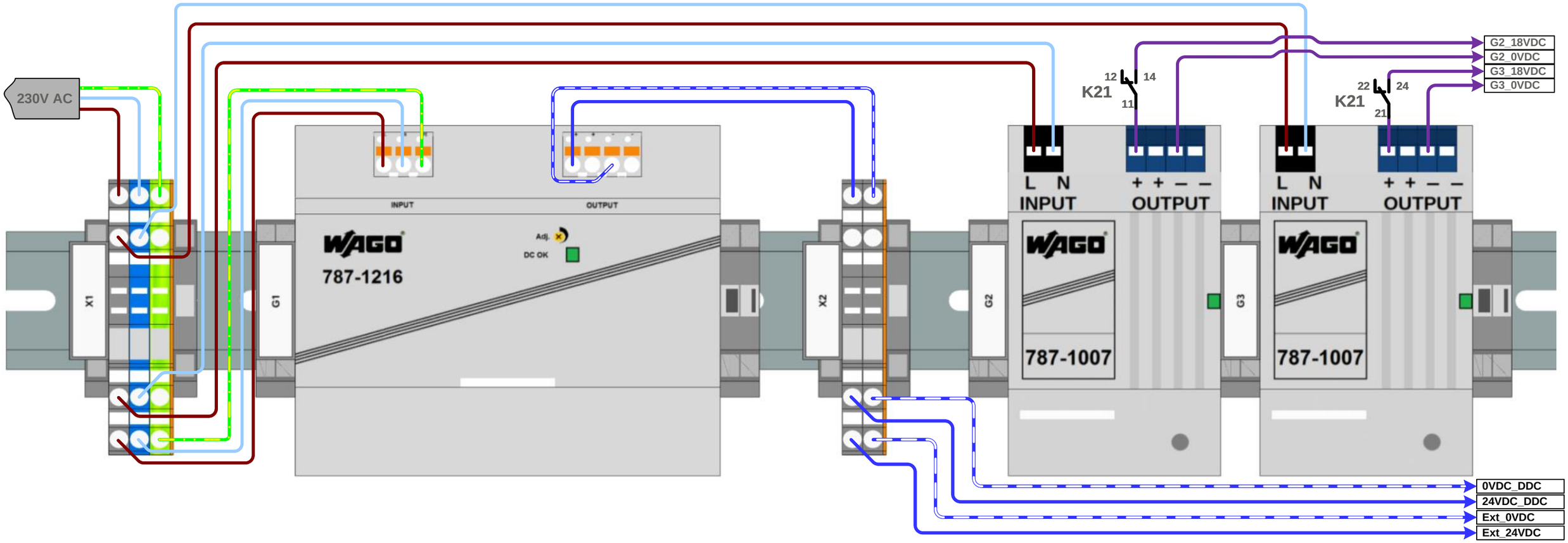
Lighting Management – V2.1

WAGO Lighting Management – V2.1

Änderungen								
D			DATE	NAME	PROJECT TITLE	CUSTOMER	PROJECT NUMBER	WAGO
C		DRAWN	04.04.2022	A. Peschel	WAGO Lighting Management	WAGO Kontakttechnik GmbH & Co. KG	PSi CS_DE_000000	
B		EDITED					DRAWING NUMBER	
A		CHECKED					0000-ZN-01-A-3821	

WAGO Lighting Management

Section 1 – 24 VDC Supply for I/O and Field Devices / 18 VDC for DALI Bus (ECG, multi-sensors, etc.)



Cabinet level

Field level

24 VDC Power Supply (e.g., 787-1216)

The WAGO Lighting Management controller has a Series 787 24 VDC power supply. Depending on the I/O system configuration, the power supply must be designed to handle to the total power consumption of the specific application case. The loads of the field devices used must also be considered in the power supply layout.

The mounting position is also an important factor here. In the standard mounting position (horizontal on a DIN-rail), the power supply can be fully utilized; in other mounting positions (e.g., overhead), the power supply load specifications from the delivered package insert absolutely must be taken into account!

18 VDC Power Supply (DALI, 787-1007)

Depending on the configuration level of the DALI Multi-Master modules, the bus supply feed is via one power supply for up to five I/O modules or via two power supplies for up to ten I/O modules (applies to full configuration*). Up to five more I/O modules can be used, depending on the load on the Multi-Master modules. It is important to note here that the total current of 1.1 A per power supply must not be exceeded. Like with the 24 VDC supply, the specifications from the delivered package insert regarding load and mounting position must also be taken account here.

