



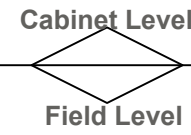
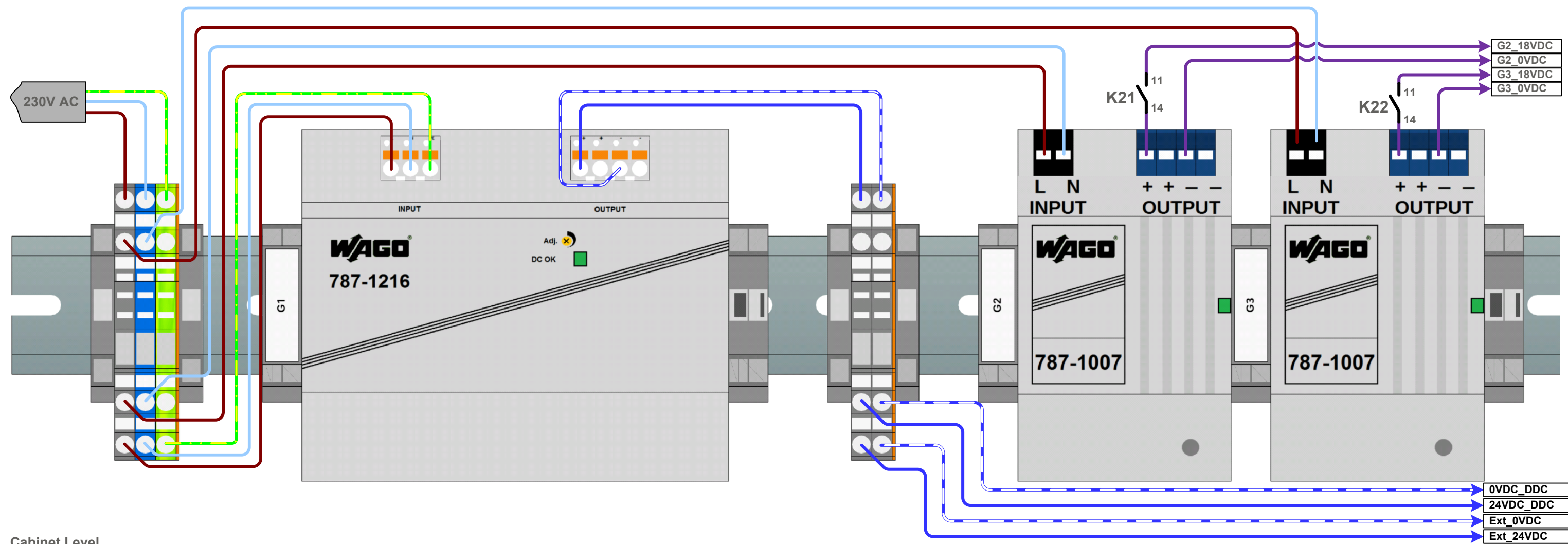
Lighting Management



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WAGO Lighting Management

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



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

The WAGO Lighting Management control is supplied via a 24 VDC *EPSITRON*® series power supply. Depending on the I/O hardware configuration, the power supply must be laid out corresponding 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 installation position is also an important factor here. In the standard installation position (horizontal on a DIN rail), the power supply can be fully utilized; in other installation positions (e.g., overhead), the power supply load specifications from the delivered package insert absolutely must be taken into account!

18 VDC 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 bus modules or via two power supplies for up to ten bus modules (applies to full configuration*). Up to five more bus modules can be used, depending on the load on the Multi-Master Modules. It is important to note here, 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 installation position must also be taken account here.

