

iMCU-NEMA

INTELLIGENT MULTIFUNCTIONAL CONTROLLER UNITS



Developed for use with street lighting and lighting near buildings they are controlled by luminance. The controller enables the control of magnetic and electronic ballasts with 1 to 10 V, DALI and PWM interface. Individually programmable and updatable, it offers all the functions of a lighting management system in operation, but in stand-alone operation without time-consuming commissioning.

Other advantages

- 10 dimming levels with individual dimming sequences
- Stand-by loss: < 0.5 W
- Delayed switching-on and early switching-off with individual dimming sequences
- Analog control input can be adjusted to perform different tasks
- Intuitive software-based configuration
- Luminaire can be switched off if connected to a not switched lighting cable
- Simple configuration transfer using a USB interface converter or a manual programming device with a Nema socket
- Burning-in of high-pressure discharge lamps following lamp exchange
- Remote parameter functions
- Connections for various motion sensors
- Integrated highly accurate and sensitive light sensors
- Automatic, random and delayed switching-on of electronic ballasts in a maximum of 15 groups to distribute inrush current peaks.
- Non-linear, adjustable maintenance value with 5 interpolation points
- Automatic summer/winter time changeover
- Parameter function: Change of parameter settings of the weather-dependent time and dimming values by means of power supply line switch-on cycles
- 5 years warranty

Typical applications

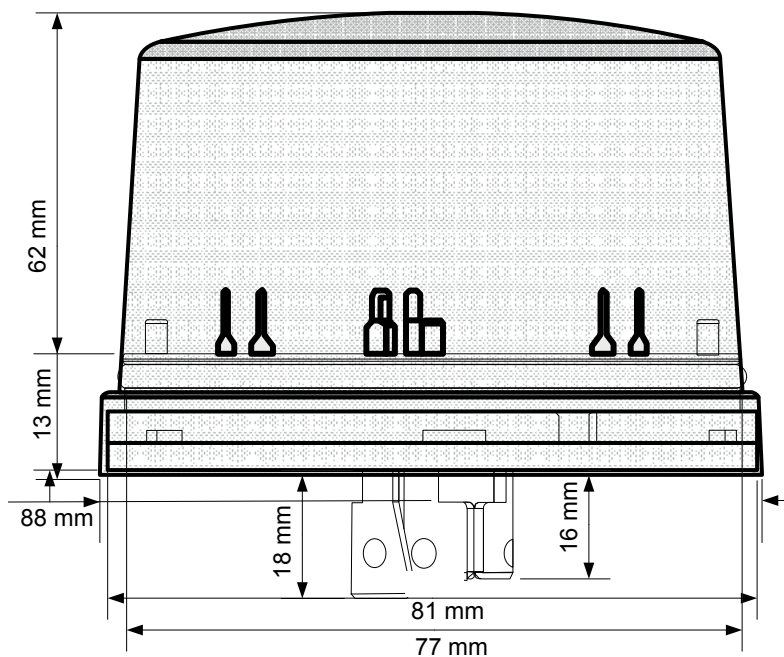
- Street lighting and lighting in the vicinity of buildings
- Outside illuminated zones at pedestrian crossings
- Car parks, bus stops and stations
- Company premises, warehouses
- Sports facilities

Light Controller iMCU-N

Technical data

Electronic light controller	186915
Type	iMCU IP65
Input voltage	110 – 265 V AC $\pm 10\%$
Mains frequency	50/60 Hz (+1% / -2%)
Power consumption	< 0.5 W; PF = 0.1
Electrical isolation	Electrical isolation between input and output
Switching current	4 A, $\lambda = 0.8$
Switching cycles	50.000 switching operations per function (I, λ)
Programmable	Yes
Configurable parameters	Yes
Control output 1–10 V	Short-circuit proof
Control output DALI	Short-circuit proof, for max. of 4 electronic ballasts
Terminals	3 plus 4 connectors NEMA
Firmware update / parameter setting	With iMCU configuration tool using control output 1–10 V/ DALI/PWM while disconnected from the mains
Light sensitivity	10 – 100 lux adjustable
Working temperature range t_w	-25 °C to +80 °C
Storage temperature range	-25 °C to +85 °C
Air humidity	5% to 85%
Surge voltage protection	4 kV / 1.2 / 50 in acc. w. DIN EN 61037
Type of protection	IP65
Protection class	Suitable for luminaires of protection classes I and II
Casing material	Polycarbonat
Dimensions (ØxH)	Ø 88 x 85 mm
Weight	160 g
Country of origin	Made in Serbia

