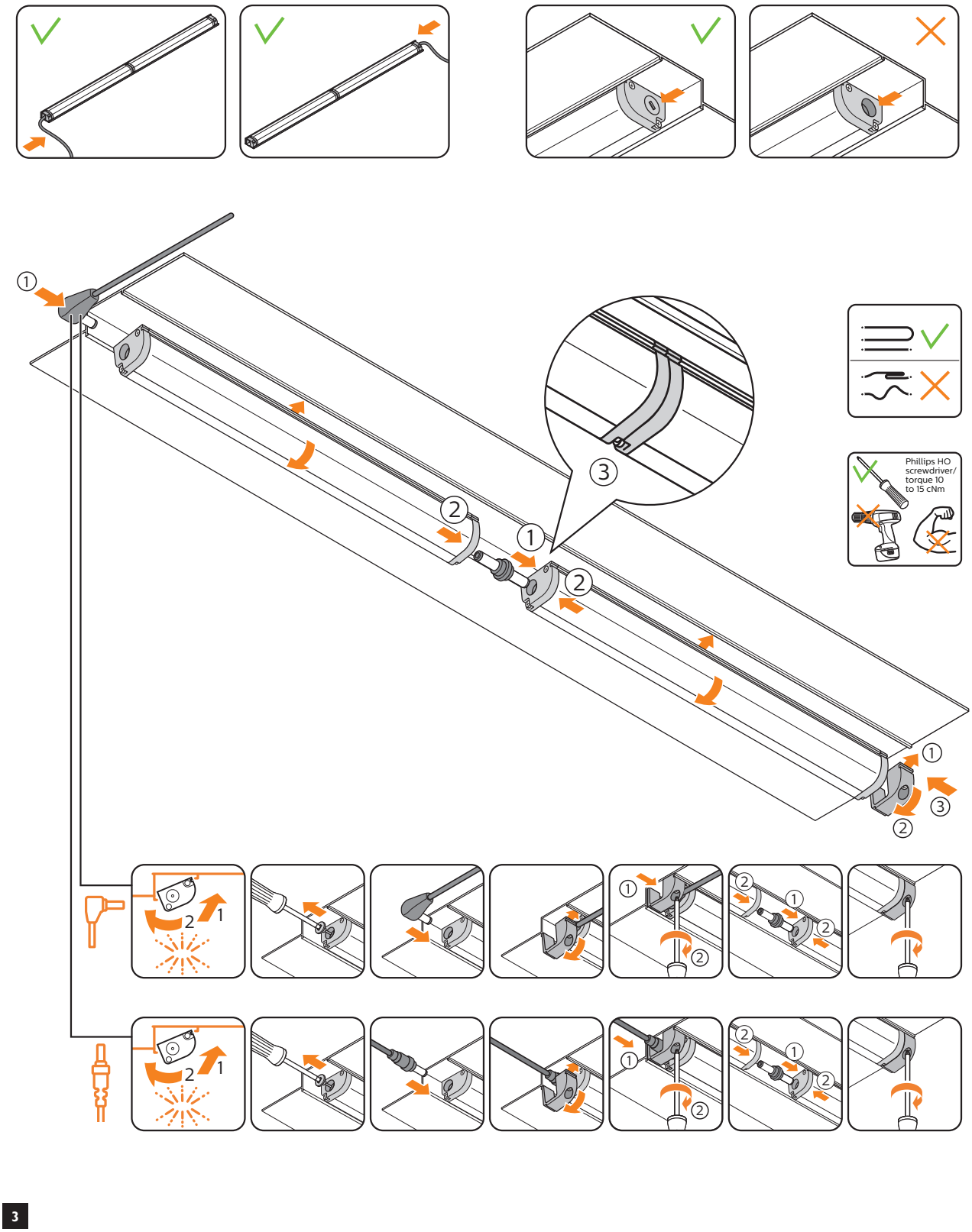




Connecting the LED InteGrade engine (vertical installation)