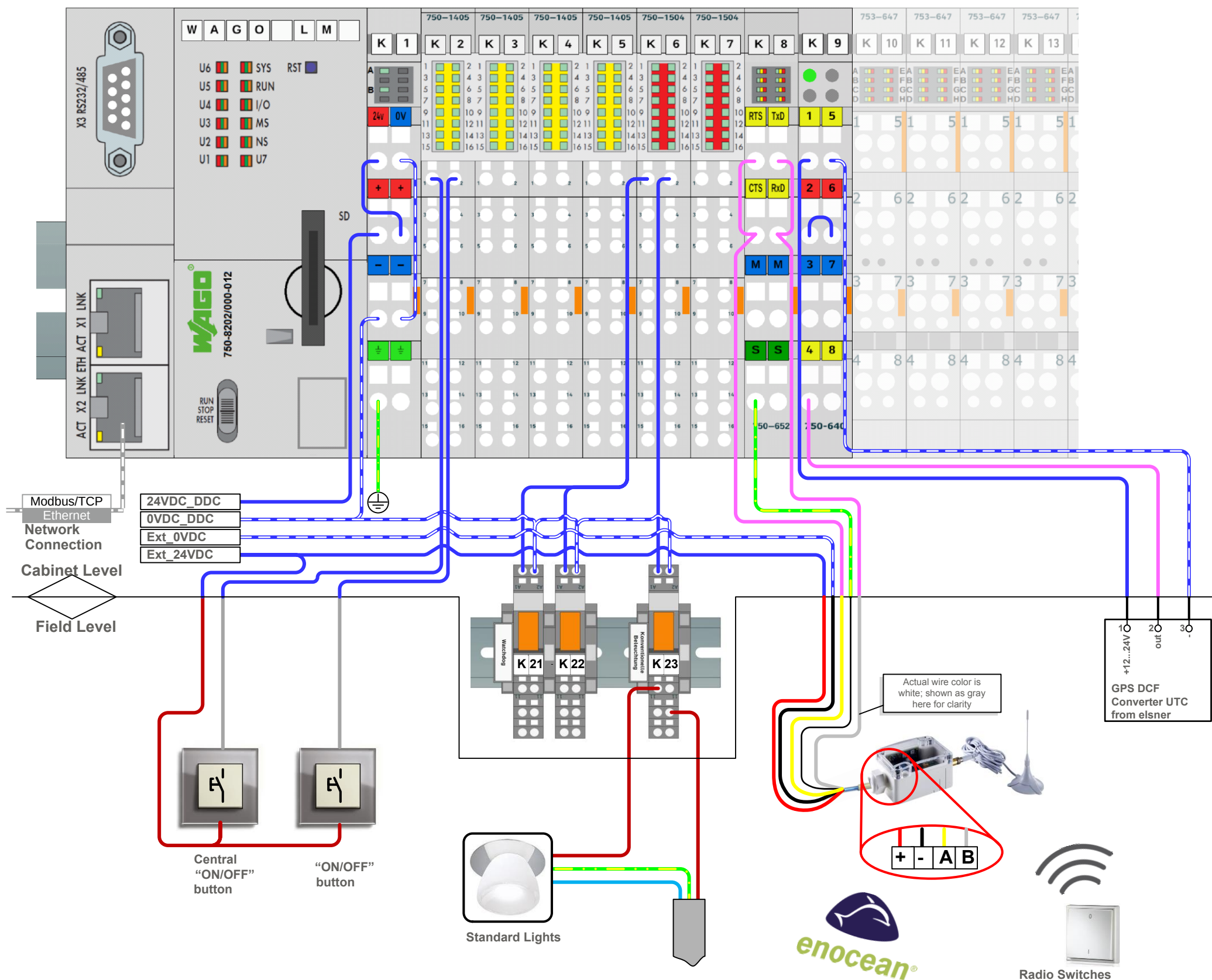
*Full configuration = DALI bus subscriber with total power consumption max. 200 mA

Watchdog Function

The watchdog function is intended to prevent the lighting from failing if there is a disruption in an I/O node. To so so, one relay per DALI Power Supply is switched after triggering by the first digital output (see WAGO Lighting Management, Section 3). 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 illumination (the DALI ECG) is automatically switched to a defined state. This state can be set directly on the DALI ECG of the lighting management system, for example, 100% illumination intensity.

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Section 2 – Lighting Management Controller, Digital In- and Output Modules, EnOcean & Real-Time Clock



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 through the included Web visualization from a PC, tablet or smartphone.

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 this case, keep in mind that DI 1 on the digital input card is always reserved for the central command “ON/OFF” All other outputs can be freely allocated with sensors.

