

# iPC

## intelligent Luminaire Controller for Pole Built-in

Developed for use in street lighting and lighting in the vicinity of buildings, the interoperable iPC controls electronic operating devices fitted with a 1-10 V, PWM or DALI interface via standardised powerline communication in the C/B band according to CENELEC 50065-1 based on the OLC LonMark® profile.

Standardised data transmission is in accordance with ANSI/CTA and EN. Operation is possible in light management systems, in stand-alone, repeating or iMCU emulation mode.

Individually programmable and updateable, it performs all the tasks of a modern light management system.

### Typical Applications

- Street lighting and lighting in the vicinity of buildings
- Car parks, bus stops and railway stations
- Company premises, warehouses
- Sports facilities



### Product Benefits

- Luminaires can be switched off when connected to a switched lighting cable
- Power consumption: 1 to 3 W
- Adjustable control input to suit various tasks
- Connection of various sensors such as motion sensors, key switches and light sensors
- 10 time-dependent, synchronisable dimming levels with individual dimming sequences can be set via control line or the control input in stand-alone mode
- Lighting can be switched on earlier and switched off with a delay with individual dimming sequences
- Compensation of reduction in luminous flux with freely definable values for lamp service life as well as start and end levels
- Burning in of high-pressure discharge lamps after lamp replacement
- Optionally available with an audio frequency ripple control receiver to enable migration of existing systems
- 2 years warranty

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*Interoperable Communication Technology  
for Smart Cities and Buildings*

**iciti** intelligent.  
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controls.

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## Technical Details

Electronic Luminaire Controller	with 1 relay	with 2 relays
Type	iPC-100-1R	iPC-100-2R
Ref. No.	200049	200051
Input voltage	110–230 V AC (± 10%)	
Mains frequency	50/60 Hz	
Power consumption	1 to 3 W	
Communication	Via the power supply line (powerline) in acc. with CENELEC 50065-1, class 2 acc. to 2000/299/EC	
C Band	Primary band 125–140 kHz	
B Band	Secondary band 95–125 kHz	
Data transfer (USA)	ANSI/CTA 709.1, ANSI/CTA 709.2	
Data transfer (Europe)	EN 14908-1, EN 14908-3	
Optional plug-in	Audio frequency ripple control receiver	
Filter frequencies	100 Hz ... 1.7 kHz	
Protocols	On request	
Bit patterns	On request	
Galvanic isolation	No electrical isolation from input to output (as soon as the electronic device is connected to the iPC, the control input ceases to be electrically isolated)	
Switching current	4 A (at $\lambda = 0.8$ )	
Switching cycles	50,000 switching operations per function (at $\lambda = 0.8$ )	
Programmable	Yes	
Configurable parameters	Yes	
High-voltage control input	230 V AC	
Switching output luminaire	1 x for connecting several luminaires	2 x for connecting several luminaires
Control output power reduction relay	--	1 x to address an electronic power reduction relay (control current $\leq 10$ mA, not protected against short-circuiting)
Control output electronic operating device	1 x DALI, 1–10 V, PWM: short-circuit-proof, suitable for respective ballasts, DALI bus master interface for max. 4 ballasts	
Connection cable	1 mm <sup>2</sup> , length: 500 mm	
Conductor type of the connection terminals	Stranded with ferrule bare end of core	
Firmware update / parameter configuration	Via powerline	
Control and monitoring parameters	Switch on and off, power reduction	
Capture of measured data	Voltage, current, power factor, power consumption, energy, temperature, lighting hours with an accuracy of better than 1%	
Software interface	Interoperable in acc. with the LonMark® OLC profile, use of network variables and configuration parameters, repeatable	
Operating temperature range tc	–25 to +80 °C	
Storage temperature range	–25 to +85 °C	
Humidity	90% non-condensing	
Surge voltage protection	10 kV (EN 61000–4–5)	
Degree of protection	IP65	
Casing material	PC	
Dimensions (WxHxD)	60 x 300 x 38 mm	
Weight	424 g	
Custom tariff number	8543 7090	



- The Controller is designed for built-in into the pole.
- The non-galvanically isolated control output operates up to 4 DALI operating devices. Since up to 10 DALI channels are supported, more devices can be operated as long as the total load does not exceed 8 mA. Separate firmware must be loaded for this purpose.
- The controller supplies the connected operating devices with bus voltage supply and is not suitable for an external supply.
- The digital control input ceases to be electrically isolated as soon as an electronic operating devices is connected to the controller.
- The configurable parameters of the applications as well as optional firmware updates ensure a high degree of investment protection.
- Both, OEM and customer-specific versions can be protected against unauthorised distribution with a special software key. Please contact your iciti representative for more information on this function.

