Datasheet

PLD2

The PLD2: The PLD2 (PoultryLightDimmer) is an advanced sunlight simulator, designed for creating a natural light environment for animals kept indoors, e.g. poultry.

Description

The PLD2 (PoultryLightDimmer) is an advanced sunlight simulator, designed for creating a natural light environment for animals kept indoors, e.g. poultry. The PLD2 can simulate a sunrise and sunset, which ensures a smooth change in light output in order to help reducing stress in poultry.

The intuitive interface consists of a display and one push/turn knob. You can simply configure the PLD2 to your needs with these controls.

The PLD2 has a mains power input of 100-240VAC that is connected to a switched auxiliary output. This switched power output can be used to directly connect (medium) power supplies or relays powering the connected light sources. In case of unstable mains voltage, it is recommended to use the potential free power output, controlling a low voltage DC-relay to switch the light sources. There is a 12VDC power output available, which can be used together with the potential free power output, to energize a 12VDC relay. The availability of both power outputs and a dedicated 12VDC output ensures stable operation of connected power supplies in a wide range of operation conditions and different types of loads.

The PLD2 controls the connected light sources by sourcing an analog 0-10VDC signal, or by sinking a 1-10VDC signal. Make sure the power supply of the light-sources has a suitable analog input, which controls the power output.

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Datasheet

PLD2

The PLD2 has thee operating modes, called MANUAL, AUTO, and AUTO-EXT.
in MANUAL mode, the PLD2 functions as ordinary standard light dimmer. A single knob adjusts the analog output (0-100%), which controls the attached power supplies, and thus controls the light output.

In AUTO-mode, the PLD2 executes a maximum of four successive light programs configured.
Configuration of a light program is straightforward (only valid input values are accepted):

1. Set start of sunrise (absolute time) and sunrise duration (in minutes)
2. Set relays to use with current program. Set to Yes to activate relay when sunrise starts.
   Use for example to activate other colour during other program.
3. Set light output (%) start value, and light output end-value (%)[1]
4. Set start of sunset (absolute time) and sunset duration (in minutes)

In AUTO-EXT (EXTernal mode) the PLD2 executes the first light program configured, however the start time of sunrise and start time of sunset will be ignored. The start of sunrise is triggered by applying a voltage (rising edge) on the external trigger input. The start of sunset is triggered by removing any voltage (falling edge) on the external trigger input.
The light outputvalues and duration set in light program 1 are used in this operating mode.

In case the analog output is overloaded or short-circuited the PLD2 will switch of its analog output and will try to recover from the fault condition. During a fault condition, the potential free NO alarm-output is switched on (NC will be switched of), which allows a third party device to signal an alarm to the end-user in various ways (e.g. siren, GPRS-modem).
During the fault condition, an alarm buzzer will sound and an alarm message will be displayed on screen.

Features

» Easy to use interface: one push/rotate-button and graphic LCD
» Mains input voltage 100-240VAC
» Auxiliary mains output voltage (switched input voltage)
» 12VDC output for control equipment (e.g. relay)
» External trigger input for sunrise or sunset control
» Analog output 0-10VDC, sink and source capability
» Alarm output
» DIN-rail 35mm mounting2
» AUTO and MANUAL mode
» Light program execution (maximum 4 light programs)
» Warranty = 2 years

[1] The light output start value is set just before start of sunrise. The light output end value is the light output maintained after finishing the sunrise (which is also the start-value of the sunset).

Markings

2 The enclosure can be mounted on a standard DIN-rail, however the dimensions of the enclosure are slightly bigger than most common DIN-rail enclosures. Please make sure you have sufficient space for installing the PLD2, see chapter 2. OUTLINE DIMENSIONS.