* Full configuration = DALI bus subscriber with total power consumption max. 200 mA

Watchdog-Function

The watchdog function is intended to prevent the lighting from failing if there is a disruption in a node. To so so, one relay contact per DALI power supply (e.g., 858-304), actuated by the first digital output, is switched to the DALI bus voltage path (see WAGO Lighting Management, Section 4). In normal operation, the changeover contact switches on the DALI bus. If the controller is stopped (e.g., after installing an update), the relay trips, the contact interrupts the DALI bus and the lighting (the DALI ECG) automatically switches to a defined state. This state can be set directly on the DALI ECG via the lighting management system, e.g., 100% illumination intensity.

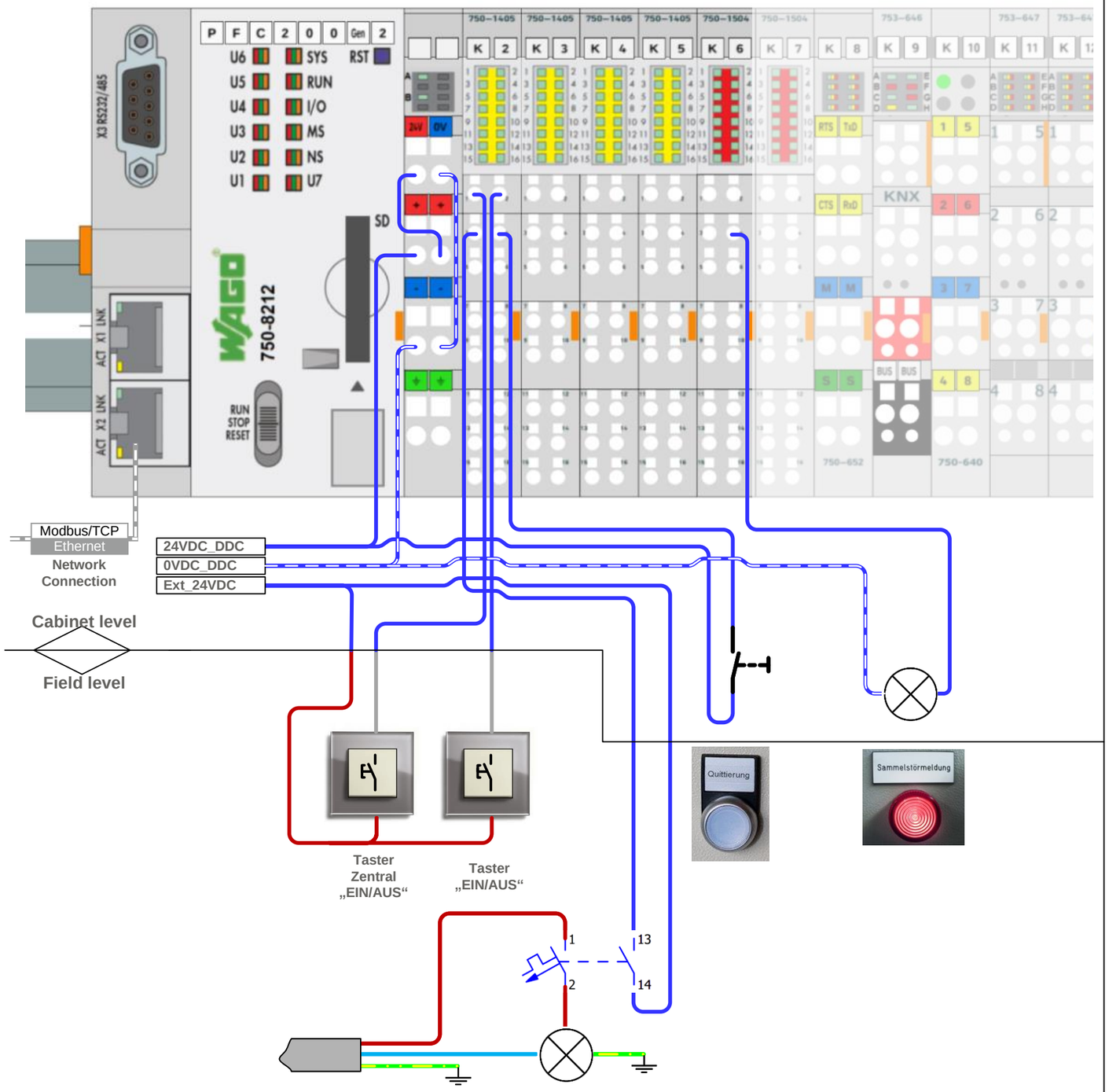
WAGO LIM – 24 VDC Supply for I/O and Field Devices
18 VDC for DALI Bus (ECG, multi-sensors, etc.)

