LED Driver Solution

48 V DC-String: LED Driver and DC/DC Board
The LED track light revolution

TRIDONIC

48 V DC-String

The LED track light revolution for aesthetic designs

In the past, the size and design of a conductor track spotlight was extremely dependent upon the dimensions of the LED driver. Track boxes provided sufficient space for the driver, but the design options and the miniaturisation of the luminaires were very restricted. The Tridonic revolution has now ensured that spotlights can make a impression, not only with optimum light but also with an aesthetic, essentially free design.

Bulky track boxes spoil the appearance of the ceiling.

48 V DC-String allows you to have small luminaires and an aesthetic solution on a conductor track.

Due to the physical separation of the AC/DC driver and the DC/DC board, the innovative 48 V DC-String lighting solution does away with bulky track boxes altogether. In spite of miniaturisation, you still have unrestricted control of the individual conductor track luminaires, thanks to the possibility of transmitting commands via the powerline communication. Hot plug luminaire replacement can be carried out effortlessly and safely by anyone due to the conductor track with low constant voltage.

At a glance:
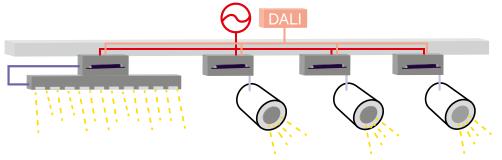**48 V DC-String**

— Design freedom thanks to the miniaturisation of luminaires and conductor tracks
— Individual luminaire control via powerline communication or DALI
— Safe and simple hot-plug luminaire replacement for anyone
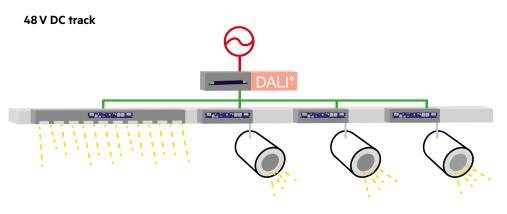
Components and functionality
Comparison between conventional 3-phase conductor track and the new 48 V DC track

3-phase conductor track

AC system with mains voltage

— LED Driver required for each module/luminaire

— Luminaire size determined largely by LED Driver dimensions

— Communication lines to each individual luminaire

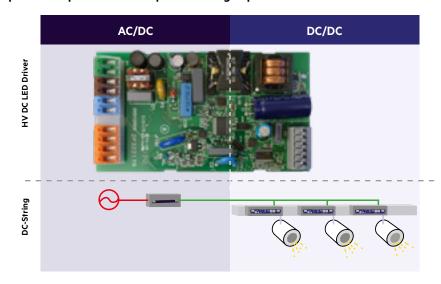— 230 V line running to each LED Driver/luminaire

48 V DC track

Low Voltage DC System (LVDC)

— The Low Voltage DC-String system is driven by one centralised LED Driver

— Only DC/DC part remains with each module/luminaire, allowing further miniaturisation of the luminaire

— Integrated DALI communication allows individual luminaire control

— Safe and easy luminaire exchange by everyone

█ Mains voltage █ Low-voltage DC with PLC current █ Constant █ AC/DC LED Driver █ DC/DC LED-Board █ DALI

* DALI and controls optional with dimming variant

Separate components create space for design options

In conventional LED drivers, the AC/DC conversion takes up most of the space. For 48 V DC-String, Tridonic has divided the LED driver into two components. Only the DC/DC LED driver remains part of the luminaire, whereas the AC/DC driver operates independently of the LED modules.

3

48 V DC-String

Benefits at all levels

Your benefits

OEM

— New miniaturised luminaire designs
— Eliminate trackbox
— Smaller tracks possible
— Individual luminaire dimming without additional wiring

Architect / Planner

— New ceiling / room design opportunities
— Improved ceiling aesthetics through miniaturisation of track light systems
— Emergency and DALI compatible to cover track lighting with one design

Installer

— Quick and easy installation
— SELV – safe and easy to install
— Hot-Plug-In possible – quick commissioning
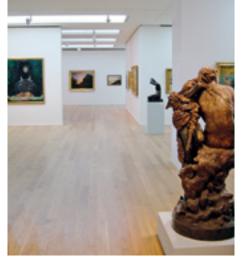— Quick upgrade to DALI dimmable track lights