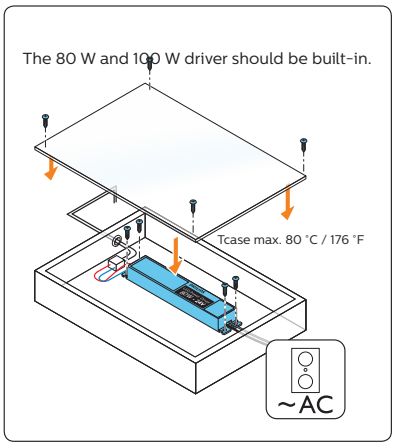
Connecting the LED InteGrade engine (canopy installation)



3

Power driver and wiring

- To allow for variance in the installation, it is not recommended to load the power driver beyond 90% of it's rated maximum power
  - LED driver 100 W (logistic code 929001669506) max 90 W
  - LED driver 80 W (logistic code 929001669406) max 72 W
  Use Philips InteGrade LED power cable of 1 m (39 inch) or 2.5 m (98 inch)
- If InteGrade power cables are extended, only use 0.75 mm2 (AWG 18) or thicker cable uptil a length of max 10 m (32 feet) between driver and Philips LED power cable
- If you wish to make any other configuration, please contact Philips.



Parallel connection

- You can make any combination of engines but:
  - do not exceed the maximum total load on one driver and
  - stay within the boundaries of the maximum load allowed for series connection.

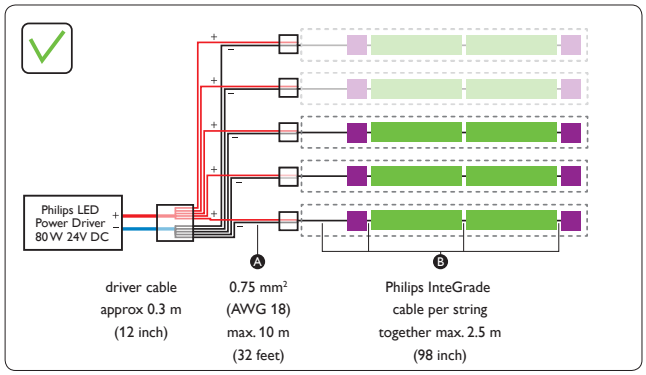
Series connection with Xitanium driver*

- You can make any combination of engines but:
  - Series connections of InteGrade engines always need to be placed into the InteGrade Profiles
  - do not exceed the maximum total load on one driver and
  - stay within the boundaries of the maximum length indicated below!

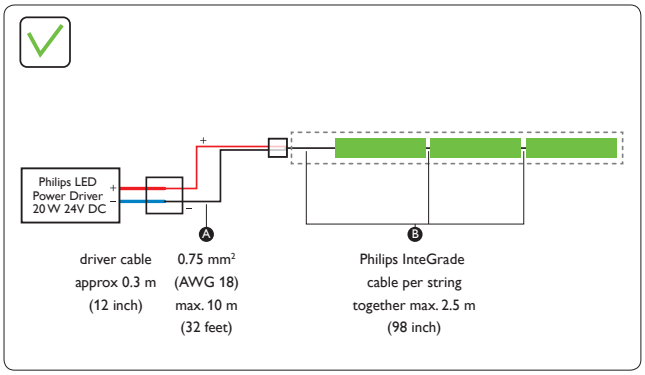
Max. length of LED engines in series: 1570 mm

Wiring diagram with Philips InteGrade LED engines

Example parallel connections (more strings)

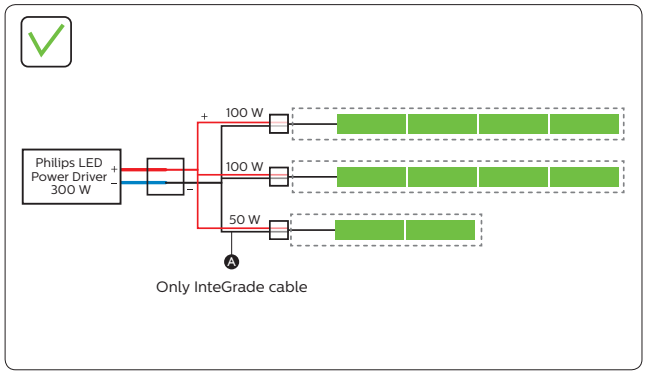


Example series connections (one string)



InteGrade LED engine 140 mm (6") **InteGrade LED engine 575 mm (23")** **1 string**

Example parallel connections (max. 100W per string)



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