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Datasheet

PLD2

Outline dimensions

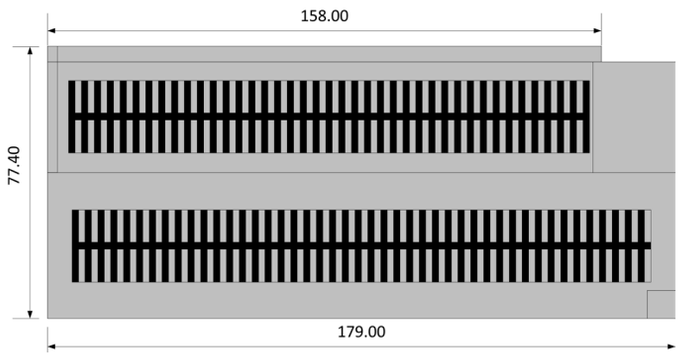

Figure 1. Front view

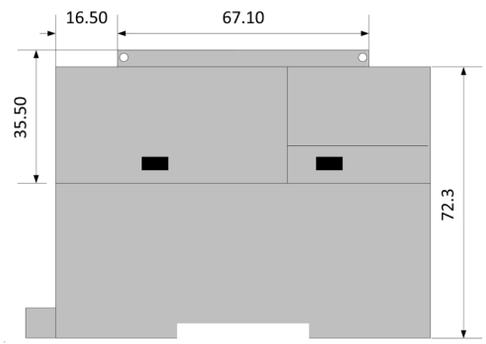

Figure 2. (Right-)side view view

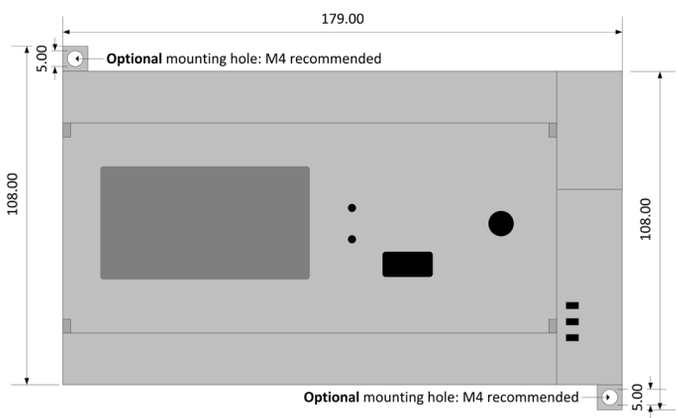

Figure 3. Top view

NOTE: all dimensions are in millimeter (mm)

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PLD2

Electrical characteristics

Absolute maximum ratings

Parameter	Symbol	Value	Unit
Mains input voltage	U_{in}	240	VAC
Mains input power 3	P_{in_max}	10	W
Auxiliary output voltage 4,5	U_{out_aux}	240	VAC
Auxiliary output current 6	$I_{out\_aux\_max}$	3	A
Auxiliary output voltage potential free AC/DC	$U_{out\_aux\_p\_free}$	240 / 30	VAC/VDC
Auxiliary output current potential free AC/DC	$I_{out\_aux\_max\_p\_free}$	5	A
Auxiliary power output voltage 12VDC	$U_{out\_aux\_12VDC}$	12	VDC
Auxiliary power output current 12VDC	$I_{out\_aux\_12VDC}$	0.1	A
External trigger input voltage	$U_{ext\_trigger\_max}$	240	VAC
External trigger input current 7	$I_{ext\_trigger\_max}$	<0.125	A
Alarm output contact AC/DC	U_{alarm_out}	240 / 30	VAC/VDC
Alarm output load current AC/DC	$I_{alarm\_out\_max}$	5	A
Analog output voltage - 0-10VDC / 1-10VDC	$U_{out\_0\text{-}10VDC\_max}$	10.2	VDC
Analog output current - 0-10VDC / 1-10VDC	$I_{out\_0\text{-}10VDC\_max}$	0.10 / -0.06	A
Real-time clock (RTC) drift	RTC_{drift}	10	Minutes / year
Operating temperature	$T_{ambient\_degree\_celsius}$	-10 ~ +40	°C

3 The power consumed by the load attached to the power auxiliary outputs and alarm output are excluded.

4 A default filter capacitor (0.068uF) and varistor is connected across the output terminals.
When an inductive load is connected, please make sure to install a suitable snubber close to the inductive load.