Änderungen

			DATE	NAME	PROJECT TITLE	CUSTOMER	PROJECT NUMBER
D					WAGO Lighting Management	WAGO Kontakttechnik GmbH & Co. KG	PSi CS_DE_000000
C		DRAWN	04.04.2022	A. Peschel			DRAWING NUMBER
B		EDITED					0000-ZN-01-A-3821
A		CHECKED					

WAGO Lighting Management

Section 2 – Lighting Management, Digital Inputs and Outputs, Emergency Monitor and Watchdog Function



PFC200 Lighting Management Controller

The brain behind WAGO Lighting Management is the high-power PFC200. This is where the control program runs; it can be conveniently parameterized and operated in the included Web visualization from a PC.

Digital Inputs

In addition to 24 VDC switching signals, other voltages (e.g., 230 VAC) can be integrated and processed for connecting sensors such as push-buttons, presence and/or motion detectors, etc. In the event it is necessary to change the potential, the appropriate bus supply module must always be used. When assigning the digital inputs, note that DI 1 of the first digital input module must initially be in Construction Site mode. Execution of central commands “ON/OFF” is possible without further parameterization. Construction Site mode can be disabled after commissioning has been completed, making it possible to parameterize the first digital input. All other outputs can be freely allocated with sensors.

Connecting Error Messages

It is possible to receive messages from external devices, e.g., auxiliary switches of circuit breakers or emergency monitors, via a digital input. Any digital input can be used.

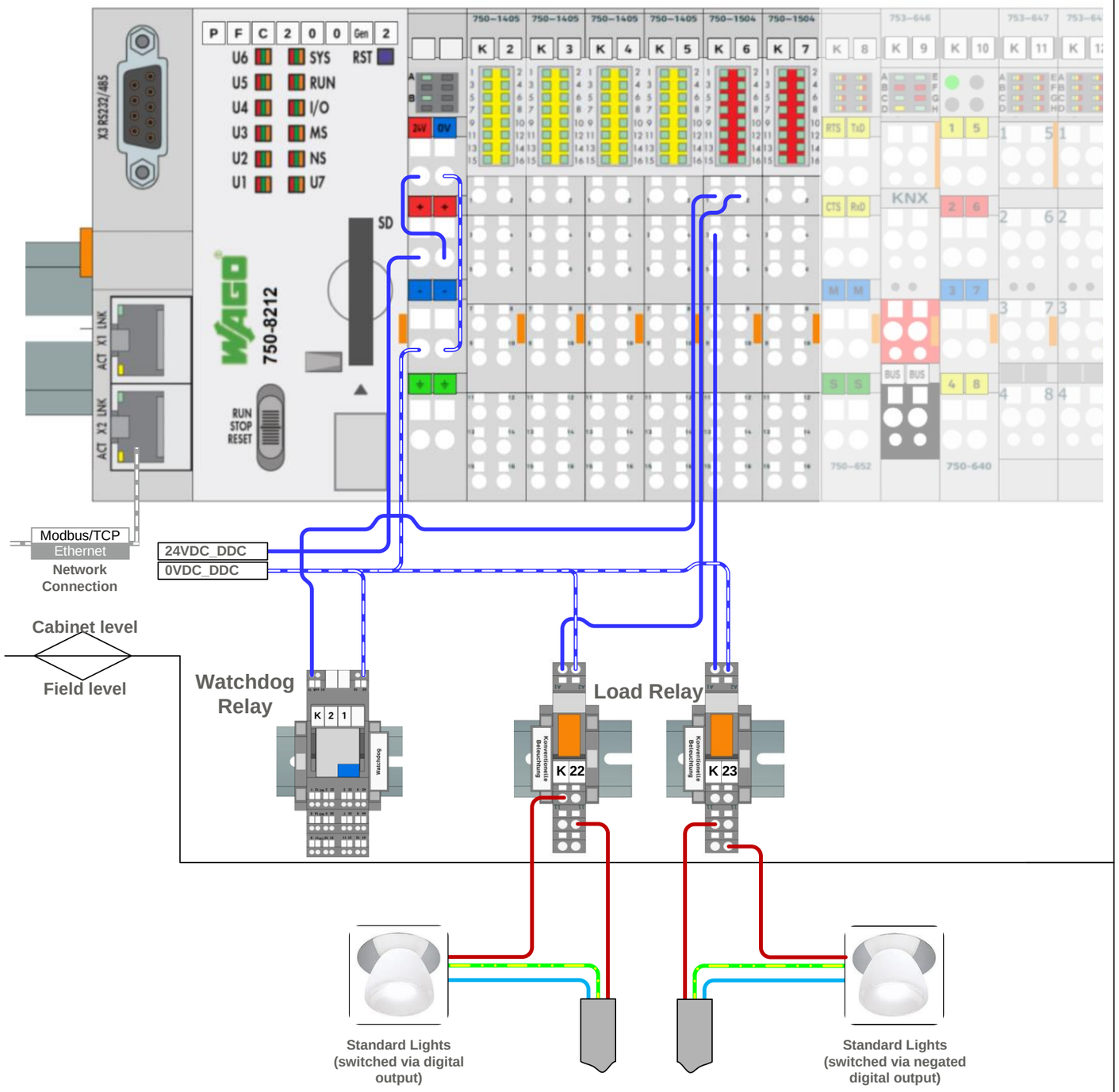
Collective Fault Message and Acknowledgement