End User

— Quick and easy maintenance
— SELV – no electrician needed for luminaire exchange
— Hot-Plug-In possible – quick and safe exchange
— Reduced maintenance costs by concentrating critical building blocks to central supply

Typical applications to be replaced by DC-String

If inspirational aesthetics and design freedom are required in addition to optimum light, 48 V DC-String is the perfect solution. Miniaturised spotlights are discreetly integrated into your architectural environment, drawing attention to exhibits, products and selected zones. They are therefore ideal for gastronomy, sales and museums.
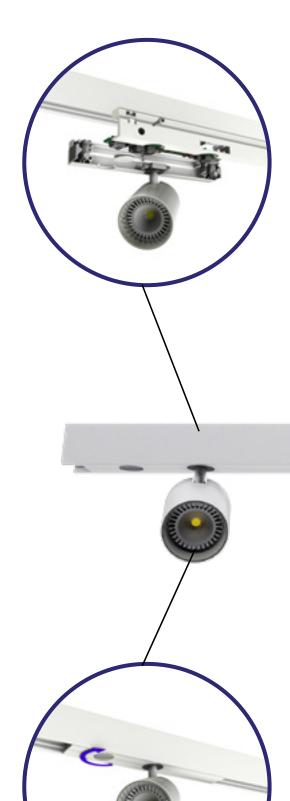

Hospitality

Shop lighting

Showcase lighting

One solution, many advantages

Miniaturisation

— Separation of AC/DC driver and DC/DC board for innovative conductor track lighting
— Free of interfering adapters

Modularity

— Possibility of equipping spotlights from small to large with different lumen packages
— Also suitable for linear luminaires

Fixed output – dimming using a potentiometer

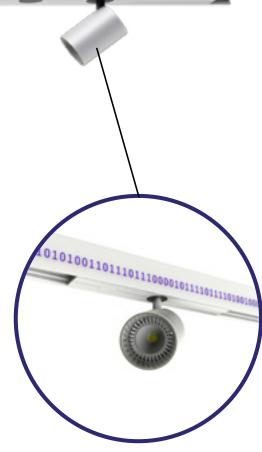— Output current dimmable up to 10 % (amplitude modulation only)

Safety

— 48 V conductor track with separate AC/DC
— Easy replacement – even for users without a technical
background
— Quick commissioning thanks to hot plug-in
— Directional-neutral use of adapters
— No phase adjustment and no locking mechanism re-
quired. The adapter is clicked in via a reliable magnet
system.

Dimming via power line

— Control via DC Power Line Communication (PLC) – no
extra wiring for individual luminaire dimming
— DALI to PLC bridge fully integrated into AC/DC Driver
— Guaranteed DALI compatibility for use of standard
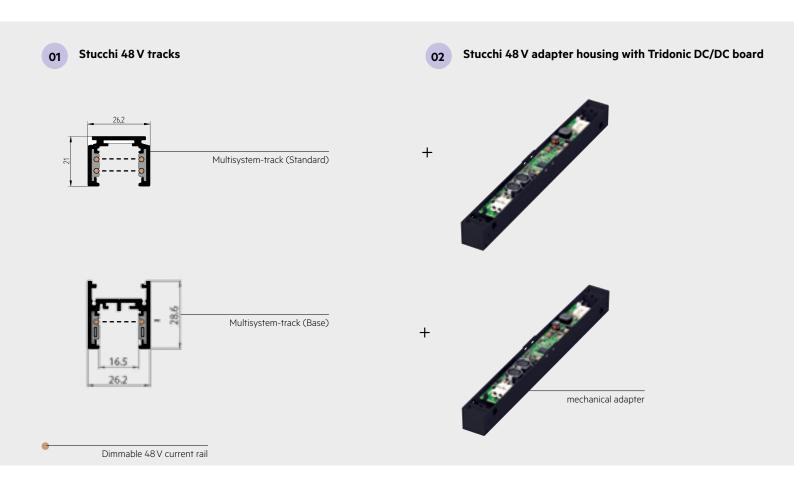DALI controls
— Each node appears individually at the DALI system