Dimensions

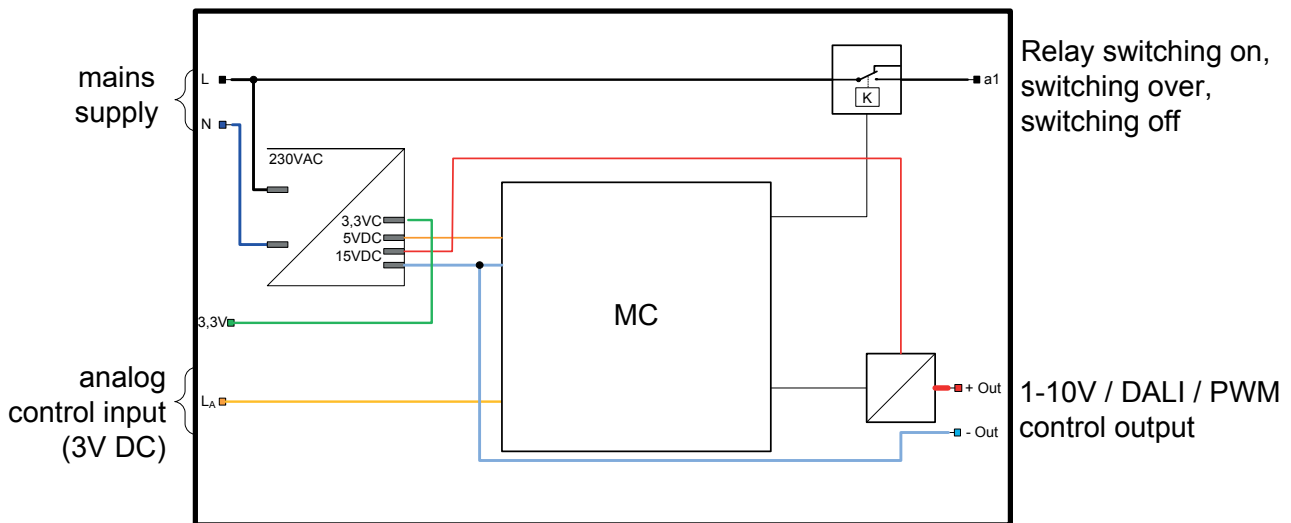


The values specified in this data sheet may change due to technical innovation and without notice.
For more detailed information visit www.vossloh-schwabe.com.

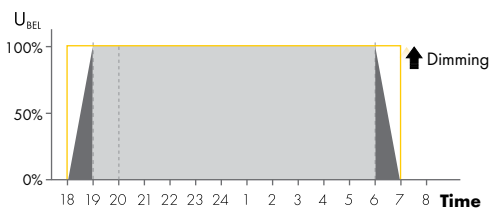
Light Controller iMCU-N

Controller versions are available for installation outside the luminaire with connection to a standard Nema socket 3 plus 4 optional. The 1–10 V/DALI/PWM output is designed for controlling an electronic ballast to achieve the lowest stand-by loss of < 0.5 W. In addition to changes of parameter settings of the various applications, the microcontroller enables complete firmware updates to be ready for future adjustment such as to new or different functions. Disclosure of OEM and customer-specific versions can be prevented by means of a special software key. Please ask your VS contact for details about this function. When the electronic ballast is connected to the iMCU, the control input is no longer electrically isolated.

Block diagram



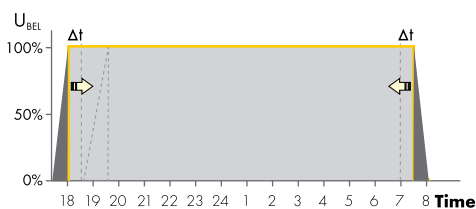
Functions



DOO (Dimmed ON/OFF)

Dimming sequences can be used to switch lighting to the desired brightness and also to switch lighting off.

The brightness of modern LED luminaires can also be increased slowly up to a defined light level immediately after they have been switched on. This function enables the configuration of an up to 36 minutes long dimming sequence.



DPC (Delayed Switching for Pedestrian Crossing)

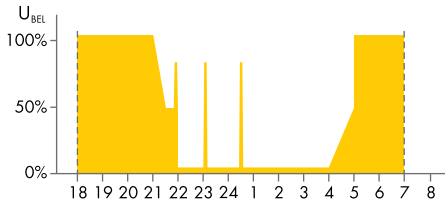
Delayed switching-on and early switching-off of lighting near pedestrian crossings.

