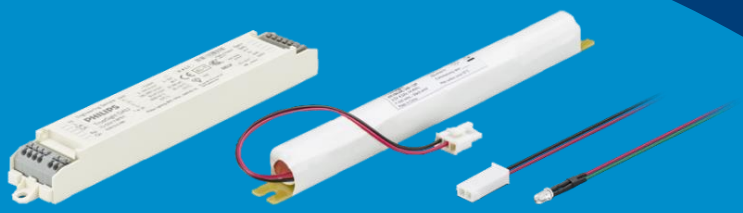
PHILIPS

TrustSight

Emergency

SELV & High Voltage



Datasheet

TrustSight
LED Emergency Lighting

TrustSight Linear SELV & High Voltage

The application of LED technology within the lighting sector also requires integration of reliable emergency lighting equipment inside luminaires. The range of TrustSight Emergency Lighting solutions offers easy design-in and is compatible with all dimmable and non-dimmable linear high voltage and SELV LED drivers. The TrustSight emergency driver is designed for Maintained solutions but can also be used in a non-Maintained Emergency Lighting configuration. It offers Self-testing (IEC 62034) and is available with 3 hours Emergency duration. Two battery technologies are supported by the TrustSight: NiMH batteries and Lithium-Ion batteries. The TrustSight LED emergency drivers come with battery harness and LED indicator. The TrustSight driver can also be used as an independent emergency driver with the separately available strain relief accessories.

Benefits

- Compliant with international standards.
- Easy system integration with LED driver and LED modules
- Built-in and Independent use

Features

- Constant output power
- Compatible with NiMH and Li-Ion batteries
- Automatic cell count detection
- Double-insulated/SELV output

Application

- Insulation Class I and II luminaires
- Offices, supermarkets, department stores, schools, etc.

December 2018

Logistical data

Product name	12NC	Pieces per box
TrustSight Basic 15-55VNiMH	9290 016 42606	10
TrustSight Basic 45-300VNiMH	9290 016 42706	10
TrustSight PRO 15-55VNiMH	9290 016 42806	10
TrustSight PRO 45-300VNiMH	9290 016 39906	10
TrustSight DALI 15-55VNiMH	9290 016 40006	10
TrustSight DALI 45-300VNiMH	9290 016 40106	10
TrustSight Basic 15-55V LFP	9290 016 51906	10
TrustSight Basic 45-300V LFP	9290 016 52006	10
TrustSight PRO 15-55V LFP	9290 016 52106	10
TrustSight PRO 45-300V LFP	9290 016 52206	10
TrustSight DALI 15-55V LFP	9290 016 52306	10
TrustSight DALI 45-300V LFP	9290 016 52406	10

The TrustSight PRO and DALI types are equipped with self-test functionality according IEC 62034. The TrustSight Basic can only be tested manually (via mains interruption or with a test switch).
LED-indicator and battery connection cable are included in the driver box.

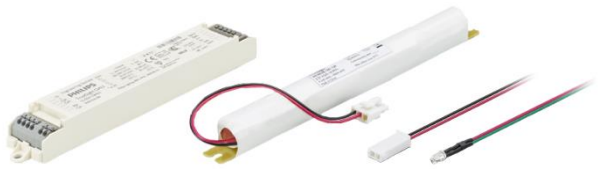
Product name	12NC	Pieces per box
TrustSight 3.6V 3cell 4000mAh battery NiMH	9290 016 52506	10
TrustSight 4.8V 4cell 4000mAh battery NiMH	9290 016 52606	10
TrustSight 6.0V 5cell 4000mAh battery NiMH	9290 016 52706	10
TrustSight 3.2V 3cell 4500mAh battery LFP	9290 016 53006	10
TrustSight 6.4V 4cell 3000mAh battery LFP	9290 016 53106	10
TrustSight 9.6V 6cell 3000mAh battery LFP	9290 016 53206	10

The selected TrustSight battery pack will determine the output power in Emergency mode.

Product name	12NC	Pieces per box
TrustSight Strain relief	9290 016 53306	20
TrustSight battery independent box	9290 016 53406	10
TrustSight Indicator LED	9290 016 53606	20
TrustSight battery harness NiMH	9290 016 82206	20
TrustSight battery harness LFP	9290 016 82006	20

EM system contains of:

TrustSight driver for built-in application



TrustSight driver for independent application

Wiring & Connections

Electrical input data

Specification item	value	Unit	Condition
Rated input voltage range	220...240	Vac	
Rated input frequency range	50...60	Hz	
Rated input current	35	mA	@230 Vac, 2S3P LFP pack
Rated input voltage	230	Vac	
Rated input power	6	W	@230 Vac, 2S3P LFP pack
Rated input power with battery charger idle	< 1	W	
Power Factor	0.7		Battery charge state
Input voltage AC	202...254	Vac	Performance range
Input voltage AC	198...264	Vac	Safety operational range
Input frequency AC	47...63	Hz	Performance range
Input frequency AC	45...66	Hz	Safety operational range
Switched mains contact current	2.4	A	Maximum permissible current, Basic only