Error messages can control an external collective fault light via a connected digital output. An external pushbutton can be used to acknowledge the message. Assignment of the digital inputs and outputs required for this purpose can be freely selected.

Änderungen								
D			DATE	NAME	PROJECT TITLE	CUSTOMER	PROJECT NUMBER	
C		DRAWN	04.04.2022	A. Peschel	WAGO Lighting Management	WAGO Kontakttechnik GmbH & Co. KG	PSi CS_DE_000000	
B		EDITED					DRAWING NUMBER	
A		CHECKED					0000-ZN-01-A-3821	

WAGO Lighting Management

Section 3 – Lighting Management, Digital Inputs and Outputs, Emergency Monitor and Watchdog Function



Digital Outputs

To control conventional lighting and implement the watchdog function (see page 2), 24 VDC switching signals that can be used to actuate corresponding relays (e.g., 788-354) are sent via digital output modules. Only DO 1 on the first digital output module is reserved for the watchdog function. All other outputs can be freely used.

Watchdog-Function Extension

To prevent the lighting (DALI / conventional) from failing when the controller is stopped (e.g., after updating), this must be implemented on the hardware and software side. This is important, for example, for rooms or corridors that are defined as escape routes. The lighting should be able to switch on automatically in an emergency.

The conventional lighting must be wired via the NC contact of the load relay (see page 8).