48 V DC-String

A perfect combination
Tridonic and A.A.G. Stucchi

A.A.G.
STUCCHI

48 V track systems for DC-String boards

The multi-system tracks and adapters from A.A.G. Stucchi allow for simple integration of the Tridonic DC/DC boards. The partnership therefore offers a simple and cost-effective way of implementing miniaturised spotlighting. There is a standard version with two separate 48 V circuits and magnetic adapter, as well as a basic version to choose from, which can be dimmed via PLC and has a mechanical adapter connection.
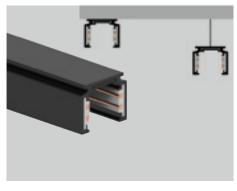
01 **Stucchi 48 V tracks**

26,2
21

Multisystem-track (Standard)

28,6
16,5
26,2

Multisystem-track (Base)

Dimmable 48 V current rail

02 **Stucchi 48 V adapter housing with Tridonic DC/DC board**

+

+

mechanical adapter

The right conductor track

In order to integrate the new technology in the track, providers such as Stucchi have developed a 48 V low-voltage conductor track whose compact design follows the idea of consistent miniaturisation. The range of different profiles also provides a considerable amount of ceiling design freedom.

Further rail mounting options can be found on aagstucchi.it

Multisystem-track (Standard)

Multisystemtrack (Basis)

48 V DC-String

A perfect combination
Tridonic and A.A.G. Stucchi

03 **Simply implemented 48 V track systems**

=

=

Adapter

There is sufficient room for the DC/DC board from Tridonic in the associated adapter. This scores points with its integrative design and a holder, which makes safe and uncomplicated installation and the secure mounting of the spotlight possible.
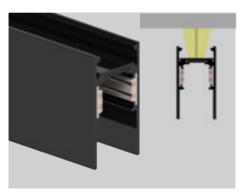
Multi-track-System: Standard

There is a standard version with two separate 48 V circuits and magnetic adapter, as well as a basic version to choose from, which can be dimmed via PLC and has a mechanical adapter connection. The magnetic adapter with integrated DC/DC board can be mounted and removed very quickly and easily via Click-and-Play.
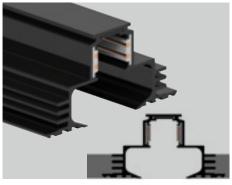
Multitrack-System: Base

The basic version with two DC lines allows the light to be dimmed via DC Power Line Communication (PLC) without additional wiring. The adapter is installed mechanically.
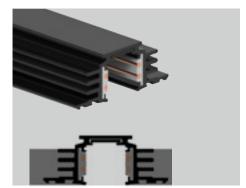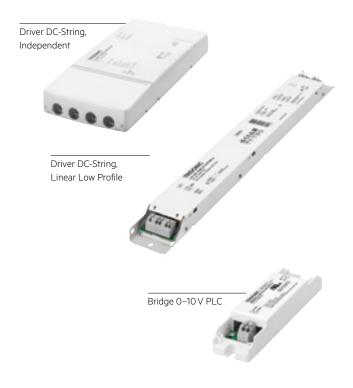
Multisystem-track (Base)

H-Profile

Recessed construction (frameless)

Driver

Driver DC-String,
Independent

Driver DC-String,
Linear Low Profile

Bridge 0–10 V PLC

At a glance:
Driver DC-String

__ Independent fixed output or dimmable DC-String constant voltage LED Driver
__ Dimmable version with integrated DALI to DC power line communication bridge (PLC), one4all interface (corridorFUNCTION, switchDIM, DALI, DSI)
__ Intelligent Temperature Guard (overtemperature protection)
__ Nominal life-time up to 50,000 h with 5-year guarantee

At a glance:
Bridge 0-10V PLC

__ Bridge for converting analogue signals into PLC for DC-String dimming
__ For connecting dimmable DC-String LMI LED Driver in 0…10 V control systems
__ For a maximum of 20 DC-String LMI LED Driver