Digital Outputs

To control the conventional illumination and implement the watchdog function (see WAGO Lighting Management, Section 1), 24 VDC switching signals that can be used to actuate corresponding relays (e.g., 788-354) are sent via digital output cards. Only DO 1 on the first digital output card is reserved for the watchdog function. All other outputs can be freely used.

EnOcean

To capture the radio telegrams from sensors supporting EnOcean technology, the EnOcean STC65 RS-485 EVC Gateway is employed via a serial interface.

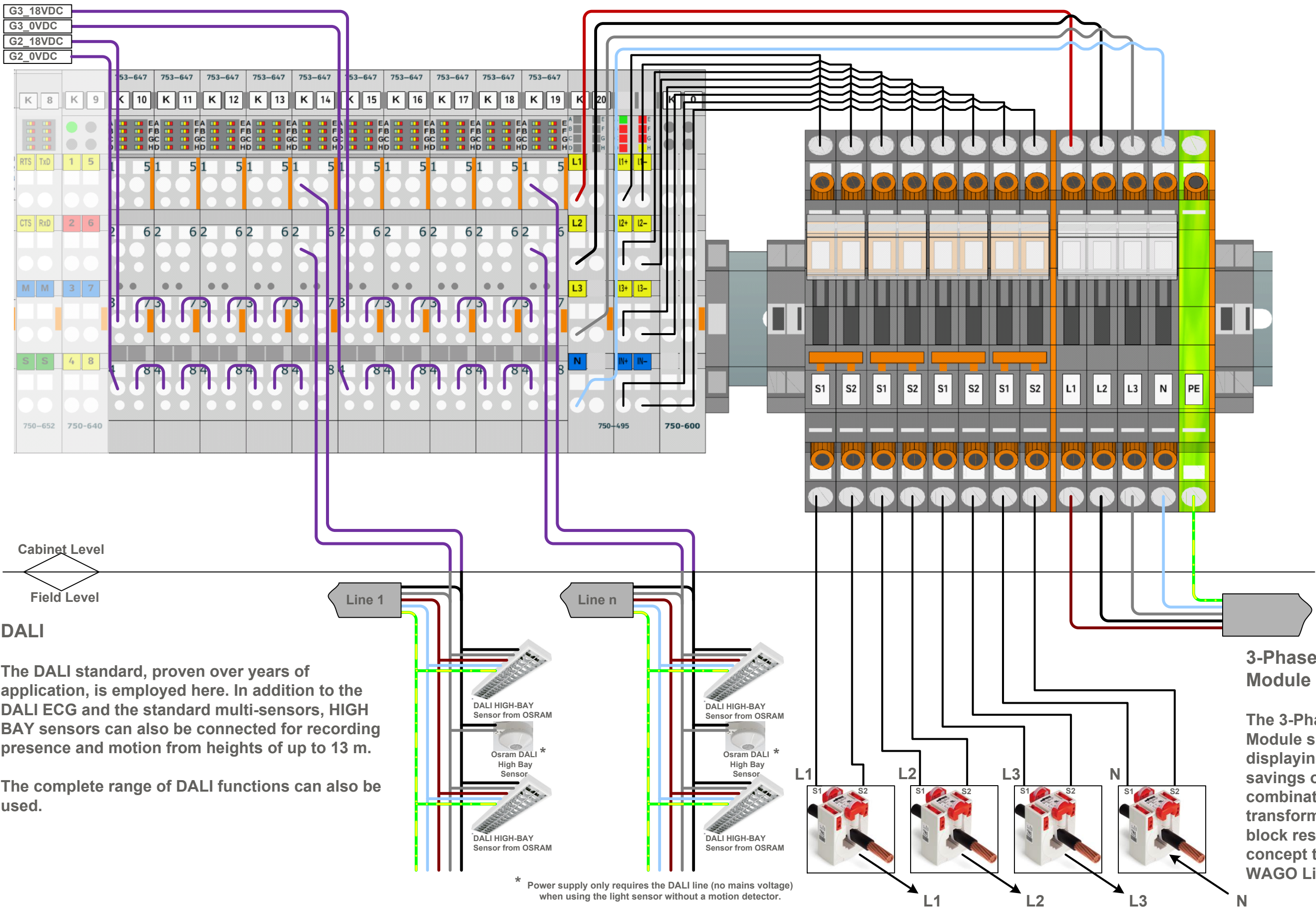
Real-Time Clock

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

Changes	D	C	B	A	SIGNED	DATE	NAME	PROJECT NAME	CUSTOMER	PROJECT NUMBER
						18.01.2017	Peschel	WAGO Lighting Management	WAGO	PSI_CS_DE_008188-17
					PROCESSED					DRAWING NUMBER
					TESTED					8188-ZN-01-A-0117