Lighting at pedestrian crossings is typically to be switched at 40 lx, while outside such areas lighting is switched only at lower lux levels. If the cabling infrastructure required for this kind of control does not exist, the iMCU controller can simulate a similar behaviour thanks to its ability to learn. The pedestrian crossing area can be switched and time-delayed. The remaining lighting can be switched and/or dimmed independently based on a learning function.

The values specified in this data sheet may change due to technical innovation and without notice.
For more detailed information visit www.vossloh-schwabe.com.

Light Controller iMCU-N

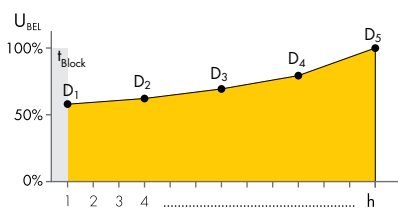
Functions (continued)



ISD (Intelligent Switching Time Dimming)

Intelligent, timer-controlled periods of dimmed light

A season-specific reference value is derived from the period of time the 3.3 V analog input is short-cut to minus. Based on the reference value, the controller can control the lighting system with up to 10 dimming levels and dimming sequences. Accidental (erroneous) configurations that can arise, for instance, during maintenance work, are successfully 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)

Maintenance factor function: Control of the luminous flux decrease over the lamp's service life

Lamps, mirrors and glass luminaire covers are subject to ageing. This process is compensated by controlling the luminous intensity during the lamp's service life, so that a constant luminous flux can be generated. If it is known how much the luminous flux decreases over service life, the process can be equalised and energy costs can be saved. This function can also be used to precisely adjust the luminaire to the lighting task where otherwise the lighting level would be too high as a result of the replacement of the lamp.

T_{Block}

Period of time during which a lamp is burned in, i.e. the time during which it must not be dimmed (typically 100 hours).

T_n

Service life of the lamp expressed in n x1000 hours.

D1

Dimming value at the time of commissioning. The value set is stated in %.

D2, D3, D4,

Configurable dimming values according to the ageing of the lamp, stated in %.

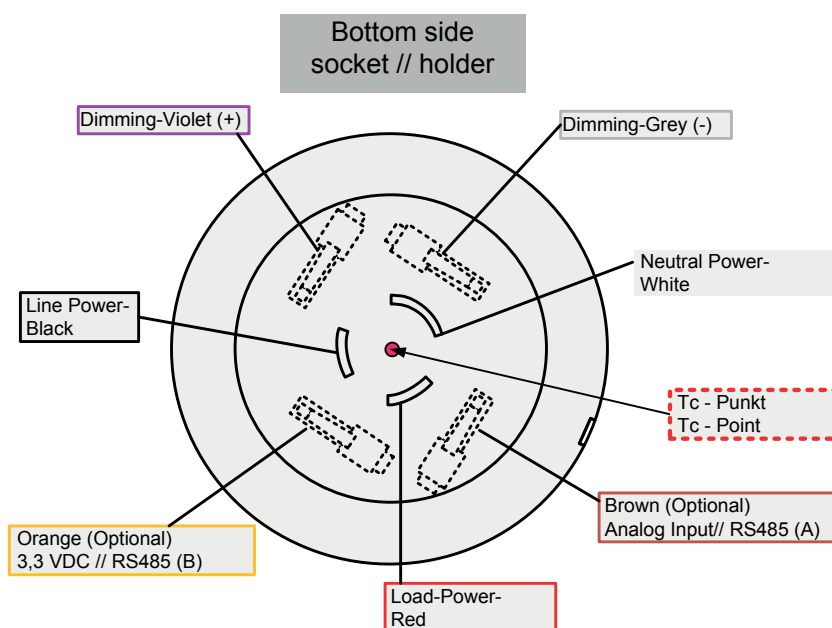
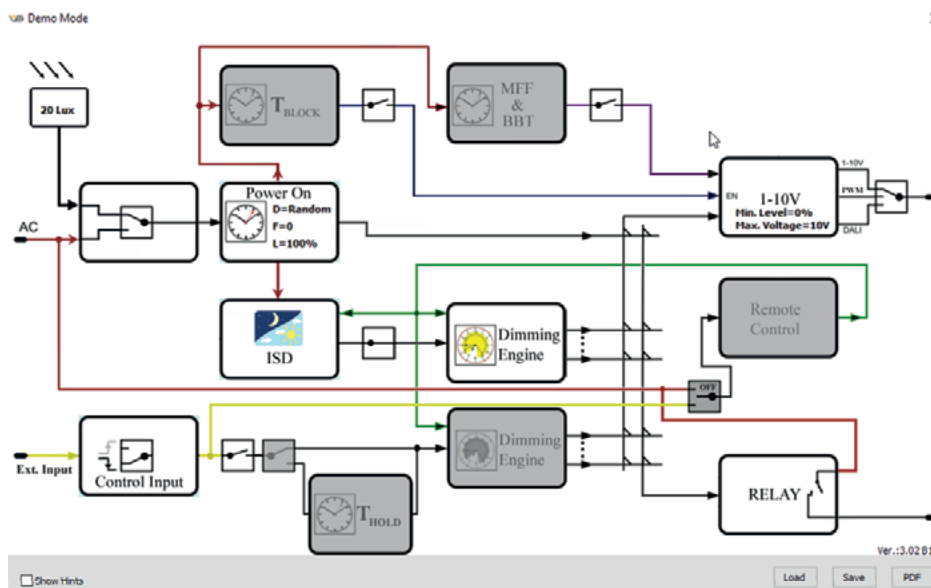
D5