Electrical output data

Specification item	value	Unit	Condition
Regulation method	Constant Power		Full output voltage range
Output voltage SELV	15..55	Vdc	
Output voltage max. SELV	60	Vpk	U-OUT
Output voltage HV	45..300	Vdc	
Output voltage max.	330	Vpk	U-OUT
Output power	2...5	W	Depending on selected battery pack
I_{LED} max	1	A	Maximum LED current from AC driver
Switch over time ac. Emergency Mode	< 500	ms	

Battery pack v.s. output power

Specification item	12NC	description	Max Output power in EM mode
TrustSight 3.6V 3cell 4000mAh battery NiMH	9290 016 52506	NiMH 3cell, 4000mAh	3W (2.7W)
TrustSight 4.8V 4cell 4000mAh battery NiMH	9290 016 52606	NiMH 4cell, 4000mAh	4W (3.7W)
TrustSight 6.0V 5cell 4000mAh battery NiMH	9290 016 52706	NiMH 5cell, 4000mAh	5W (4.7W)
TrustSight 3.2V 3cell 4500mAh battery LFP	9290 016 53006	LFP 1S3P, 4500mAh	2W (2.1W)
TrustSight 6.4V 4cell 3000mAh battery LFP	9290 016 53106	LFP 2S2P, 3000mAh	3W (2.9W)
TrustSight 9.6V 6cell 3000mAh battery LFP	9290 016 53206	LFP 3S2P, 3000mAh	5W (4.7W)

* Batteries are sufficient charged within 24 hours after being discharged.

DALI

The TrustSight drivers with DALI functionality comply with DALI standard IEC IEC62386 and IEC62386-202 (particular requirement for control gear - Self-contained emergency lighting). Commands supported are given below:

Inhibit
Query lamp failure
Rest
Re_light_reset_inhibit
Start function test
Start duration test
Stop test
Reset function test done flag
Reset duration test done flag
Reset lamp time
Store test execution timeout
Store prolong time
Start identification
Query battery charge
Query test timing
Query duration test result
Query lamp emergency time
Query lamp total operation time
Query emergency level
Query rated duration
Query emergency mode
Query features
Query Failure status
Query Emergency status

Wiring & Connections

The TrustSight drivers with DALI functionality support SimpleSet configuration. Several setting can be selected to configure the TrustSight driver.

Parameter	Default setting	Range	description
Output power	100	50 – 100%	Output power can be tuned as % of selected power
Region Selection	Europe	Europe	
		Australia	
Duration test acceptance time	180	1 – 240 minutes	Australia: 90 minutes
SelfTest Mode	fixed	Fixed/DALI	Fixed mode gives standard FT/DT interval times
Function Test (FT) interval	28 days		Fixed mode
Duration Test (DT) interval	24 weeks		Fixed mode
Function Test (FT) interval	7 days		DALI mode, Configurable via DALI
Duration Test (DT) interval	52 weeks		DALI mode, Configurable via DALI
Battery Type	NiMH, LFP	Product dependent	Depends on the selected TrustSight type
Battery capacity	Auto Detect,	Auto Detect	The TrustSight detects the cell count automatically
		NiMH 3cell for 3W	
		NiMH 4cell for 4W	
		NiMH 5cell for 5W	
		LFP (1S3P) for 2W	
		LFP (2S2P) for 3W	
		LFP (3S2P) for 5W	

In the diagnostics tab of MultiOne the next parameters can be read out:

Parameter	Unit		
Lamp emergency time	Hours		
Lamp total operation time	Hours		
Last duration test time	Minutes		
Time since last duration test	Days		
Total number of discharge cycles	-		Number of complete battery discharges

Reset battery detection:
It is possible to set back the battery capacity (cell count) to auto detect, e.g. when the system is wrongly configurated. To reset the battery cell count there are two options:

- Direct changing the battery cell-count in the memory bank via DALI, e.g. in the final tester.
- Power cycle scheme to Reset to factory defaults:
    1. Apply Mains power, Apply 12Vdc on battery input (at same time or within 2s)
    2. After 1s the Indicator LED starts fast flashing RED for 2s (4 times)
    3. Remove 12V while flashing.
    4. After 1s the Indicator LED becomes steady GREEN for 2s.
5. remove Mains power.