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Section 3 – DALI Multi-Master Modules & 3-Phase Power Measurement Module



DALI

The DALI standard, proven over years of application, is employed here. In addition to the DALI ECG and the standard multi-sensors, HIGH BAY sensors can also be connected for recording presence and motion from heights of up to 13 m.

The complete range of DALI functions can also be used.

3-Phase Power Measurement Module

The 3-Phase Power Measurement Module supports detecting and displaying potential 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.

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Section 4 – Technical Appendices, Maximum Configuration, Software Functions

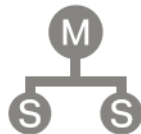
Maximum Hardware Configuration

- 1 x Programmable Controller PFC200 – 750-8202/000-012
- 10 x DALI Multi-Master Modules, 753-647
- 64 x Digital Input Modules in any combination
Exceptions:
 - All Digital Input Modules with diagnostic function
- 32 x Digital Output Modules in any combination
Exceptions:
 - 750-523
 - All Digital Input Modules with diagnostic function
- 1 x Real-Time Clock RTC, 750-640
- 1 x Serial Interface for EnOcean Gateway, 750-652
- 1 x 3-Phase Power Measurement Module, 750-495
- 1 x End Module, 750-600

Component	In Detail	Description – What Does This Control?
Inputs	10 x 16 DALI Multi-Sensors	1 to 160 DALI Multi-Sensors
	10 x 16 DALI Tridonic Key Couplers (DALI XC)	1 to 160 key couplers
	64 x EnOcean rockers	1 to 64 EnOcean single push-buttons
	64 x digital inputs	1 to 64 push-button inputs
	64 x MODBUS inputs	1 to 64 inputs for touch panel and BCS
	16 x cross communication to additional lighting management controllers	You can interconnect the controllers if you need more components.
	20 x time switching programs	1 to 20 programs on the controller or from the BCS
Outputs		
	10 x 64 DALI ECG	1 to 640 DALI ECG
	32 x digital outputs	1 to 32 switched light groups

Software Functions

- Switching
 - ON/OFF push-button
 - Latching relay
 - Staircase feature
 - Automatic light (motion detector)
 - ON/OFF switching (e.g., twilight control)
- Dimming
 - Dimming
 - Dimming with presence sensors
- Lighting control
 - Constant lighting control
 - Daylight control with switches
 - Daylight control with with staircase feature
 - Advanced daylight control
- Slave feature
 - External virtual room
 - External dimming value
- Time functions
 - Weekday, vacation, custom time and holiday switching programs



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Section 5 – 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 12 DALI sensors	$64 \cdot 2\text{mA} = 128\text{mA}$ $12 \cdot 6\text{mA} = 72\text{mA}$ ----- 200mA	64 ECG addresses 36 sensor addresses (12*3)
Example 2:	64 ECG 16 DALI sensors	$64 \cdot 2\text{mA} = 128\text{mA}$ $16 \cdot 6\text{mA} = 96\text{mA}$ ----- 224mA	64 ECG addresses 48 sensor addresses (16*3)
Correction Example 2:	50 ECG 16 DALI sensors	$50 \cdot 2\text{mA} = 100\text{mA}$ $16 \cdot 6\text{mA} = 96\text{mA}$ ----- 196mA	50 ECG addresses 48 sensor addresses (16*3)

General Information

- Up to 64 sensor addresses can be allocated, but please note: Some sensors have several sensor addresses.
- The above examples are theoretical calculations intended to present the influence factors and dependencies.

The number of supported sensors is also a function of the network load. For current recommendations, contact the manufacturer or WAGO.

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	C		SIGNED	18.01.2017	Peschel
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