Dimming value at the end of the lamp's service life. The value is stated in %.

Light Controller iMCU-N

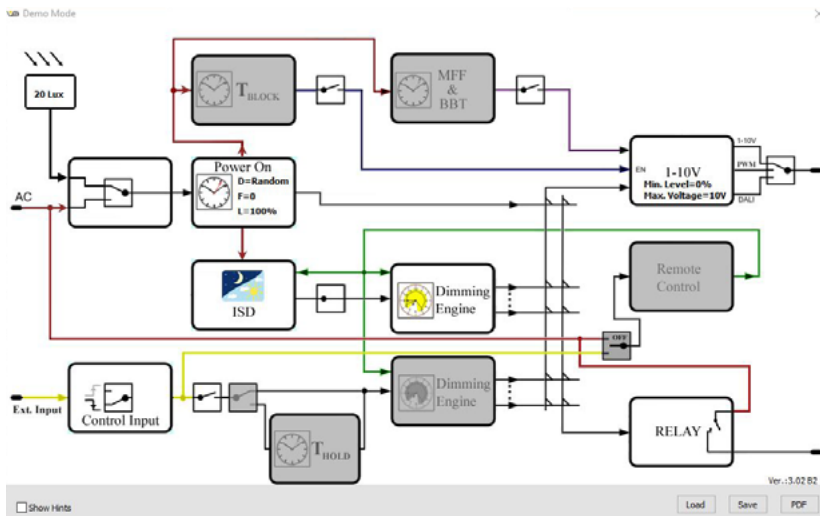
Configuration and graphical user interface

Despite being a highly complex piece of technology, the light controller's intuitive software interface makes it both user-friendly and easy to configure. The GUI enables direct configuration via a USB interface. Alternatively, the configuration process can also be transferred to a hand-held programming device, which means that the parameters of a luminaire can be reconfigured even without a PC or notebook (see accessories, p. 8). The integrated power supply of the programming device means configuration updates can be undertaken even when the power supply is disconnected. In addition, the device can be used for daylight control, the connected device is displayed at the top left, **DEMO mode means no programming device is detected**. Details on programming this can be found on the next page.

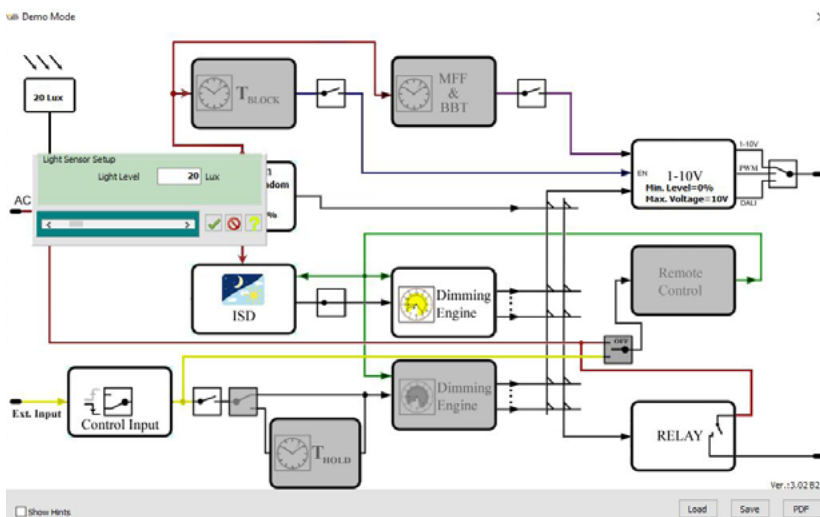


The values specified in this data sheet may change due to technical innovation and without notice. For more detailed information visit www.vossloh-schwabe.com.