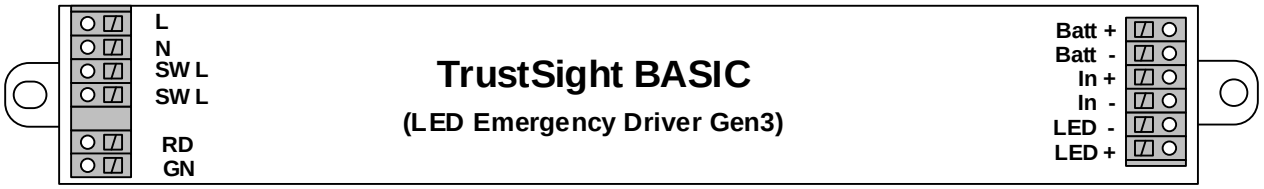
To change to Australia mode:

1. Apply Mains power, Apply 12Vdc on battery input (at same time or within 2s)
2. After 1s the Indicator LED starts fast flashing RED for 2s (4 times)
3. Remove 12V while flashing, Press testbutton, Indicator LED becomes dark.
4. After 4s remove Mains power

In ergo, pressing the testbutton during the procedure will reset the device with Australia mode enabled, and not pressing the button will reset the device with Australia mode disabled.
Not removing the 12V within the 3s or applying for at least 1.5s will not perform the factory reset.
Note that applying an invalid battery voltage will trigger battery failure state (RED indicator LED), which when mains is lost, will not produce emergency light.
To verify the successful execution, do connect a valid battery and mains. If it takes 30 seconds before the indicator LED starts flashing, the reset was successful. Remove power well before the 30 seconds to be sure the product stays in autodetect mode.
To verify that Australia mode is active, press testbutton for at least 10s while battery is charging. The 30s functional test is started. When test succeeds, the LED indicator is flashing fast green (for 5 days). This is specific for Australia mode.

Wiring & Connections

Specification item	value	Unit	Condition
Built-in use: mains input wire cross-section	0.5...1.5 20...16	mm2 AWG	WAGO250, solid and stranded wire WAGO250, solid and stranded wire
Independent use: mains input wire cross-section	0.75...1.5 18...16	mm2 AWG	WAGO250, solid and stranded wire WAGO250, solid and stranded wire
Input wire strip length	8.5..9.5	mm	
Independent use: input/output thick/thin cable diameter	6...8 / 1.4...2.0	mm	
Output wire cross-section	0.5...1.5 20...16	mm2 AWG	WAGO250, solid and stranded wire WAGO250, solid and stranded wire
Input wire strip length	8.5...9.5	mm	
Maximum cable length	0.6	m	Total length of wiring including LED module, one way



Insulation TrustSight Pro & DALI driver

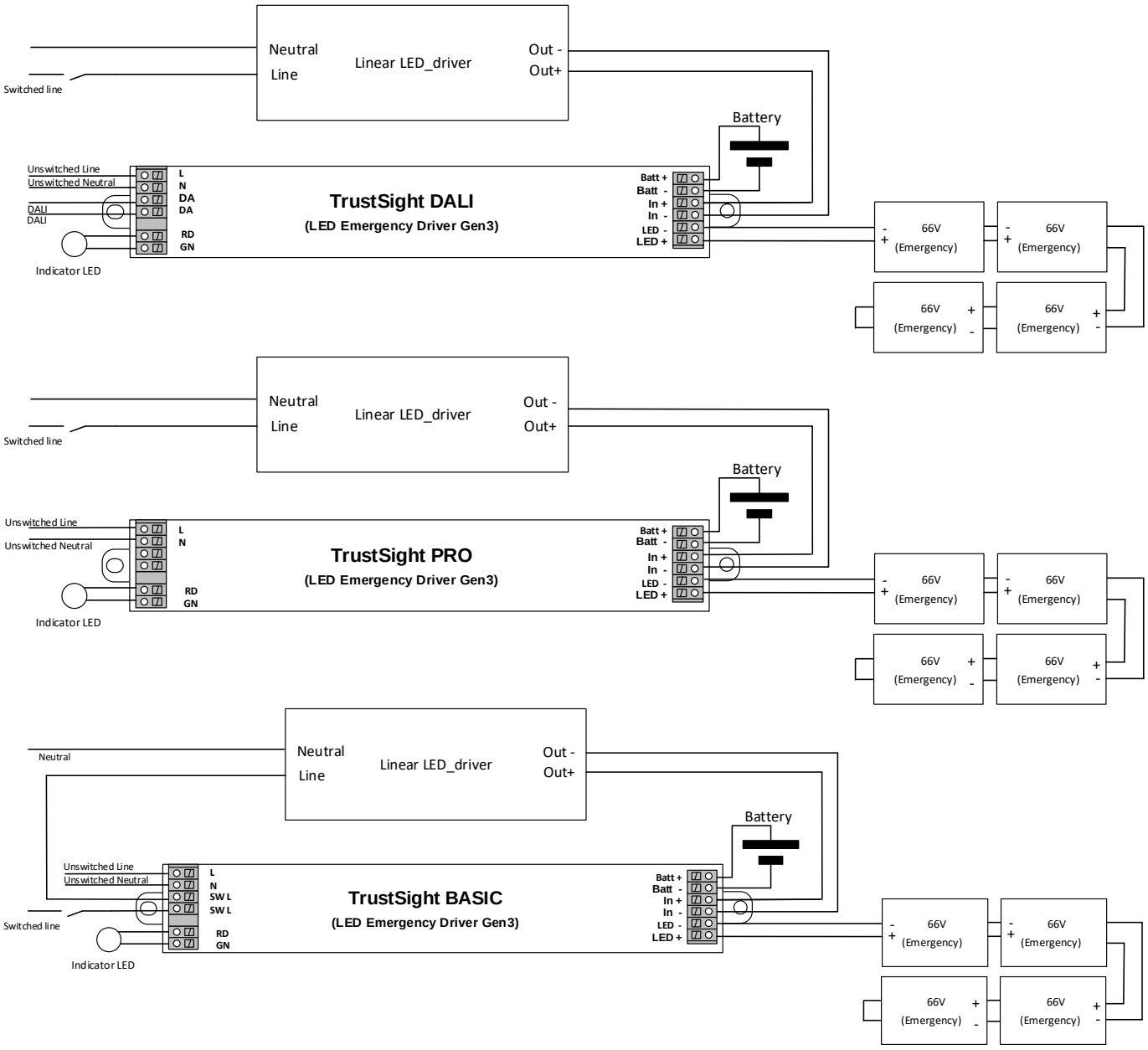
	Mains	Battery	LED in/output	Status LED	DALI
Mains	NA				
Battery	Double	NA			
LED in/output	HV: Double, LV: SELV	Functional	NA		
Status LED	Double	No	Functional	NA	
DALI	Basic	Supplementary	Supplementary	Supplementary	NA