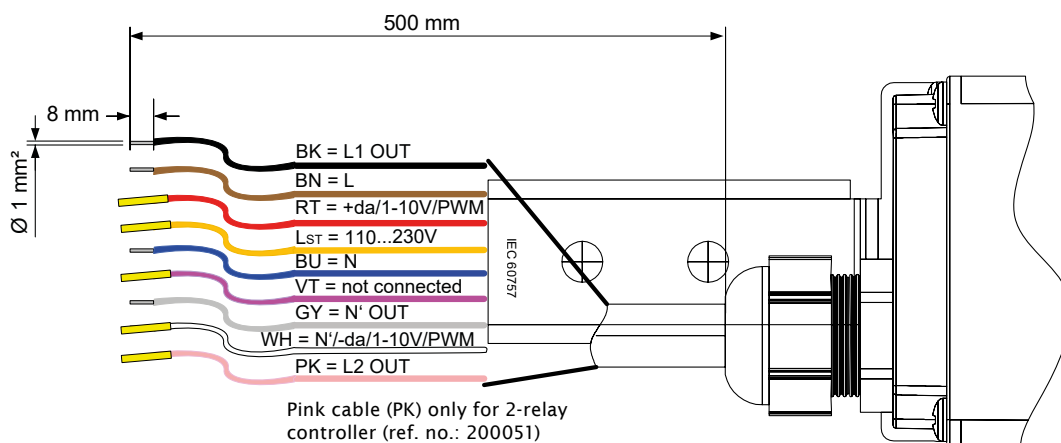
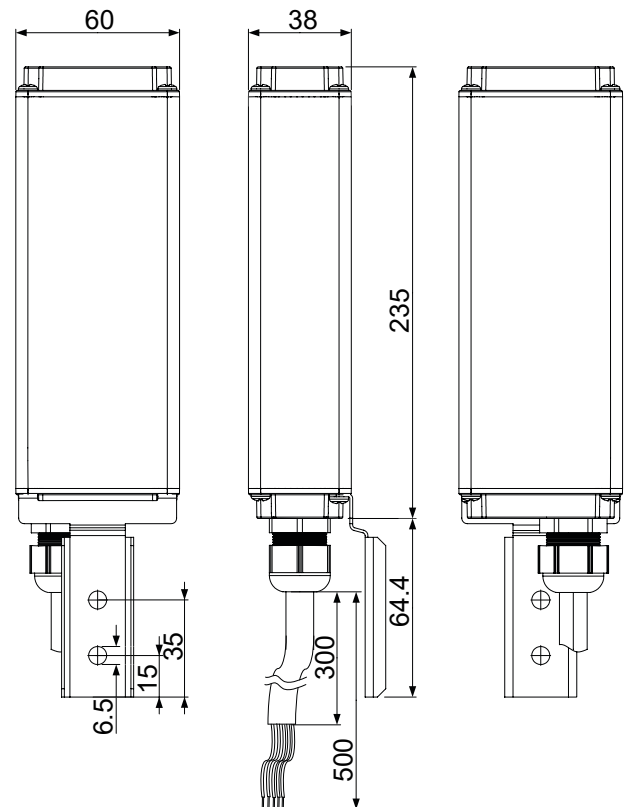
## Main Cable for Supply