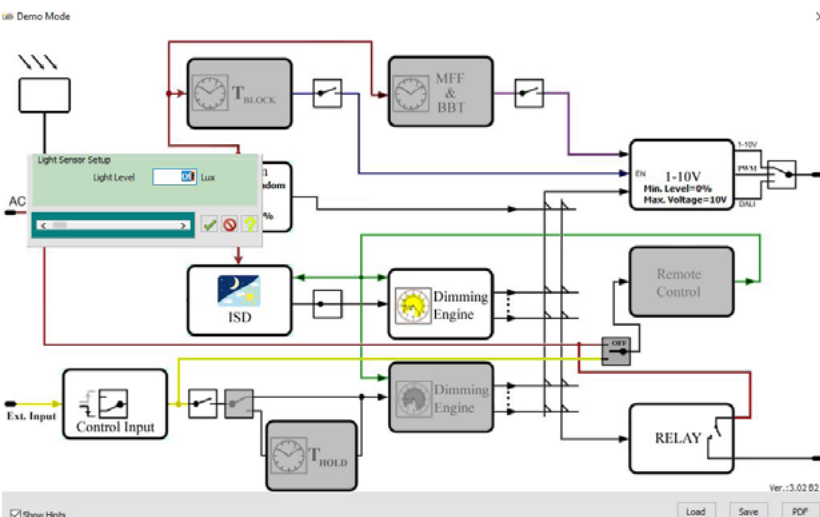
1. Open the user interface.



2. Click on the icon at the top left (light sensor) to open the configuration interface of the light control. Values between 10 and 100 lux can be set in one step.



3. click on the icon under which the inscription ISD can be seen and select "Light Sensor On" to activate the light control.