Insulation TrustSight Basic driver

	Mains	Battery	LED in/output	Status LED	SW line
Mains	NA				
Battery	Double	NA			
LED in/output	HV: Double, LV: SELV	functional	NA		
Status LED	Double	No	functional	NA	
SW line	Basic	Supplementary	Supplementary	Supplementary	NA

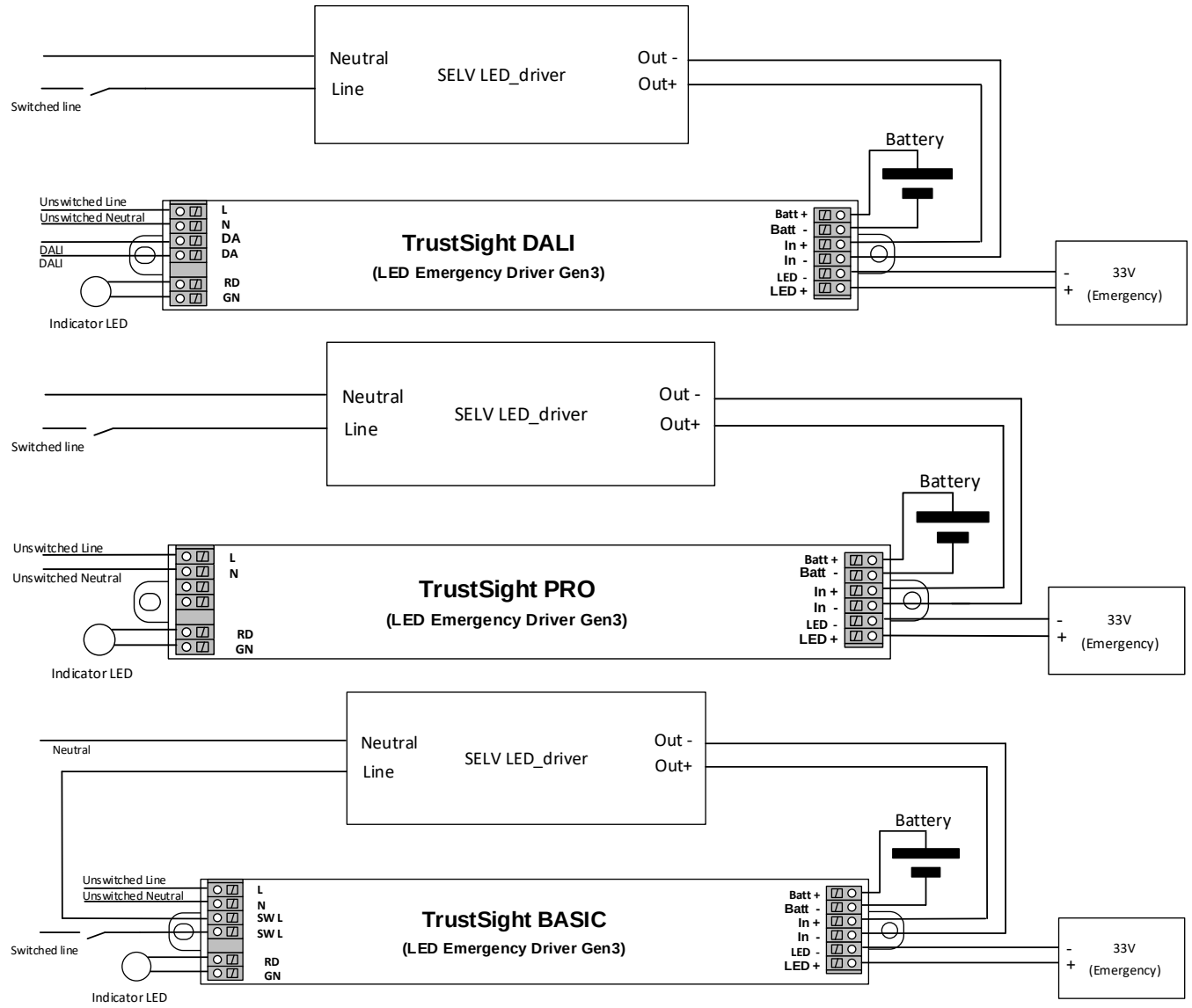
Connection examples