5 The Auxiliary output is connected (switched contact) to the mains input terminal, DO NOT apply any external voltage

6 This output is fused with 3.0A (replaceable) slow blow.

7 This input is fused with 0.125A (none- replaceable) fast blow.

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Datasheet

PLD2

Electrical characteristics

Recommended operating conditions

Parameter	Symbol	Value	Unit
Mains input voltage	U_{in}	100-240 (50-60Hz)	VAC
Mains input power 8	P_{in_max}	5	W
Auxiliary output voltage	U_{out_aux}	100-240 (50-60Hz)	VAC
Auxiliary output current 9	$I_{out\_aux\_max}$	1.5	A
Auxiliary output voltage potential free AC/DC	$U_{out\_aux\_p\_free}$	240 / 24	VAC/VDC
Auxiliary output current potential free AC/DC	$I_{out\_aux\_max\_p\_free}$	1.5	A
Auxiliary power output voltage 12VDC 10	$U_{out\_aux\_12VDC}$	12	VDC
Auxiliary power output current 12VDC	$I_{out\_aux\_12VDC}$	0.1	A
External trigger input voltage	$U_{ext\_trigger\_max}$	240 (50-60Hz)	VAC
External trigger input current	$I_{ext\_trigger\_max}$	0.004	A
Alarm output contact AC/DC	U_{alarm_out}	240 / 24	VAC/VDC
Alarm output load current AC/DC	$I_{alarm\_out\_max}$	1.5	A
Analog output voltage - 0-10VDC / 1-10VDC	$U_{out\_0\text{-}10VDC\_max}$	0-10.0	VDC
Analog output current - 0-10VDC / 1-10VDC	$I_{out\_0\text{-}10VDC\_max}$	0.10 / -0.06	A
Operating temperature	$T_{ambient\_degree\_celsius}$	0 - 40	°C

8 The power consumed by the load attached to the power auxiliary outputs and alarm output are excluded.
During normal operation, the average power consumption will be 5 Watts.

9 Maximum current draw when input voltage equals 230VAC and one SPV-300 is connected.

10 When loaded, the voltage slightly drops.

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Fault conitions / alarm

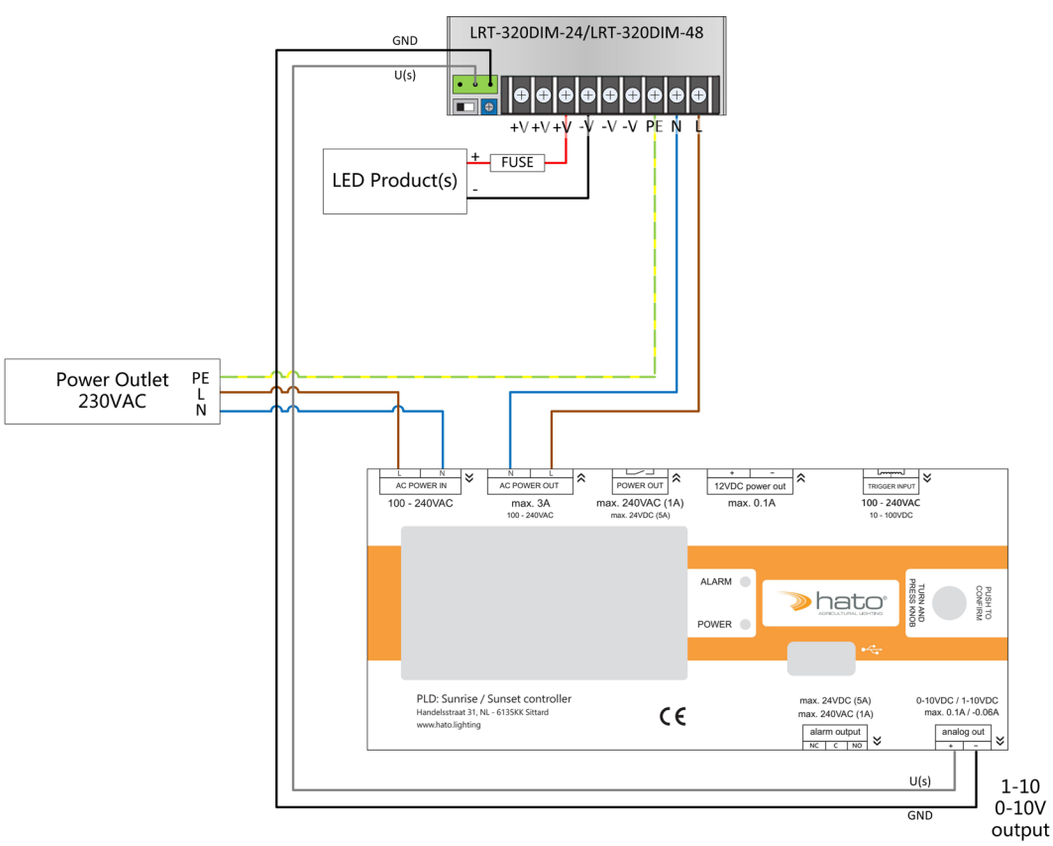
Fault condition	Description	Alarm LED	Alarm buzz	Alarm contact (NO)	LCD-message
Software fault	Software error occured	BLINK	DISABLED	OPEN	NO
Hardware fault	Reset occured or low VBAT.	BLINK	DISABLED	OPEN	NO
Analog output Short Circuit 11	The analog output has been shorted. A short-circuit recovery procedure is initiated.	STEADY	ENABLED	CLOSED	YES
Analog output overload 12	The analog output has overloa-ded (more current drawn then specified)	OFF	DISABLED	OPEN	YES