according to IEC 60757

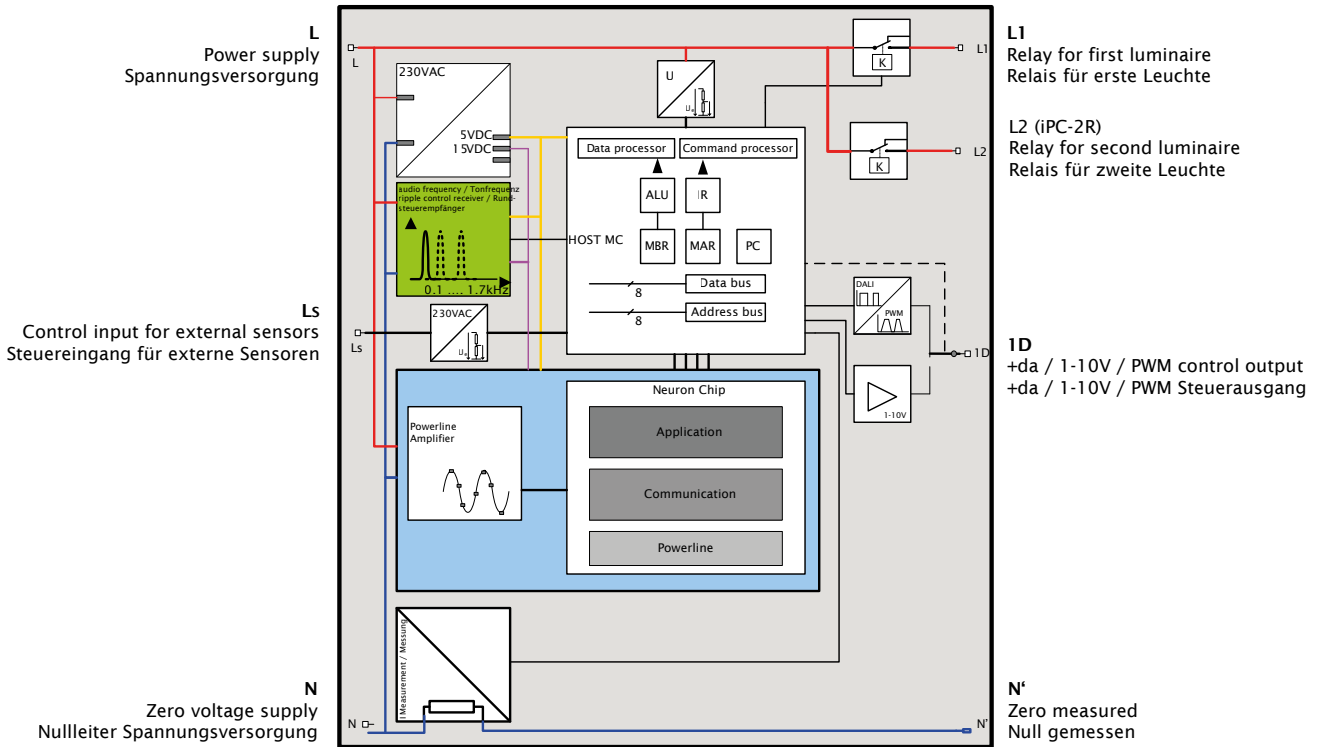
Preassembled cable 10 x 1 mm<sup>2</sup>, oilflex-sheathed cable classic 100, ferrule on bare end of core on connection side.

Colour	Abbreviations	IEC 60757	Configuration	Special features
Black	SW sw	BK	L1 Out	
Brown	BR br	BN	L	
Red	RT rt	RD	+da/ 1-10 V	shrunken
Orange	OR or	OR	L <sub>ST</sub> 110...230 V	shrunken
Blue	BL bl	BU	N	
Violett	VI vi	VT	--	
Grey	GR gr	GY	N' Out	
White	WS ws	WH	N'/-da/ 1-10 V	shrunken
Pink	RS rs	PK	L2 Out	only 200051

IEC = International Electrotechnical Commission



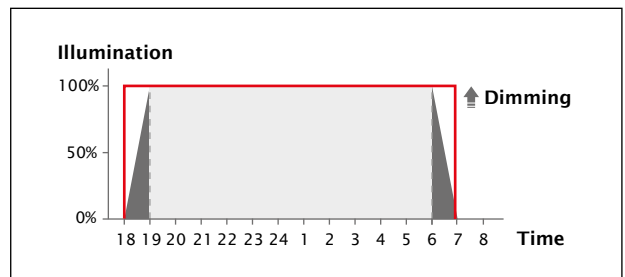
Block Diagram



Functions of the Light Controller

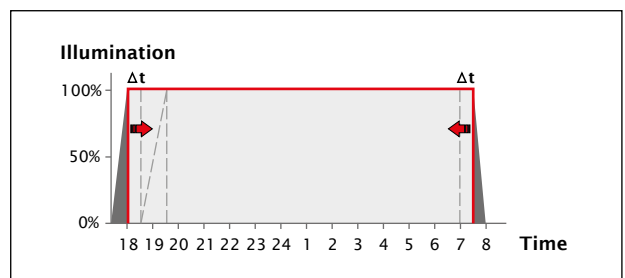
DOO (Dimming, ON/OFF)

The lighting system can be programmed to ensure the lighting level of luminaires slowly increases to the desired brightness upon being switched on and to dim down within a certain timeframe before switching off. The brightness of luminaires based on LED technology can also be increased slowly up to a defined lighting level immediately after they have been switched on. This function enables a brightness-dimming sequence of max. 36 minutes to be set.