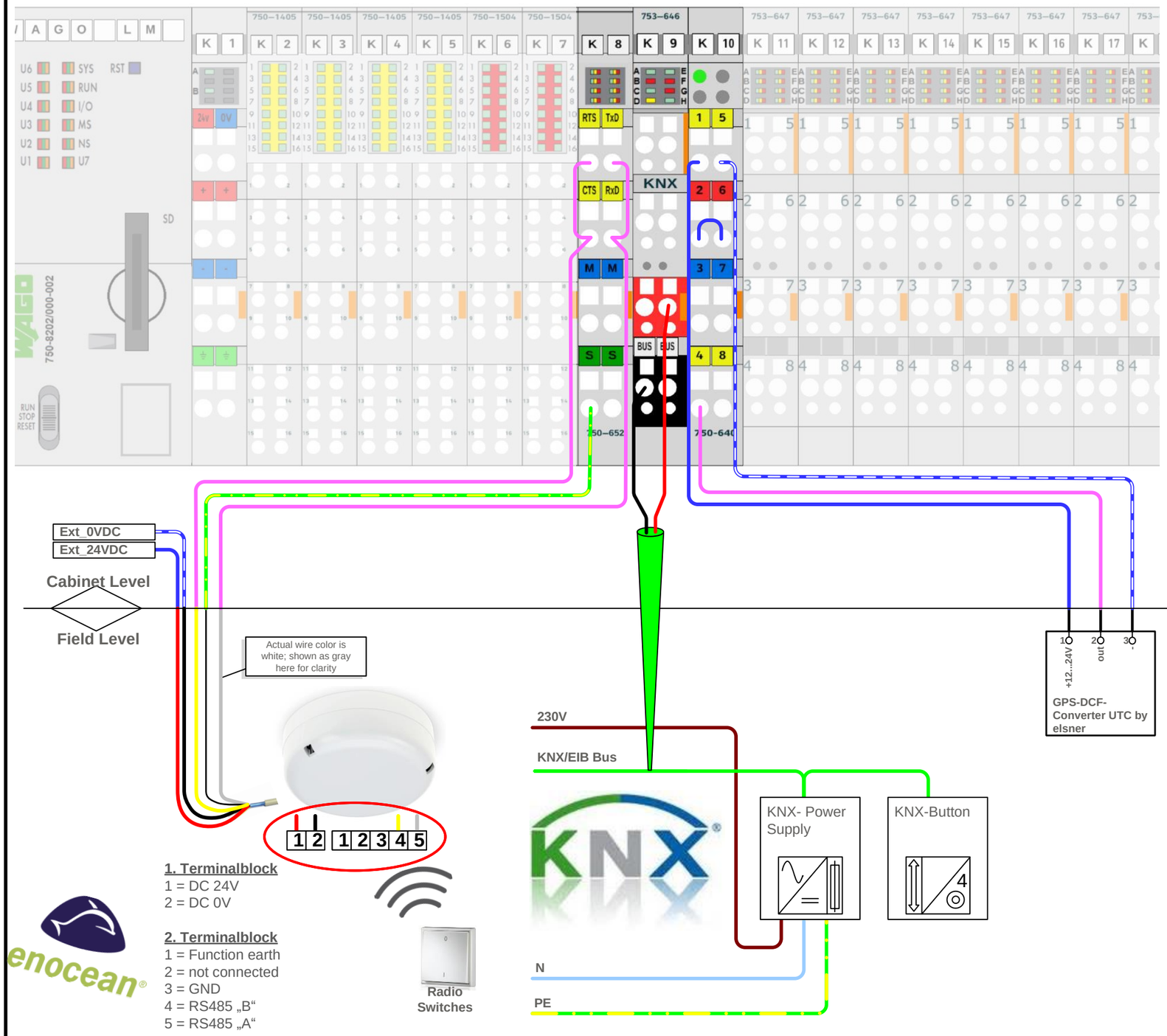
The corresponding digital outputs must now be negated in the light management application.

WAGO LIM – Section 3 – Digital Inputs and Outputs, Emergency Monitor and Watchdog Function

Änderungen				DATE	NAME	PROJECT TITLE	CUSTOMER	PROJECT NUMBER
D								
C		DRAWN	04.04.2022	A. Peschel	WAGO Lighting Management	WAGO Kontakttechnik GmbH & Co. KG	PSi CS_DE_000000	
B		EDITED					DRAWING NUMBER	
A		CHECKED					0000-ZN-01-A-3821	

WAGO Light Management

Section 4 – Bus Interfaces: EnOcean, KNX TP1 Module and Real-Time Clock



EnOcean®

To support the radio telegrams from sensors supporting EnOcean® technology, the EnOcean® STC65 RS-485 EVC Gateway (2852-7101) is employed in conjunction with a serial interface (750-652).

KNX-TP1-Module

The KNX/EIB/TP1 module (753-646) connects to a KNX/EIB/TP1 network. In a KNX network, the module appears as a standard KNX device and is linked via ETS 3 Professional Commissioning Tool. The module can be connected at any position on the node of the WAGO Lighting Management. Up to 60 KNX switching/dimming and scene objects and up to 60 KNX status objects (1 bit / 1 byte) are available.

Both an external KNX power supply and ETS Professional Software are required to operate the KNX/EIB/TP1 Module.
nötigt.