If the alarm-LED blinks, it is most likely that the voltage of the internal VBAT is too low.
After replacing the internal battery, the Alarm LED should stay off.

11 A difference of 80mv between set point and measured value, and the measured value is <=0.3 volt during 1.5 seconds.
12 If the voltage measured is >=2% lower than the voltage set during 5 seconds.

Installation

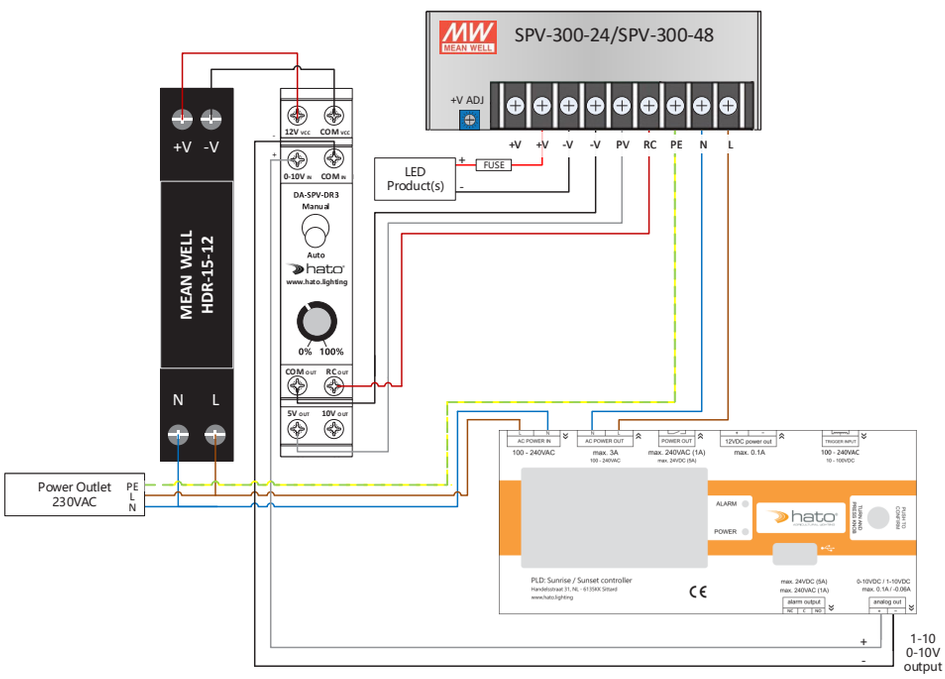
Figure 4- PLD2 connection LRT320DIM-24 / LRT320DIM-48