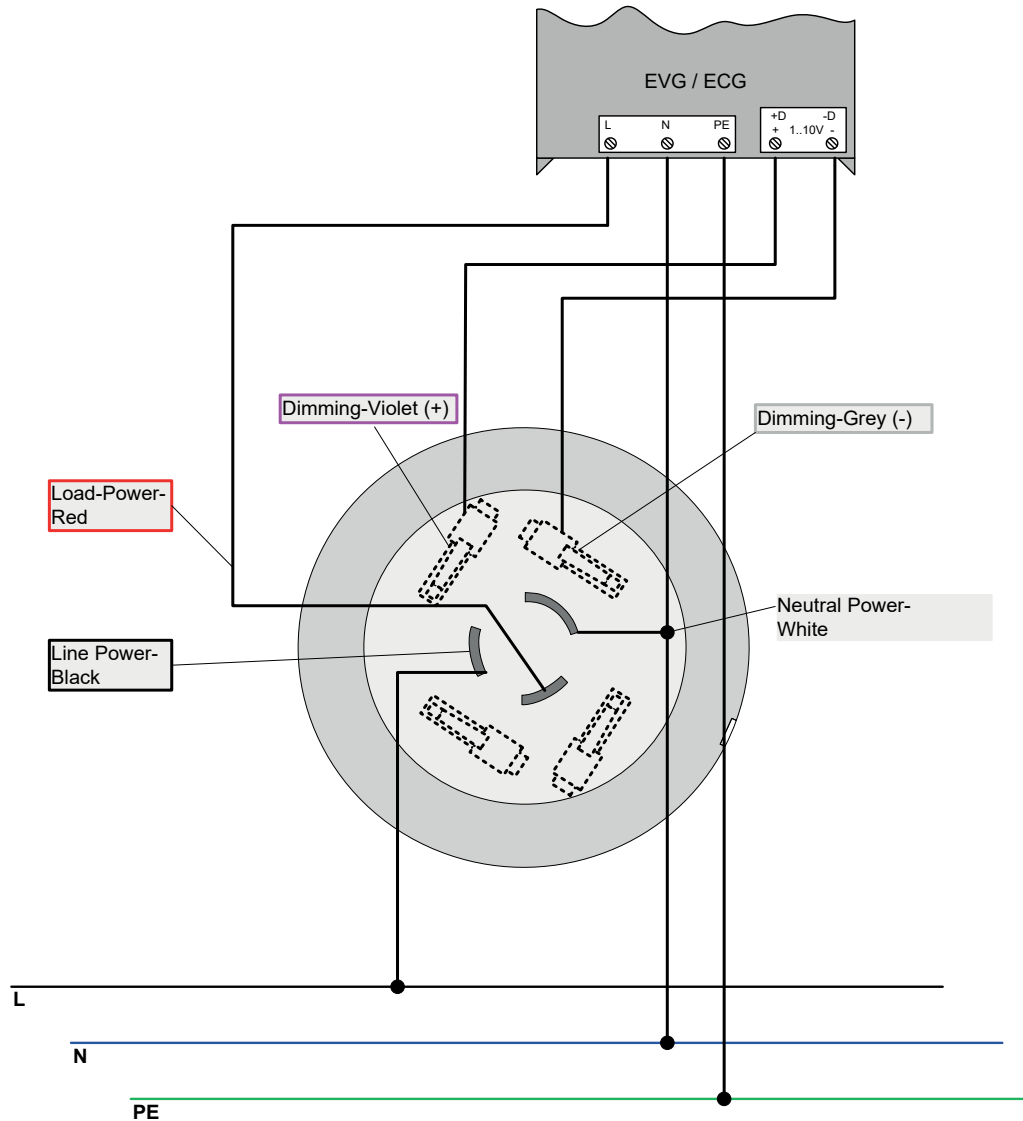


The values specified in this data sheet may change due to technical innovation and without notice.
For more detailed information visit www.vossloh-schwabe.com.

Light Controller iMCU-N

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

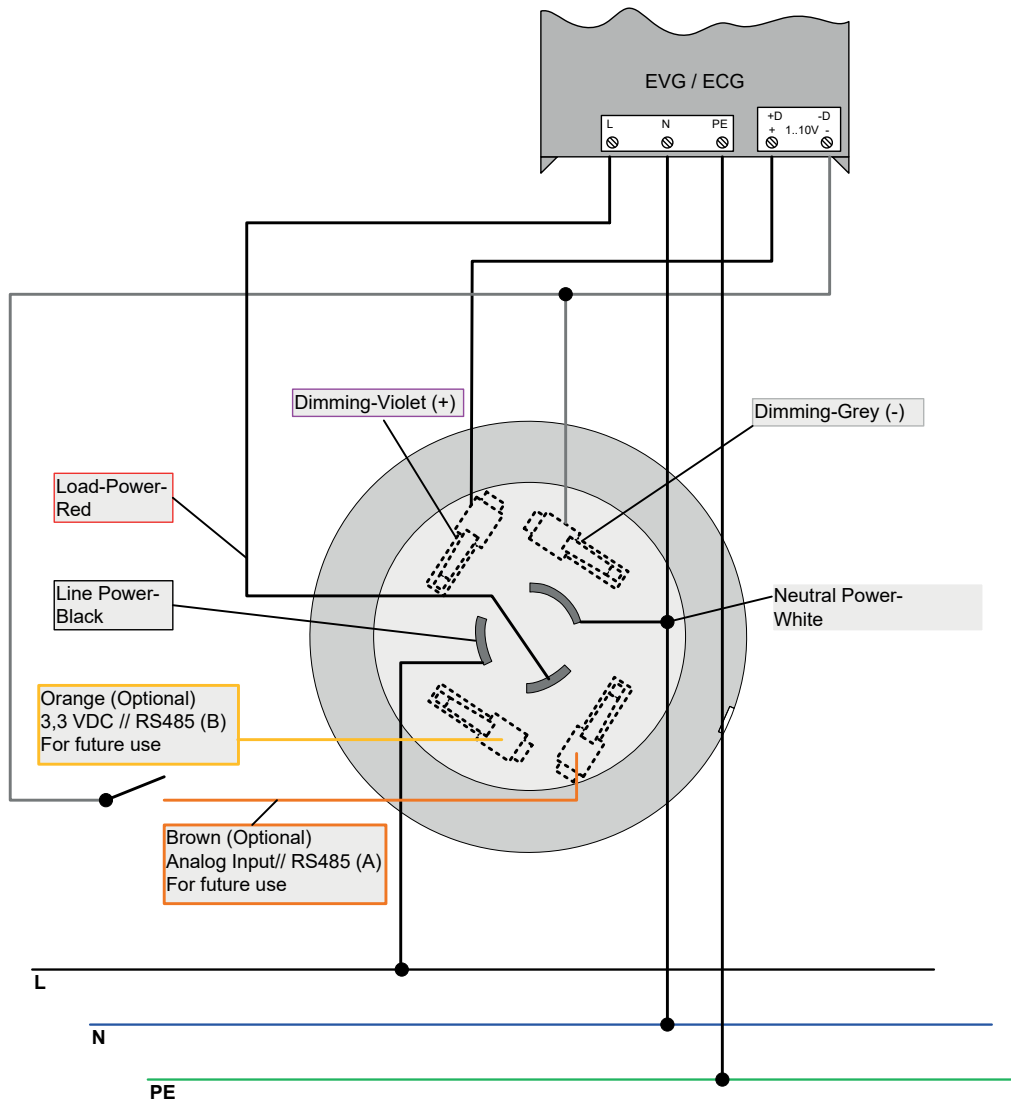
Apart from being able to address all commonly available ballasts, the iMCU also makes it possible to completely switch off electronic ballasts if connected to a not switched lighting cable. In particular, this switch off means an important additional function for luminaires operated with 1-10 V electronic ballasts.