Real Time Clock

To realize various time functions (e.g., weekday, vacation and custom time-switching programs), the system is always provided with the current time via an RTC module (750-640).

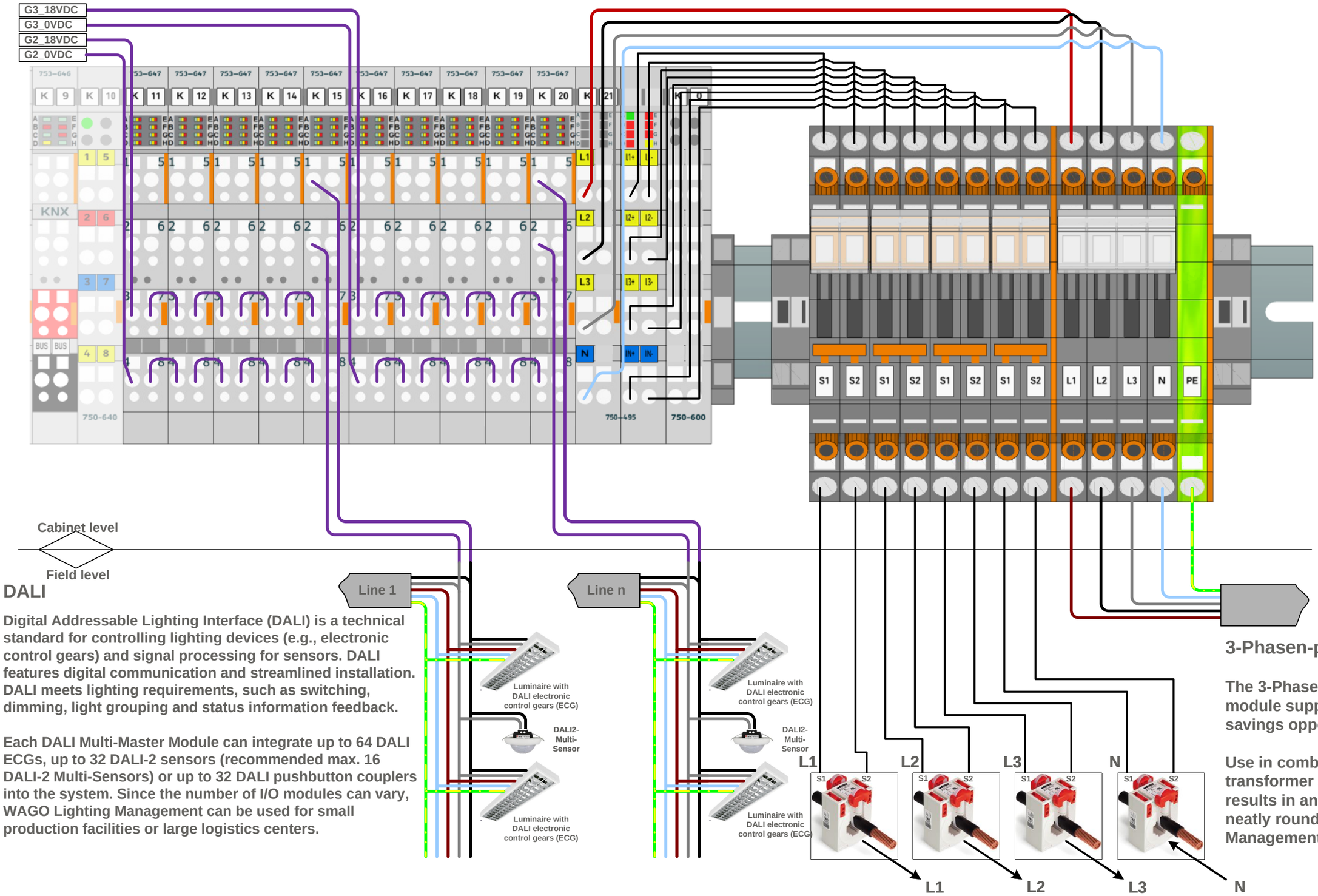
Time is synchronized through an external GPS DCF converter that receives the current time via GPS and forwards it as a DCF77 signal.