Connection example with TrustSight HV with HV LED modules



Connection examples

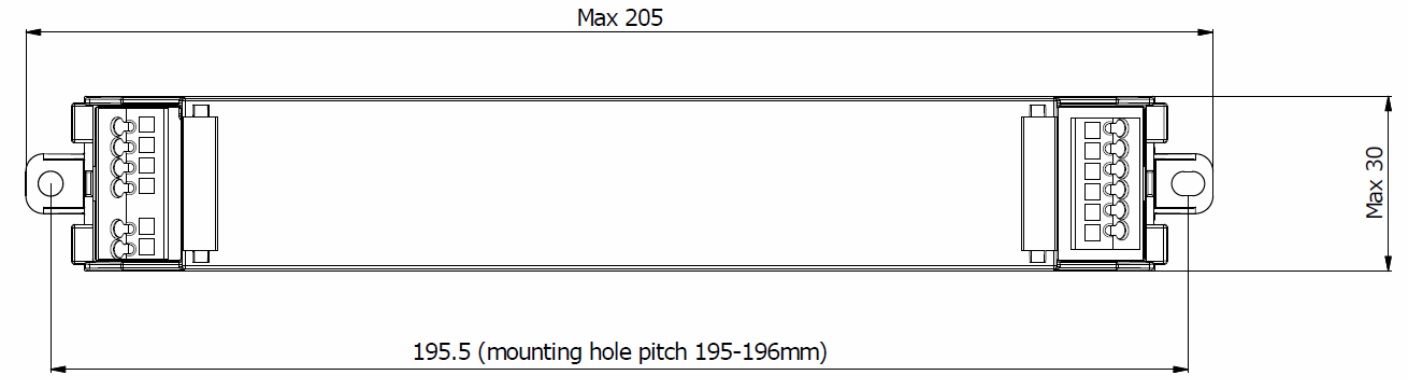
Connection example with TrustSight SELV with LV LED modules



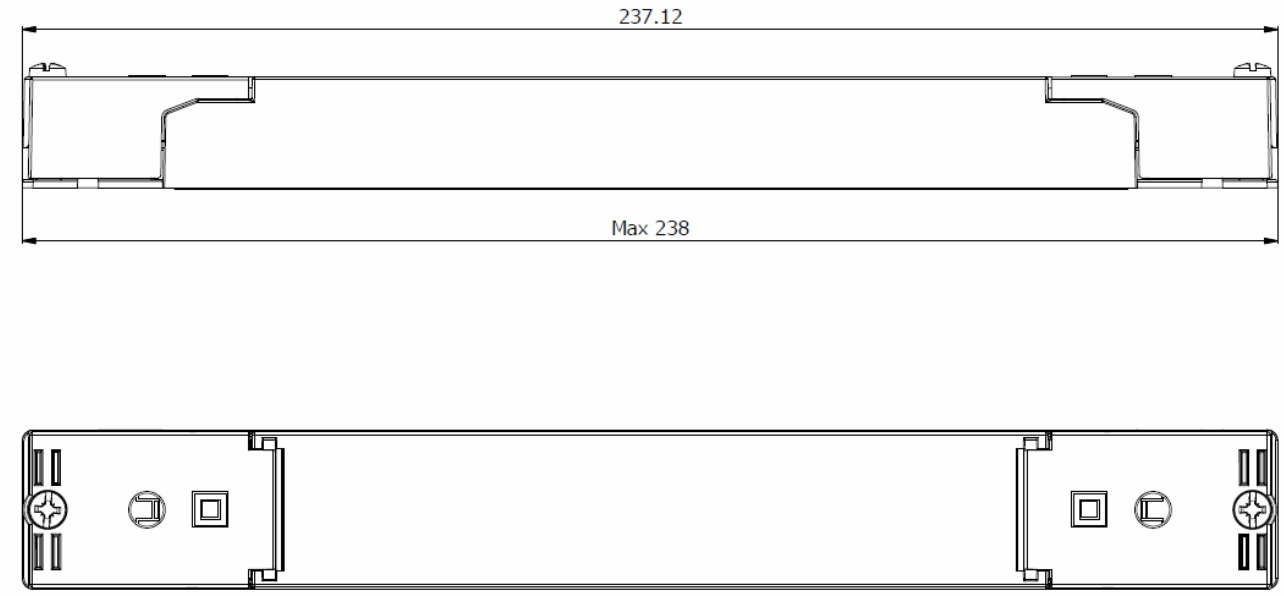
Warning: The TrustSight LV SELV driver does not support operation combined with non-SELV AC drivers.