Driver DC-String | Linear Low Profile and Independent

Designation	Output current at full load (mA)	Output voltage range (V)	Output power (W)	SELV 60 V	Input voltage (V)	Size (mm)	Order No.
**Driver DC-String	Linear Low Profile**							
LCU 48V 75W DC-STR FO lp	358	48	75	yes	220~240	360 x 30 x 21	28000816
LCU 48V 75W DC-STR DIM lp	360	48	75	yes	220~240	360 x 30 x 21	28000815
LCU 48V 150W DC-STR FO lp	708	48	150	yes	220~240	360 x 40 x 21	28001234
LCU 48V 150W DC-STR DIM lp	710	48	150	yes	220~240	360 x 40 x 21	28001235
LC 48V 100W DC-STR UNV FO lp	383	48	100	yes	120~277	425 x 30 x 22	28001983
BRIDGE 0-10V PLC DC STR						30 x 21 x 120	28002074
**Driver DC-String	Independent**							
LCU 48V 75W DC-STR FO SR	359	48	75	yes	220~240	235 x 100 x 31	28001232
LCU 48V 75W DC-STR DIM SR	359	48	75	yes	220~240	235 x 100 x 31	28001233
LCU 48V 150W DC-STR FO SR	707	48	150	yes	220~240	235 x 100 x 31	28001045
LCU 48V 150W DC-STR DIM SR	710	48	150	yes	220~240	235 x 100 x 31	28001044

48 V DC-String
DC/DC Board

Board DC-String
LMI FO Regular, Slim

Board DC-String
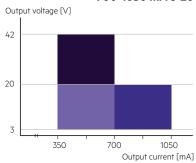LMI DIM Regular, Slim

At a glance:
DC/DC Board DC-String

__ Pure PCB for built-in application
__ Application-oriented operating window
__ Small dimensions for miniaturisation of luminaires
__ Dimming Variant dimmable via DALI, AM dimming up to 5%
__ Fixed-Output Variant Dimmable via potentiometer
__ Adjustable output current via Dip-switch
__ Nominal life-time up to 50,000 h
__ 5-year guarantee

Board DC-String | fixed output and dimming

Designation	Operating window	Output current (mA)	Output voltage range (V)	Output power (W)	Output power (W)	Input voltage (V)	Size (mm)	Order No.
Board DC-String | fixed output								
LMI G2 48V 350-700mA 3-20V FO Slim	II	350–700	3–20	7–14	yes	46~50	125 x 14.8 x 12.5	28000730
LMI 48V 350-700mA 20-42V FO Slim	I	350–700	20–42	14.7–29.4	yes	46~50	125 x 14.8 x 12.5	28000947
LMI 48V 350-700mA 20-42V FO Regular	I	350–700	20–42	14.7–29.4	yes	46~50	49.3 x 23.8 x 12.5	28000728
LMI G2 48V 700-1,050mA 3-20V FO Slim	III	700–1,050	2.5–20	14–21	yes	46~50	125 x 14.8 x 12.5	28001582
Board DC-String | dimming								
LMI G2 48V 350-700mA 3-20V DIM Slim	II	350–700	3–20	7–14	yes	46~50	125 x 14.8 x 12.5	28000731
LMI G2 48V 350-700mA 20-42V DIM Slim	I	350-700	20–42	14.7–29.4	yes	46~50	125 x 14.8 x 12.5	28001585
LMI G2 48V 350-700mA 20-42V DIM Regular	I	350-700	20–42	14.7–29.4	yes	46~50	75 x 23.8 x 12.5	28001584
LMI G2 48V 700–1,050mA 3–20V DIM Slim	III	700–1,050	3–20	14–21	yes	46~50	125 x 14.8 x 12.5	28001583

Operating window 350-700 mA 3-20 V/20-42V
700-1050 mA 3-20 V

Output voltage [V]
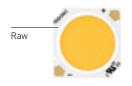
42

20

3

350   700   1050

Output current [mA]
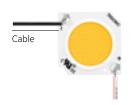
System solution for spot and downlights
Module SLE

The SLE series of modules for spotlights and downlights proves that technical development at Tridonic never stands still. Now in its seventh generation, this series is the result of constant improvements which manifest themselves in particular in outstanding efficiency and brilliant colour rendering which is far above the usual standard thanks to the high CRI and especially the Ri9 value.
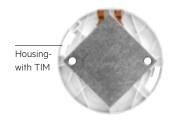
With an impressive variety of special colour modules, the SLE 7 series gives luminaire manufacturers the freedom to meet a wide range of lighting requirements for product presentation in all relevant sectors, whether fashion, food or art. All the modules are compatible with the DC-String Boards, opening up a broad spectrum of possible solutions. This makes it easier to adapt the quality of a luminaire to different applications with a high degree of precision.