PLD2

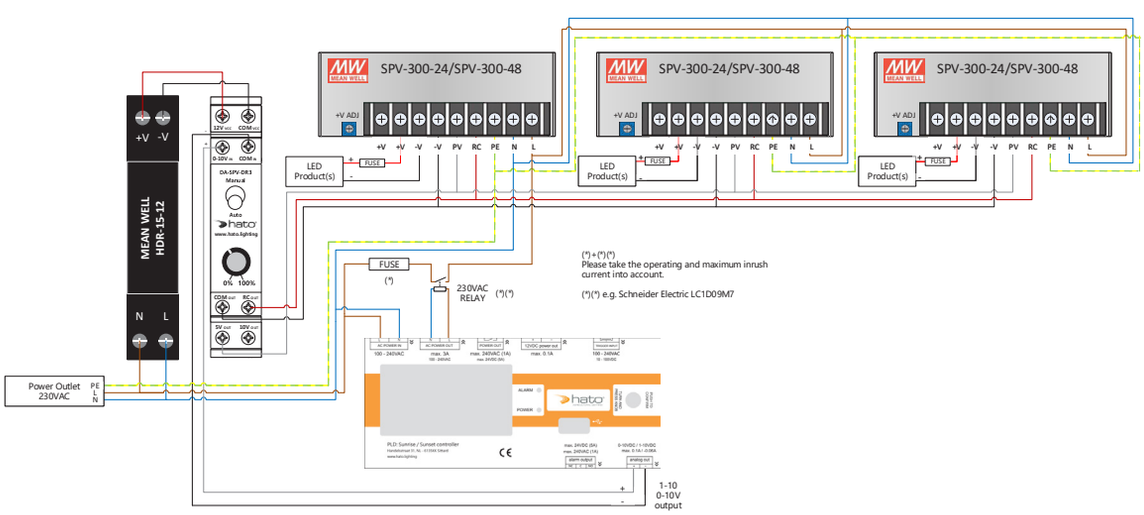
Installation

Figure 5 - PLD2 connection SPV-300, DA-SPV-DR3 and DR-15-12



Installation

Figure 6 - PLD2 connection 3x SPV-300 + 230VAC contactor

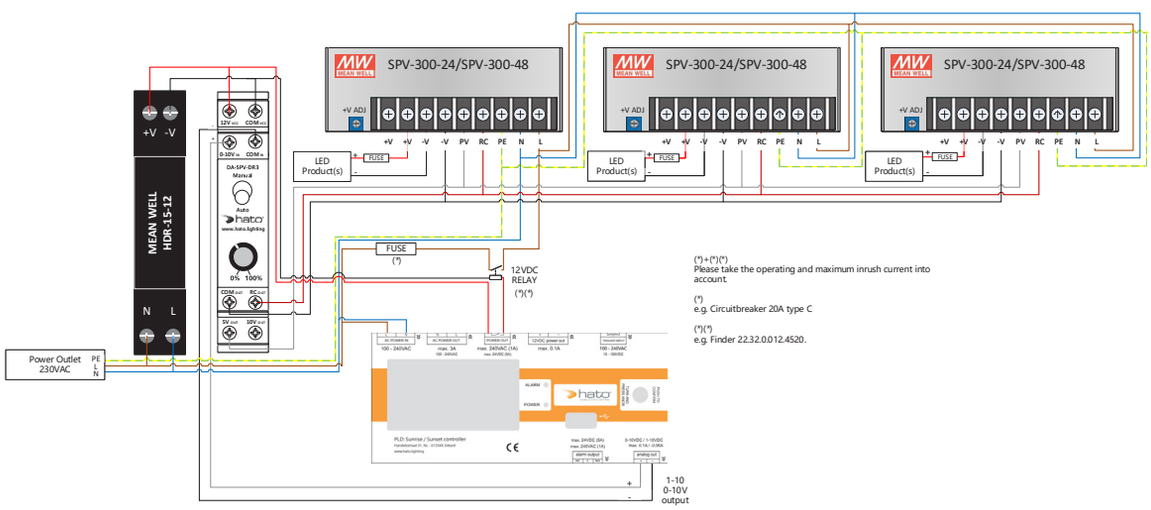


PLD2

Installation

Figure 7 - PLD2 connection 3x SPV-300 + 12VDC contactor

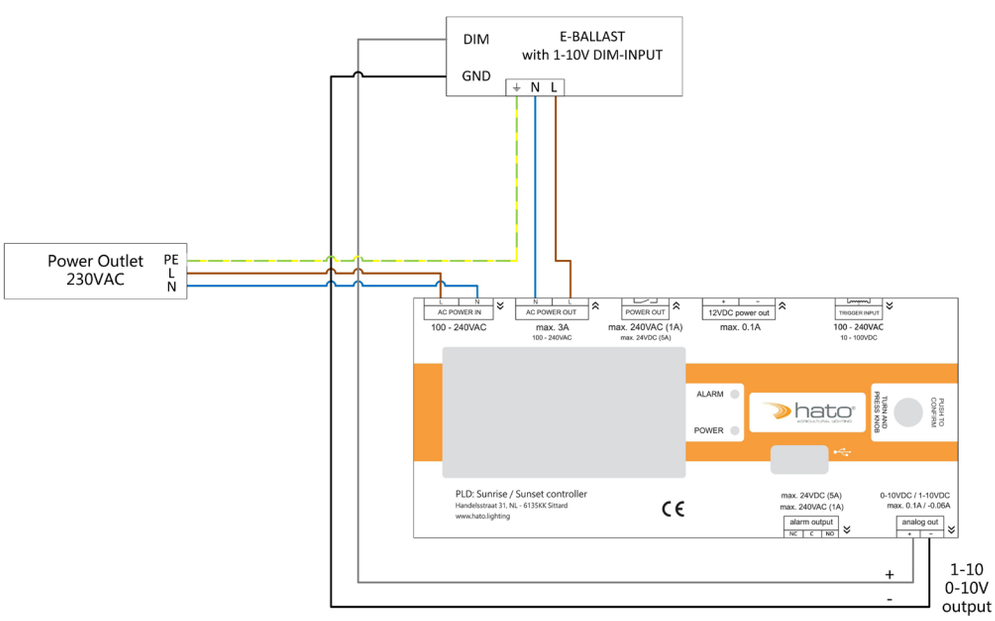
PLEASE NOTE:
If the PLD2 is controlling more than one SPV-300, and AC voltage fluctuations are a major concern, the configuration displayed in Figure 7 is preferred: a low voltage DC-relay should be used to switch the power supplies on and off.