Light Controller iMCU-N

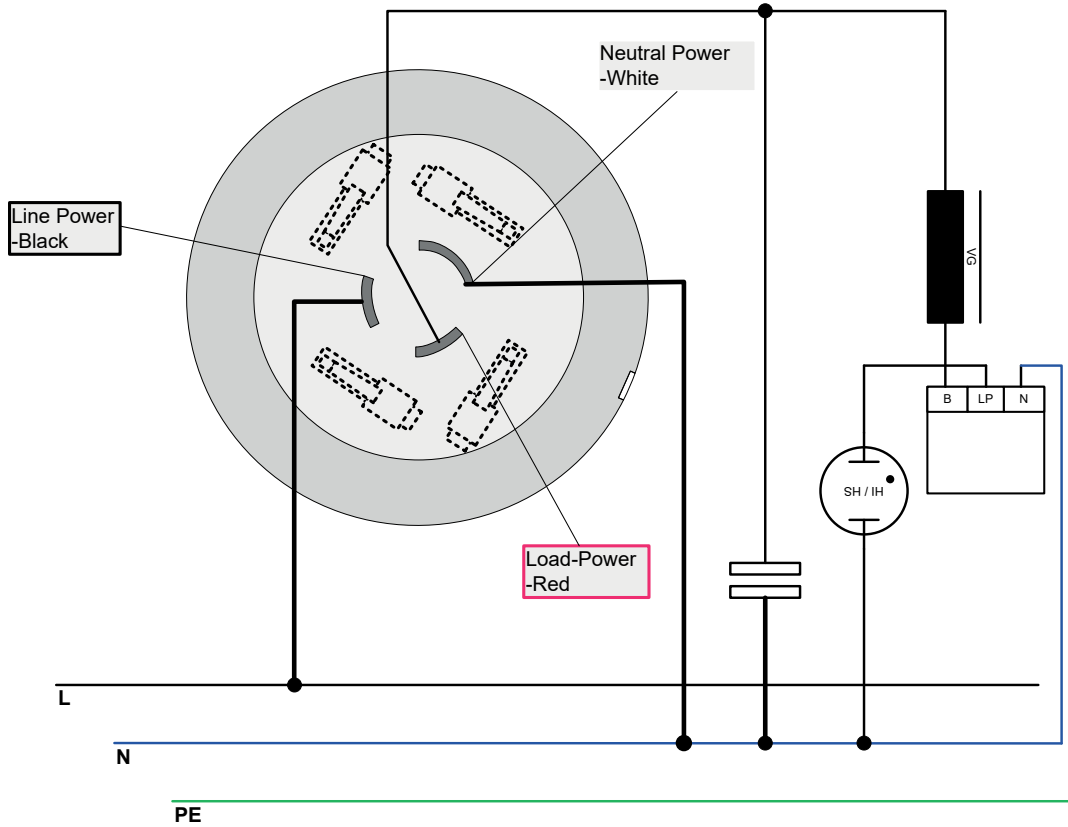
Control via input LA using motion sensor

The LA input is designed for 3V DC. Different functions can be implemented depending on the selected 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.