Dimensions and weight

Specification item built-in version	value	Unit	Condition
Length	205	mm	
Width	30	mm	
Height	21	mm	
Fixing hole diameter	4.1	mm	
Fixing hole distance	195.5	mm	
Weight	85	gram	

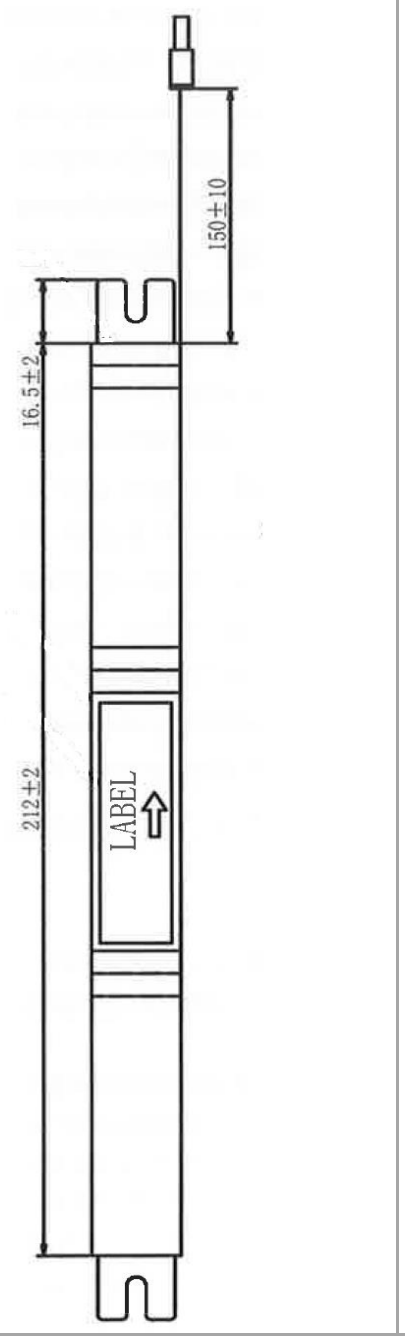
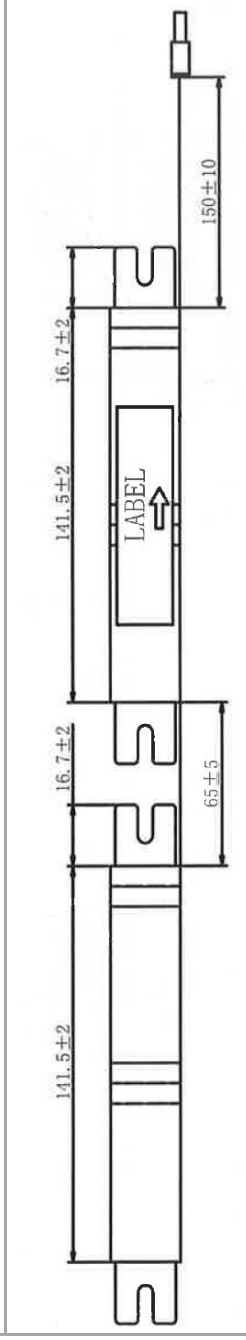
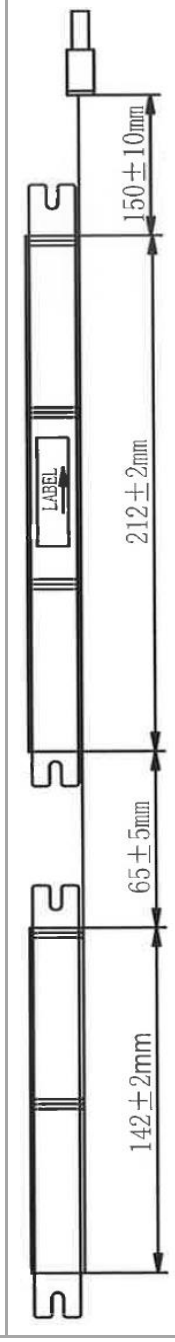


Specification item independent version	value	Unit	Condition
Length	238	mm	
Width	30	mm	
Height	21	mm	
Fixing hole diameter	4.1	mm	
Fixing hole distance	195.5	mm	
Weight	100	gram	



Battery dimensions

NiMH battery

3.6V 3cell 4000mAh battery NiMH Max height = 21mm	4.8V 4cell 4000mAh battery NiMH Max height = 21mm 65mm between pack-parts	6.0V 5cell 4000mAh battery NiMH Max height = 21mm 65mm between pack-parts
		