DPC (Delayed Switching for Pedestrian Crossing)

Delayed switching off or early switching on of the lighting in the closer area of pedestrian crossing zones. For instance, street lighting is typically activated at 40 lux within pedestrian crossing zones, but at a lower lux level in areas outside of this zone. If the cabling infrastructure needed to set up such a system is missing, the iPC controller can emulate a similar effect thanks to its ability to “learn”. Pedestrian crossing zones can be switched for a longer period, whereas the remaining lighting can be switched independently and/or dimmed after a certain “learning” period.

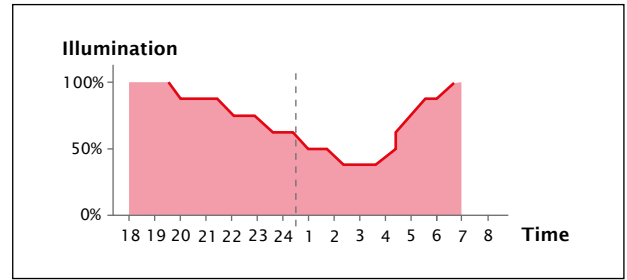


The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification. Please find further detailed information at [www.iciti.de](http://www.iciti.de)

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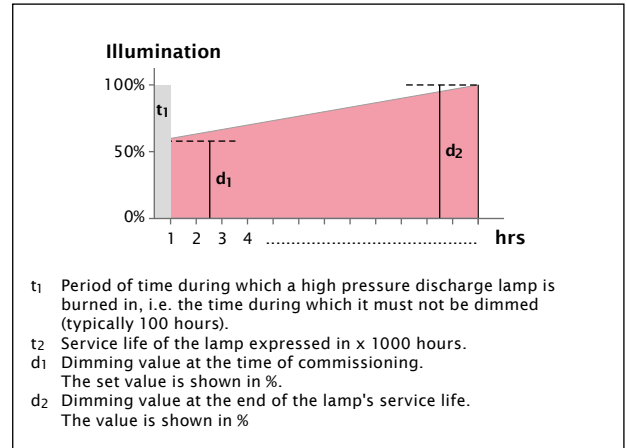
## ISD (Intelligent Switching Time Dimming)

A season-specific reference value is derived from the period of time the lighting cable is switched on. In line with this reference value, the controller can manage the lighting system with up to 10 dimming levels and dimming sequences. Accidental (erroneous) configurations that can arise, for instance, during maintenance work, are suppressed by the controller as it ignores short lighting periods of less than 6 hours and long periods of more than 18 hours.



## MFF (Maintenance Factor Function)

Lamps age, mirrors and luminaire cover glass become dirty. This unwanted effect is compensated over the service life of the lamp to ensure a constant luminous flux. The effect can be combated by quantifying the expected decrease in luminous flux over the lamp's service life, which helps to save energy costs. This function can also be used to precisely set the luminaire to suit the lighting task if the lighting level would otherwise be too high as a result of a substitute luminaire.