WAGO Lighting Management – Section 4 Bus Interfaces: EnOcean, KNX TP1 Module & RTC

Änderungen				DATE	NAME	PROJECT TITLE	CUSTOMER	PROJECT NUMBER
D								
C		DRAWN	04.04.2022	A. Peschel				PSi CS_DE_000000
B		EDITED			WAGO Lighting Management	WAGO Kontakttechnik GmbH & Co. KG	DRAWING NUMBER	
A		CHECKED						0000-ZN-01-A-3821

WAGO Lighting Management

Section 5 – DALI Multi-Master Module and 3-Phase Power Measurement



DALI

Digital Addressable Lighting Interface (DALI) is a technical standard for controlling lighting devices (e.g., electronic control gears) and signal processing for sensors. DALI features digital communication and streamlined installation. DALI meets lighting requirements, such as switching, dimming, light grouping and status information feedback.

Each DALI Multi-Master Module can integrate up to 64 DALI ECGs, up to 32 DALI-2 sensors (recommended max. 16 DALI-2 Multi-Sensors) or up to 32 DALI pushbutton couplers into the system. Since the number of I/O modules can vary, WAGO Lighting Management can be used for small production facilities or large logistics centers.

3-Phasen-power measurement

The 3-Phase Power Measurement module supports detection of energy savings opportunities.

Use in combination with the current transformer compact terminal block results in an integrated concept to neatly round out the WAGO Lighting Management.

WAGO Lichtmanagement – Teil 5 DALI-Multi-Master & 3-Phasen-Leistungsmessung

Änderungen				DATE	NAME	PROJECT TITLE	CUSTOMER	PROJECT NUMBER
D								
C		DRAWN	04.04.2022	A. Peschel	WAGO Lighting Management	WAGO Kontakttechnik GmbH & Co. KG	PSi CS_DE_000000	
B		EDITED					DRAWING NUMBER	
A		CHECKED					0000-ZN-01-A-3821	

WAGO Lighting Management

Section 6.1 – Technical Appendices: Calculating the DALI Bus Load

The power consumption and number of addresses need to be considered when calculating the amount structure (ECG, sensors, etc.):

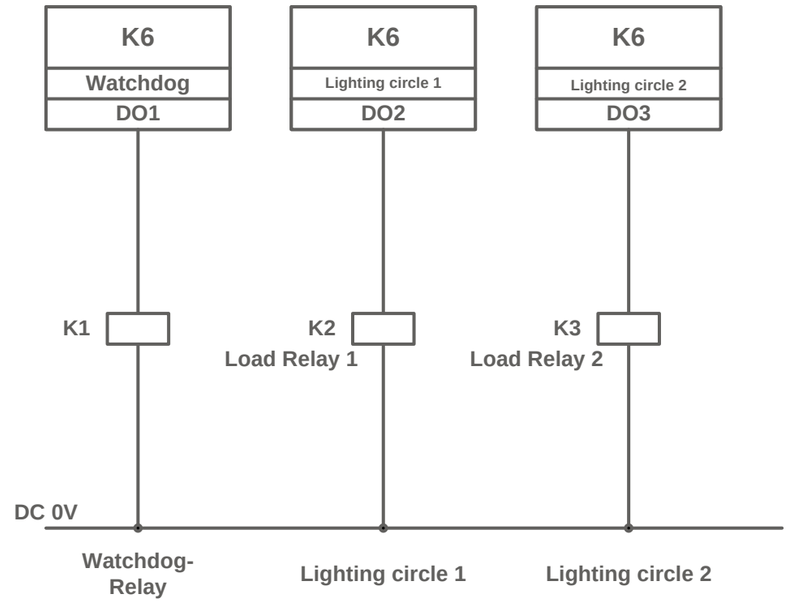
Example 1:	**64 ECG**	**64*2 mA = 128 mA**	**64 ECG-Addresses**
	12 DALI-Sensors	**12*6 mA = 72 mA**	**36 Sensoraddresses (12*3)**
		----------	
		200 mA	
Example 2:	**64 ECG**	**64*2 mA = 128 mA**	**64 ECG-Addresses**
	16 DALI-Sensors	**16*6 mA = 96 mA**	**48 Sensoraddresses (16*3)**
		----------	
		224 mA	
Correction Example 2:	**50 ECG**	**50*2 mA = 100 mA**	**50 ECG-Addresses**
	16 DALI-Sensors	**16*6 mA = 96 mA**	**48 Sensoraddresses (16*3)**
		----------	
		196 mA	

General information

- Max. 32 sensors (multi-sensors and/or pushbutton couplers) can be connected. Connecting max. 16 multi-sensors is recommended based on practical experience.
- The above examples are theoretical calculations intended to present the influence factors and dependencies.