Parts List

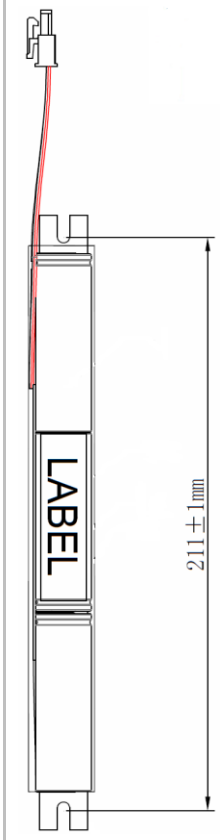
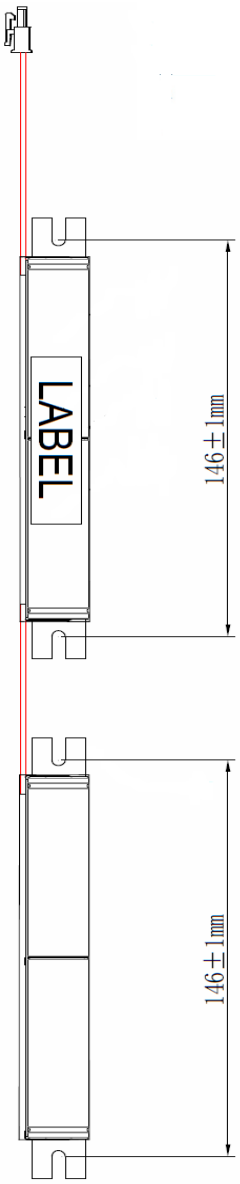
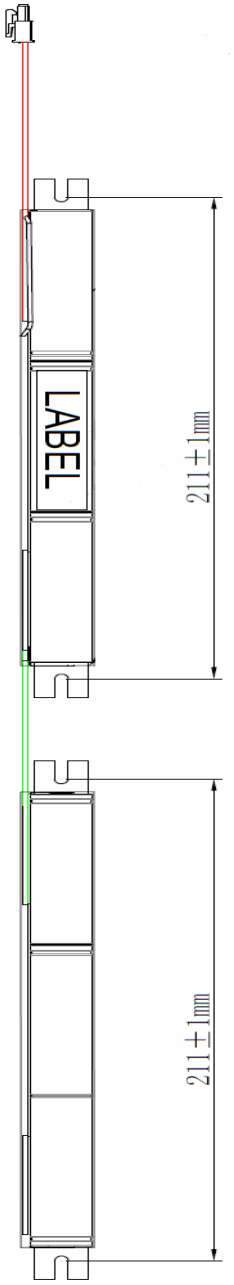
Item	Quantity	Description
Mounting PCB	1, 2, 2	
Cell	3, 4, 5	HRH18700-4000T
Battery/PCB insulation wrap		PVC
Connector	1	Molex 5557-2P
wire	2	UL1007, 20AWG

Warning:

- The battery wires currently do not support independent operation with respect to compliance per IEC60598-2 clause 22.16 unless a fire and heat resistant sleeve is put around the wires (not included).
- For independent use with a non-SELV AC driver the battery wires and LED indicator wires must have a supplementary insulation sleeve.

Battery dimensions

LFP battery

3.2V 3cell 4500mAh battery LFP Max height = 21mm	6.4V 4cell 3000mAh battery LFP Max height = 21mm 65mm between pack-parts	9.6V 6cell 3000mAh battery LFP Max height = 21mm 65mm between pack-parts
		

Parts List

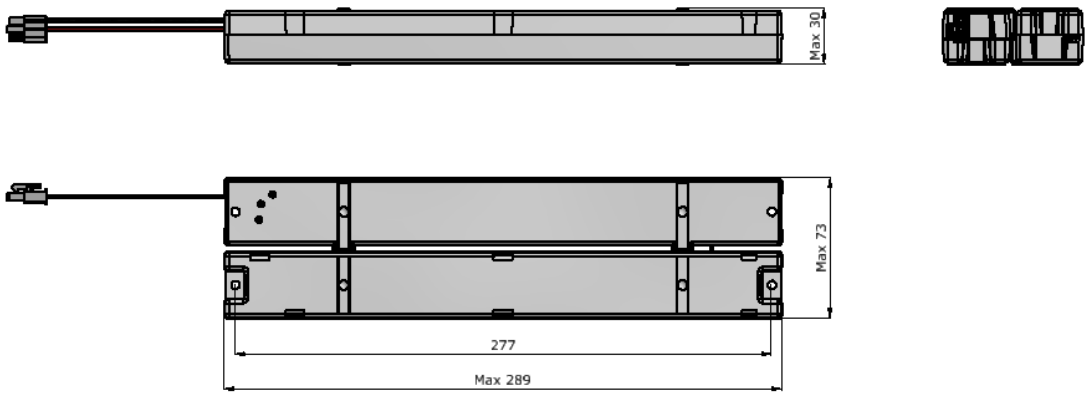
Item	Quantity	Description
Mounting PCB	1, 2, 2	223X16
Cell	3, 4, 6	FR18650E1500
Battery/PCB insulation wrap		PVC, white
Connector	1	Molex 5557-03R2
wire	2	UL1007, 20AWG

Warning:

- The battery wires currently do not support independent operation with respect to compliance per IEC60598-2 clause 22.16 unless a fire and heat resistant sleeve is put around the wires (not included).
- For independent use with a non-SELV AC driver the battery wires and LED indicator wires must have a supplementary insulation sleeve.