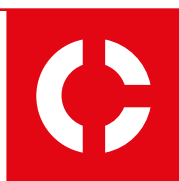
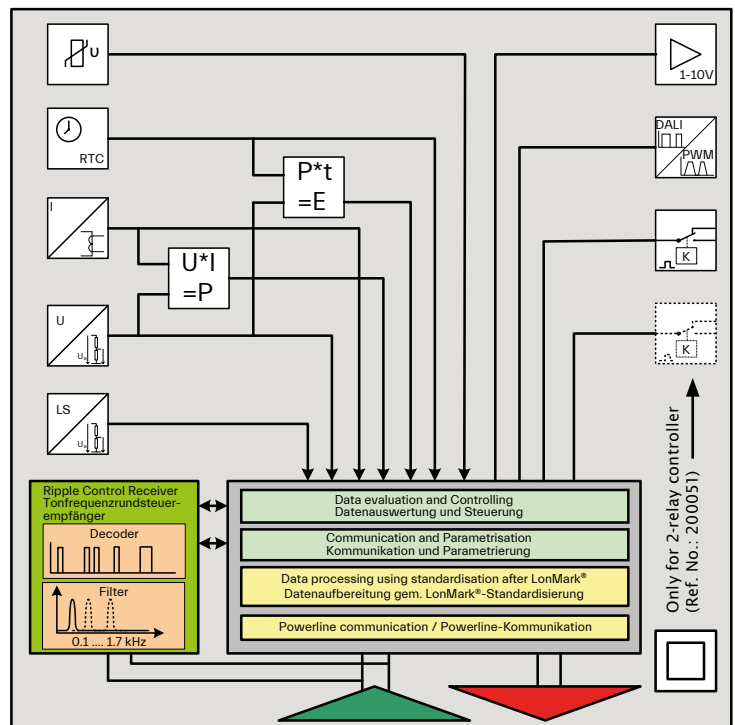
## LST (Control Input)

In addition, using a control input (e.g. with a push button or motions ensor) the system can be switched to a certain lighting level for a freely configurable period of time.

## Configuration and Graphic User Interface

If the controller is initially operated without a light management system, the configuration process is undertaken using a programming tool. Despite being a highly complex piece of technology, the controller's intuitive software interface makes it both user-friendly and easy to configure. The GUI enables direct configuration via the powerline.

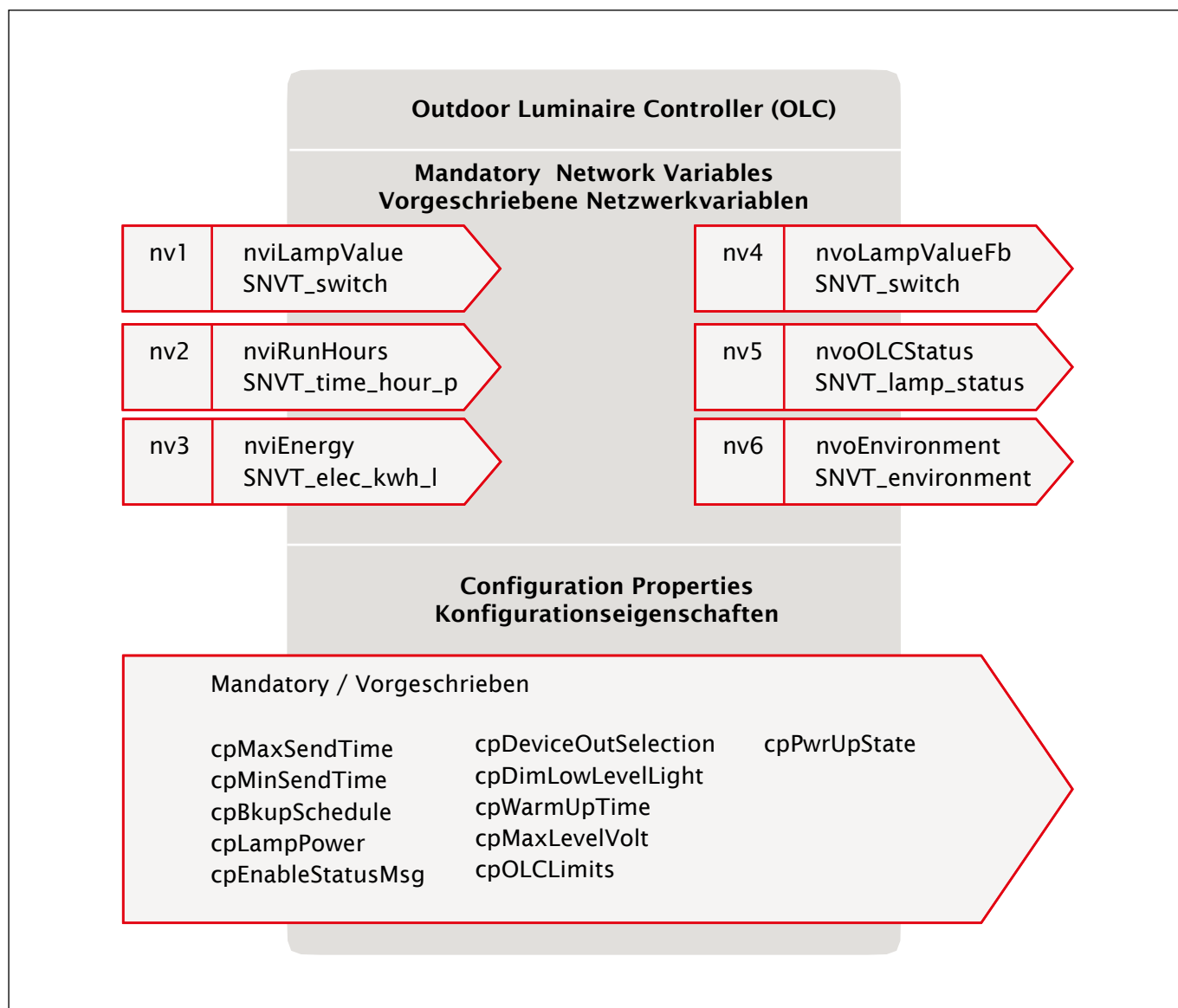
If the controller is integrated into a light management system, the same functions are available, but the parameters are configured from a central control point and lighting control is web-based online. In this case, time control using the "synthetic" midnight is only used as a redundant application.