WAGO Lighting Management

Section 6.2 – Technical Appendix: Principle of the Watchdog Circuit



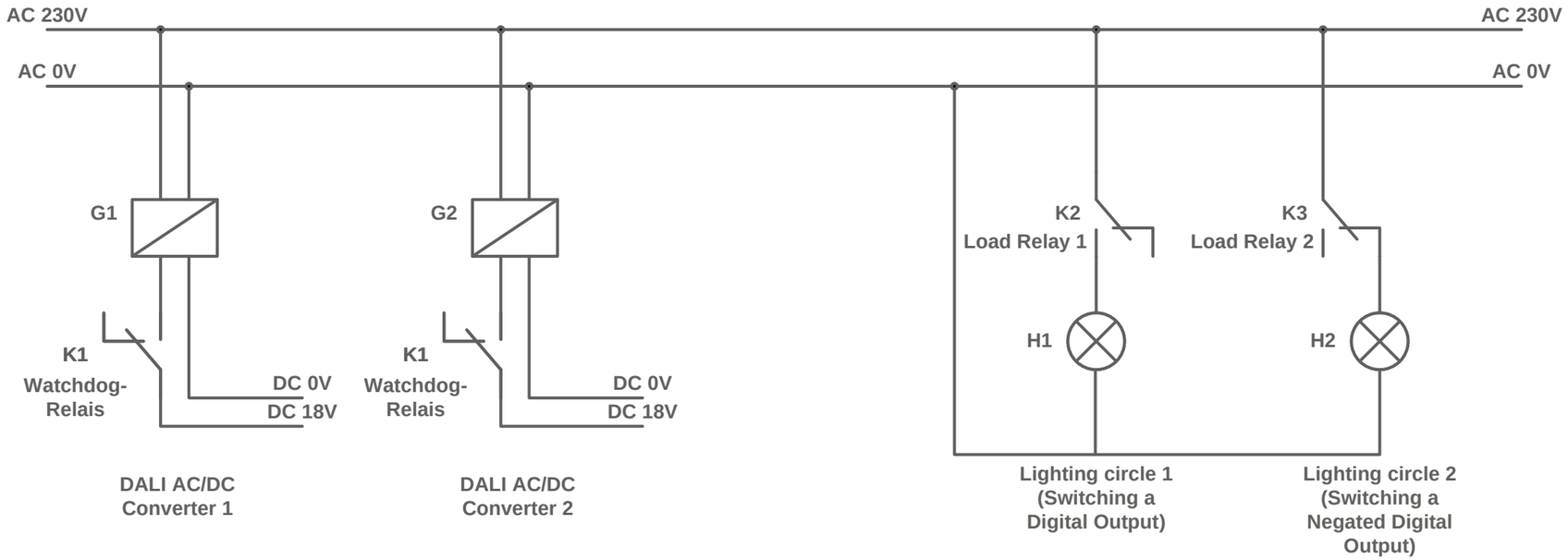
Switching a Digital Output

By default, the digital outputs switch with a positive pulse, e.g., a button signal. The lighting is switched on via the NO contact of the load relay until the digital output is switched off again by a further pulse or after a predefined time has elapsed, causing the load relay to drop out. The lighting is then switched off again.

Switching a Negated Digital Output (optional)

All digital outputs can also be negated. In this case, 24 VDC is output in the idle state and the connected relays are thus energized. The circuit is wired via the NC contact of the load relay.

After a pulse, e.g., button signal, the negated digital output outputs 0 VDC, the relay drops out and the NC contact is closed, the lighting is switched on.



WAGO LIM – Section 6.2 – Technical Appendix: Principle of the Watchdog Circuit

Änderungen				DATE	NAME	PROJECT TITLE	CUSTOMER	PROJECT NUMBER
D								
C		DRAWN	04.04.2022	A. Peschel	WAGO Lighting Management	WAGO Kontakttechnik GmbH & Co. KG	PSi CS_DE_000000
B		EDITED					DRAWING NUMBER
A		CHECKED					0000-ZN-01-A-3821