Variants

Raw

Cable

Housing

Housing-with TIM

Product portfolio and operating windows

advanced (ADV)

Cost-effective
Thanks to the high operating current, ESSENCE LED modules offer high luminous efficacy at an optimum price level, a lifetime of 50,000 hours and a CRI > 80 and a CRI > 90

Type	Module efficacy tp = 65 °C (lm/W)	Operating window
LES 09	up to 167	
LES 13	up to 174	
LES 15	up to 168	I
LES 17	up to 181	
LES 21	up to 182	

With reference to DC/DC board operating window, p. 9. For more detailed information see the data sheet.
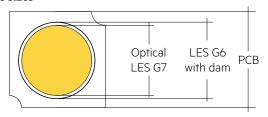
excite (EXC)

Simplicity itself
With their low operating current, advanced (ADV) LED modules offer best performance at high efficiency and have a CRI > 80 and a CRI > 90

Type	Module efficacy tp = 65 °C (lm/W)	Operating window
LES 13	up to 146	
LES 15		
LES 17	up to 153	I
LES 21	up to 147	

With reference to DC/DC board operating window, p. 9. For more detailed information see the data sheet.

Available sizes

Optical LES G7

LES G6 with dam

PCB

New LES Sizes					
SLE G7 (mm)	LES 21	LES 17	LES 15	LES 13	LES 9
SLE G1–G6 (mm)	LES 23	LES 19	LES 17	LES 15	LES 10
PCB size	31x31	31x31	19x19	19x19	13.5x13.5
Luminous flux	6,000 lm	5,000 lm	4,000 lm	3,000 lm	1,200 lm

SLE excite (EXC)
FOOD, ART, FASHION, PURE WHITE

FOOD

LED modules specifically designed for FOOD lighting systems display food in the best light – white elements stay white and colours appear more vibrant and natural. For example, rich brown tones give bakery items a crusty look, warm red tones make meat appear juicier, and cold light colours underline the freshness of fish and seafood.

Baked goods and cheese

GOLD
— The brown shades let bread and pastries appear crispy

GOLD+
— The brown shades appear crisper. Colour shades are stronger as GOLD

Meat products

MEAT+
— The red tones of the meat and sausages are noticeably stronger

FRESH MEAT
— A presentation of fresh and juicy meats and sausages is guaranteed
— White elements remain white

Seafood

FISH
— Very cold light underlines the freshness of fish and seafood

Fruit

FRUIT
— Best accentuates the freshness of fruit and vegetables

ART

This LED module offers the high quality of light that is needed for displaying high value exhibits. Unique Tridonic full spectrum technology provides excellent colour rendering. The average value for all the products in the SLE ART series is CRI 98, a truly impressive figure. And you can also rely on outstanding colour consistency (MacAdam 2) for your applications.
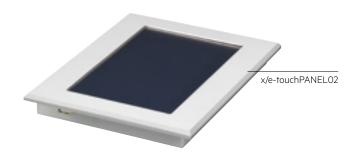

FASHION and PURE WHITE

The modern FASHION LED light is ideal for the sparkling display of fashion. The technology conceals several years of intensive research targeted specifically for lighting in the retail sector. SLE FASHION generates brilliant colours with pleasant warm tones and high saturation, and completely without UV light, as well as intensive and friendly white tones thanks to the specific blue light component, for the display of goods in perfect, colour-true light.

With a little warmer colour place the special PURE WHITE modules let objects shine more lively.

System solution
Controls Touchpanel

At a glance:
x/e-touchPANEL 02

— DALI control system with 2 mode options: Light management in mains mode and Emergency lighting management
— Lighting management system with up to 128 DALI devices
— Start-up, control and operating unit
— Manual dimming and switching
— Manual scene recall or timed scene recall with a maximum of 99 sequences
— With DALI system functions of addressing and grouping
— Can be remote-controlled via standard internet browser or em-LINK software (available at www.tridonic.com)

x/e-touchPANEL02

At a glance:
DALI TOUCHPANEL 02

— Control panels and controllers for DALI systems
— For controlling multiple luminaire groups and calling up preset lighting scenes
— Flexible design: individual design can be used
— Multiple control modules are possible in a DALI system
— Power supply via DALI line
— Individual adjustment of the control panel and button assignments with configuration software
— Setting group addresses or "broadcast"
— Setting scenes
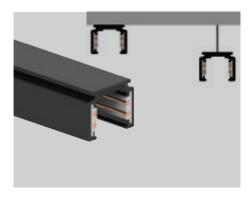
DALI TOUCH-PANEL 02