Installation

Figure 8 - PLD2 connection Electronic Ballast

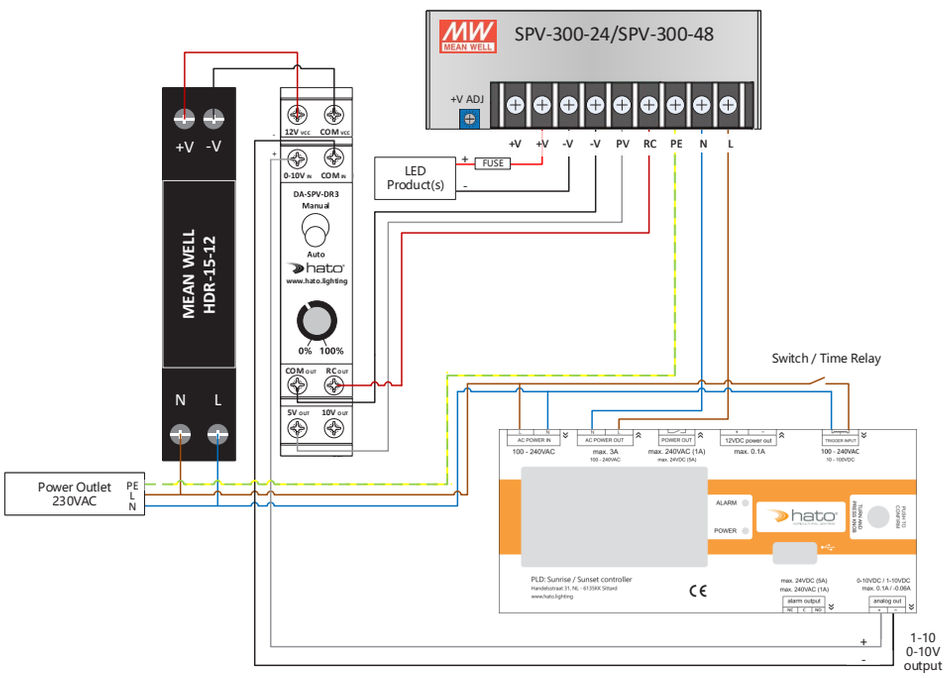
PLEASE NOTE:
Some electronic ballast need a (short duration) 10VDC DIM-signal at power-on, otherwise the fluorescent tube connected will not turn on correctly. To activate this feature, please turn on BOOST-mode, configurable in the SETUP-screen.



PLD2

Installation

Figure 9 - PLD2 connection - External trigger input



Installation

Figure 10 - PLD2 connection - Alarm contact