## OLC Profile acc. to LonMark®

In accordance with the mentioned ANSI and EN specifications, the controller is fitted with an interoperable network interface, which is essential for setting up heterogeneous networks. The definition of the exact data structure for data transfer purposes is fixed in accordance with the LonMark® definition in line with the so-called OLC profile (Outdoor Luminaire Controller).

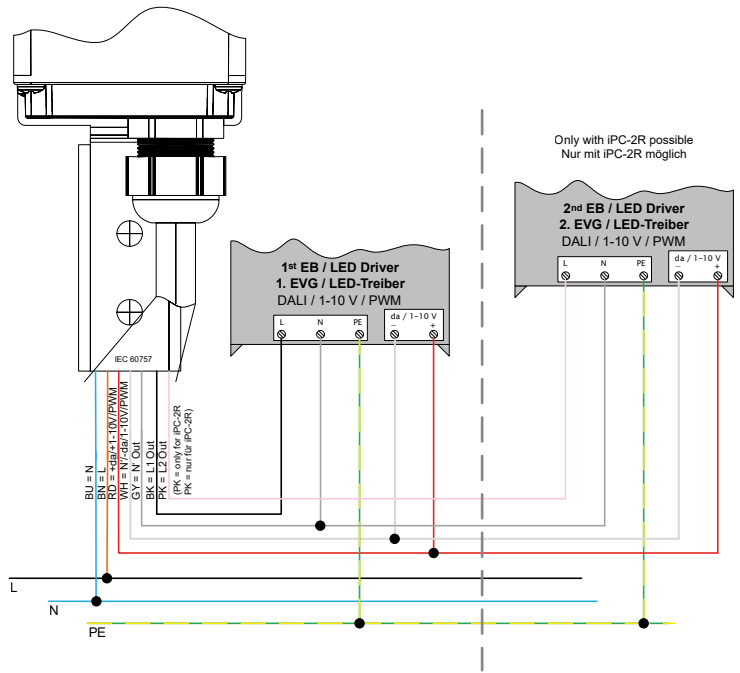
Controllers that are manufactured in line with this standard, even if produced by different manufacturers, can be integrated into a common network. All communication data are completely routable to other medias like FT (Free Topology), wireless or narrow band powerline (PLC).



## Circuit Diagrams

### Connection of electronic ballasts with 1-10 V / DALI control input

Apart from being able to address all commonly available ballasts, the controller also makes it possible to completely switch off electronic ballasts if connected to a switched lighting cable. This provides luminaires operated with 1-10 V electronic ballasts, in particular, with an important additional function. With DALI up to 4 individual ballasts are addressable per controller. With the iPC-2R, 2-lamp luminaires or 1-lamp luminaires with power reduction can be controlled via the second relay.



### Control using the L<sub>ST</sub> control input via a motion sensor or control line

The L<sub>ST</sub> input is designed for 230 V AC. Different functions can be used depending on the given configuration. When using a motion sensor, the lighting period can be defined in the controller. If motion is detected again during this period of time, the lighting period will restart for the specified time.