Battery dimensions

Battery box



Specification item	value	Unit	Condition
Ambient temperature driver	-20...+55	°C	
Ambient temperature NiMH battery pack	0...+50	°C	
Ambient temperature LFP battery pack	0...+55	°C	
Tcase-max driver	75	°C	lifetime 70 khrs
Tcase-max NiMH battery pack	55	°C	during charging
Tcase-max NiMH battery pack	50	°C	Lifetime 4 years in operation
Tcase-max LFP battery pack	55	°C	during charging
Tcase-max LFP battery pack	55	°C	Lifetime 6 year in operation
Maximum housing temperature driver	110	°C	In case of failure
Relative humidity driver	10...90	%	Non-condensing

Storage temperature and humidity

Specification item	value	Unit	Condition
Storage Ambient temperature driver	-25...+70	°C	
Storage Ambient temperature NiMH battery pack	-20...+30	°C	For 6 months
Storage Ambient temperature LFP battery pack	-20...+25	°C	For 12 months
Relative humidity driver	5...95	%	Non-condensing

Lifetime

Specification item	value	Unit	Condition
Driver lifetime	70,000	hours	Measured temperature at Tc-point is Tcase- max. Maximum failures = 10%
NiMH battery	4	year	
NiMH battery warranty	1	year	As long as the cell is treated in accordance with the specification and / or Handling precautions and Prohibitions.
LFP battery	6	year	
LFP battery warranty	3	Year	As long as the cell is treated in accordance with the specification and / or Handling precautions and Prohibitions.

TrustSight features / protections

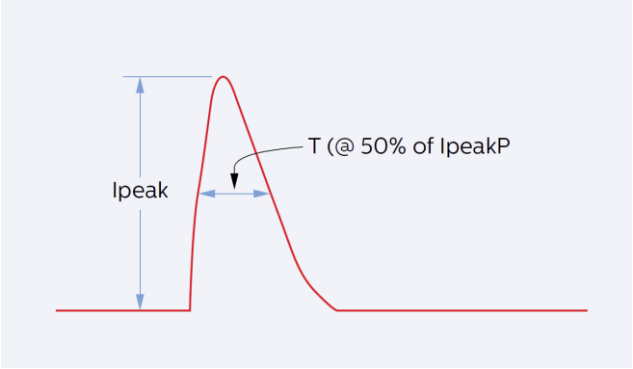
Specification item	value	Remark	Condition
Open load protection – LED	Yes		
Short circuit protection - LED	Yes		
Hot wiring -LED	No		
Suitable for luminaire Insulation Class	I and II		Acc. IEC60598-1
Open load protection – battery connection	Yes		Automatic recovering
Short circuit protection – battery connection	Yes		Automatic recovering
Reverse polarity protection – battery connection	Yes		Automatic recovering

Battery dimensions

Certificates and standards

Specification item	value	Remark
Approval marks	CE /ENEC/EL-T	Kitemark pending
Ingress Protection classification (IP)	20	
Compliances and approvals	IEC 61347-2-7	
	IEC 60598-2-22	Excluding high risk task areas
	EL (F-mark) acc. IEC61347-1 ed 8.0	
	IEC61347	
	EN 55015/CISPR15	
	IEC / EN 61000-3-2	
	IEC / EN 61000-3-3	
	IEC 62384	
	EN 61951-2	
	EN 60598-1 (650 °C/850 °C)	
	AS 2293.1-2005 (+A1)	
	AS 2293.2-1995 (+A2)	
	AS 2293.3-2005	
	IEC 62386	
	IEC 62386-202	

Specification item	value	Unit	Condition
Inrush current Ipeak	5	A	Input voltage 230 V
Mains current pulse time half peak	110	µs	Input voltage 230 V, measured at 50% Ipeak
Max. number of drivers	200		16A B type B MCB



Touch current

Specification item	value	Unit	Condition
Typical touch current (parasitical)	< 0.7	mApk	To all accessible parts, LED module contribution not included

Surge immunity

Specification item	value	Unit	Condition
Mains surge immunity (diff. mode)	1	kV	L-N, acc. IEC61000-4-5, 2 Ohm 1.2/50µs
Mains surge immunity (comm. mode)	2	kV	L/N - other, acc. IEC61000-4-5, 12 Ohm 1.2/50µs

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