At a glance:
DALI TOUCHPANEL BASIC

— Capacitive Touchpanel for controlling multiple luminaire groups and calling up preset lighting scenes
— High-quality appearance with real glass display
— Multi-master compatible: Multiple control modules are possible in a DALI system
— Power supply via DALI line
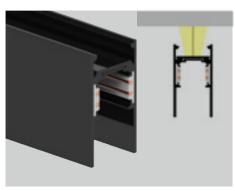— Easy and individual adjustment of the control panel and button assignments with rotary switches

DALI TOUCHPANEL BASIC

A perfect combination
Tridonic and A.A.G. Stucchi
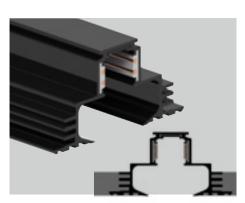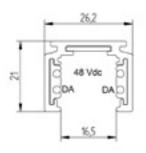
Low voltage track
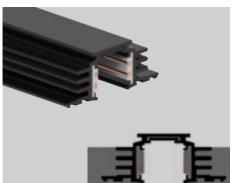
U-Profile (Standard)	H-Profile (Double emission)	Recessed (Trimmless)

The right conductor track

In order to integrate the new technology in the track, providers such as Stucchi have developed a 48 V low-voltage conductor track whose compact design follows the idea of consistent miniaturisation. The range of different profiles also provides a considerable amount of ceiling design freedom.

Adapters

There is sufficient room for the DC/DC board from Tridonic in the associated adapter. This scores points with its integrative design and a magnetic holder, which makes safe and uncomplicated installation and the secure mounting of the spotlight possible.
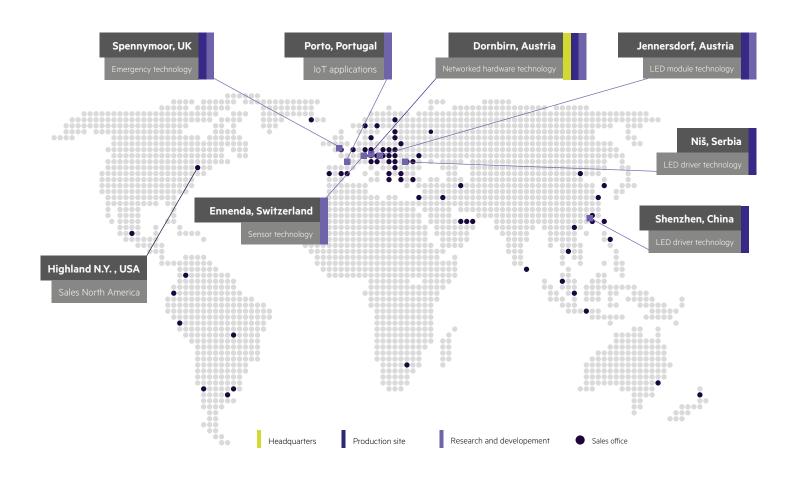
End-feed

The connector feeds the current of the driver into the track.

Prepared for the Future
Our Activities and Locations

Spennymoor, UK
Emergency technology

Porto, Portugal
IoT applications

Dornbirn, Austria
Networked hardware technology

Jennersdorf, Austria
LED module technology

Niš, Serbia
LED driver technology

Ennenda, Switzerland
Sensor technology

Shenzhen, China
LED driver technology

Highland N.Y. , USA
Sales North America

Headquarters   Production site   Research and developement   Sales office

1,932

Around 1,900 employees throughout the world are committed to helping you with their know-how and creativity to create the perfect light.

6

There are six research and development centres in which new LEDs and net-worked lighting technologies are being developed.

3

There are three things you can rely on at Tridonic: optimum product quality, decades of expertise and our committed and flexible support.

1

In our unique software competence center in Porto (Portugal), information technology experts are developing new solutions for smart buildings and smart cities. They are working on a range of products from intelligent light-ing management and control systems to highly advanced IoT solutions and their matching digital services.

21

With 21 branch offices on five continents we are there for you wherever you are in the world.

2,600

That's how many patents and inventions testify to Tridonic's extraordinary powers of innovation.

Details

For further information, data sheets, product catalogues and ordering details, please go to www.tridonic.com.

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