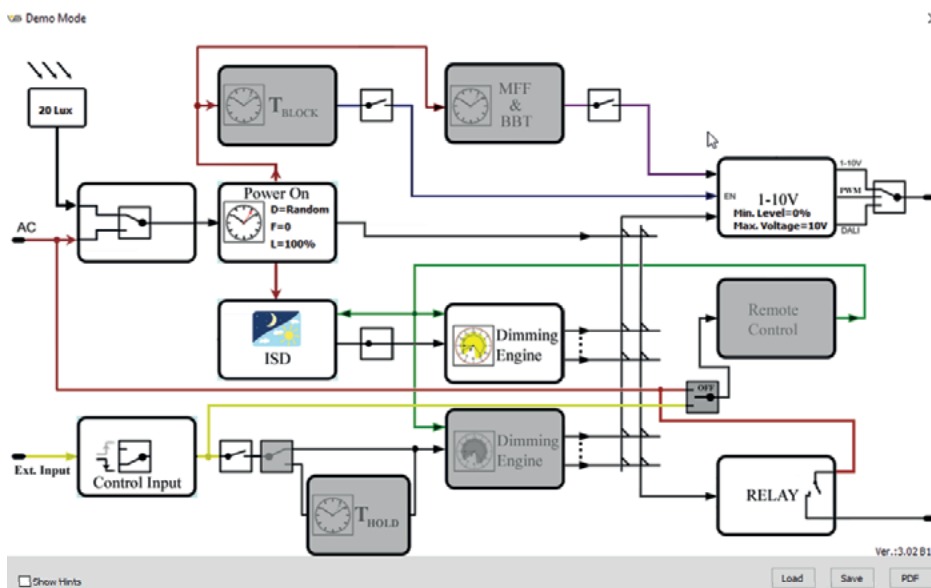
Light Controller iMCU-N

Connection Diagramm for Magnetic Ballasts



Accessories

Control software and hardware for parameter setting and updating of the iMCU-N controller



iCTI
Ref. No.: 186729



iCTI-N adapter
Ref. No.: 187043

The values specified in this data sheet may change due to technical innovation and without notice. For more detailed information visit www.vossloh-schwabe.com.

Light Controller iMCU-N

Sales text

The multifunctional, intelligent controller unit – which calculates a "synthetic" midnight – enables control of luminaires that are operated with magnetic ballasts and electronic ballasts with a 1–10 V/DALI/PWM compatible interface are used for street lighting and lighting in the vicinity of buildings. Ballasts fitted with a DALI interface are addressed using a broadcast command, which removes the need to commission the electronic ballast. The controller is extremely easy to configure and updatable. Based on the daily operating period, it is possible to set 10 switching times, each with an adjustable dimming sequence and dimming level. The 3 V DC control input permits superimposed use of up to 10 freely programmable dimming levels and dimming sequences. Furthermore, when used in sensor mode, the holding time for sensors can be freely and retriggerable defined. When used in areas outside of pedestrian crossings, the special configuration of the controller makes it possible to delay or bring forward the point in time when luminaires are switched off. The time delay, dimming sequence and dimming levels can be freely defined. Additional functions include non-linear compensation of luminous flux decrease and change of the controller's parameter settings via switch on/off commands of the lighting cable.

Text for invitation to tender

Intelligent controller for managing luminaires in street lighting and lighting in the vicinity of buildings that are operated using magnetic ballasts (low-loss ballasts, low-loss ECO ballasts) as well as electronic ballasts with a 1–10 V/DALI/PWM compatible interface. The controller is designed for use with a switched lighting cable or with an unswitched mains cable in combination with a internal luminance sensor. Electronic ballasts with a DALI interface are addressed using broadcast commands, which removes the need for any further configuration of this device. The controller provides a potential-free relay contact for switching ballasts on and off. Ballasts featuring a 1–10 V input are actively addressed. The minimum dimming value for LED driver can be defined independently. When using the light sensor or a switched lighting cable, the controller learns its own time based on the switch-on time of the last 3 days. Up to 10 freely configurable times are available for setting the electronic ballast's dimming values. The switching status of the relay as well as dimming values and dimming sequences are individually configurable on the basis of the time set in the parameters section. The 3 V DC control input can be used to influence internally calculated switching and dimming behaviour. The control input initiates up to 10 freely programmable dimming levels that impact the sequence of the relay's switching status, the dimming value and the dimming sequence. The relay, dimming value and dimming sequence can be set individually. The calculated dimming sequence and the dimming sequence that is initiated by the control input can be used in a superimposed manner. The decline in luminous flux over the lamp's service life can be compensated. Start and end values as well as lamp service life values can be freely configured. For new lamps, the higher-level dimming function can be switched off in dependence on lamp and lighting hours. The controller can delay switching on a luminaire and can switch it off earlier. Both dimming sequences and dimming levels are adjustable. External tools can be used to configure and update the controller. Power consumption during operation is < 0.5 W. Optionally, 15 randomly generated switch-on times, distributed over 150 ms, can reduce the inrush current of the drivers connected. Five interpolation points can be used to configure the luminous flux decrease of the lamp. Based on longitude and latitude, the controller automatically calculates summer and winter time with an accuracy of about 1 KVV. The accuracy depends on the switching accuracy of the lighting cable (depending on weather in case of light sensors). Astro-dimming level parameters can be changed via special switch on/off sequences of the lighting cable.

For current software and the latest firmware for configuring and updating the iMCU controller go to www.vossloh-schwabe.com

The values specified in this data sheet may change due to technical innovation and without notice.
For more detailed information visit www.vossloh-schwabe.com.