Operating instruction for electronic light controller
JT-LS V1.0 " Poultry Light Manager " (beginning from 10/2016)

The device has to be mounted correctly before you can start the initialisation procedure. To be able to use all the capabilities of the electronic light controller device it is necessary to read this manual attentively.

0. Introduction

The main function of the electronic light controller is the regulation of an optimal amount of light in accordance to the contemporary duration of daylight. The light controller (JT-LS) activates automatically the artificial lighting inside the hen house at an adjustable time and starts to dim the light within a fixed given time from 0% to 100% (simulation of sunrise). As soon as an adjustable outside light sensor has detected the threshold of daylight, the artificial lighting will be switched off automatically. In case that the daylight has reached the default threshold before the dimmer control start time (during summer) the dim process will not be started.

In the evening the light sensor initializes to turn on the artificial light in the hen house with a light level of 100%. In accordance with a preset time the dim process starts at 100% and turns slowly down to 0% (simulation of sunset). Afterwards the lighting will be shut down completely. For that procedure the light controller will just take action if the outside light sensor indicates that the daylight comes below an adjustable threshold, that means during summertime the dim process will not be started mostly.
The electronic light controller(JT-LS) was created for use with a 230 V power supply. It will be delivered with a 12 V wall plug transformer. The controller device is just using safety extra-low-voltage so that everybody can do the inside power connections. The device has the protection level IP 65 and so it is possible to use it in outdoor area without an additional protection. The inherent wall plug transformer has no protection level. So it is essential to connect it on an inside place.
The function of the light controller can be extended by some optional modules
(→ **4. Optional modules**).

1. Assembly

Open the lid of the casing by unscrewing the four cross-head screws. Fit the casing at the wall over the poultry door (screws are rested with, a drilling template is available at www.anleitung-jt.de). Where applicable connect the cable of the 12 V wall plug transformer (red wire is + / black wire is -). If you have bought an external light and/or temperature sensor, you should connect it as well. Please consider the polarity for these connections (→ **4.1 Retrofit of optional modules)**. At least you should connect now inside the device all signal wires you need for the selected functions. After this you can close the casing. Tighten the four screws just slightly. Now you can connect all the lamps with the associated cables, resp. connecting adapters.

Attention! The connections of devices with a 230 V AC power consumption (like heaters, ventilators, lamps and luminescent tubes) has only to be done by qualified professionals.

2. Initial start-up

After correct installation of the electronic light controller device (JET-LAG) you can plug in the wall plug transformer into the wall socket. The Controller starts now an initialisation procedure followed by an automatic selftest. The at left side of the casing located LED's will flashing consecutively, the backlight of the display will be turned on and the time will be displayed. In the second line some special characters will appear. After short time the backlight will be turned off now. The initialisation procedure is completed now.

3. Configuration

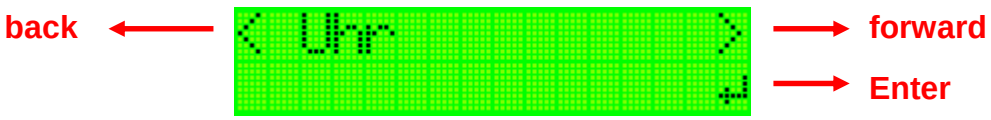
3.1 Factory settings

Operating parameter / Setting values		Factory settings
Time		Current time
Date		Current date
Installation site		outdoors
Light sensor	external	Only current value
Temperature sensor	external	Only current value
Operating mode	illuminant	LED 12 V
	heating permitted	No
	ventilation permitted	No
Dimmer	sunrise	05:00 Uhr
	sleep	22:00 Uhr
	day	XX %
	sunset	XX %
Heating temperatures	heater on	03 °C
	heater off	08 °C
Ventilation temperatures	start ventilation	30 °C
	stop ventilation	25 °C
Language		Deutsch

All parameters can be changed by the user. Some of these parameters have lower and upper input limits to eliminate malfunctions.

3.2. Adjustment of user data

3.2.1 General operation



The operating menu is divided into two lines. The thirst line shows the symbols of the push buttons (**< >**) which are operational, separated by the name of the selected parameter. The second line shows the corresponding parameter value and shows also the current values during changes are made. If necessary the symbol for the enter push button (↵) will appear in the second line.
To display or change one of the parameter values the push buttons **<** or **>** have to be used to scroll through the menu. A targeted selection of special parameters is *not* possible. Weather the mentioned push buttons at the current position of the menu are operational will be shown in both lines. The symbols of buttons which are just not operational will disappear from the display. After you have scrolled completely trough the menu, the time display will be shown and the device is back to the automatic mode.

Push button " > ": scroll forward to next menu / increase selected parameter value
Push button " < ": scroll backward to previous menu / reset selected parameter value
Push button " ↵ ": select menu or parameter

If parameters have been changed the values will be saved and they are still available after a power cut.

3.2.2 Inspect/change parameters

The parameter menu can be called up by using the push button **"Menu"**.

1. Clock

The light controller unit will be delivered by the manufacturer with adjusted day time. A readjustment of the time will just be necessary if the device is used in a different time zone or the clock has been stopped by replacing the battery at the motherboard. The clock has the ability to switch over automatically between standard time (CET) and daylight saving time (CEST).
For time adjust press the button ↵. The cursor at the hour position will start blinking. Now you can increase the hour value by pressing the button **>**. The button **<** resets the value to zero. Next press on the button ↵ will select the value for minutes. The minute value can be adjusted now in the same manner like the hour value. When the button ↵ will be pushed again the minute adjustment will be left, the value for seconds will be reset to **"00"** and the clock adjustment is completed. By pressing the push button **>** the next menu will be selected.

2.Date

The date is pre-adjusted by the manufacturer. A readjustment is just necessary under the same circumstances as mentioned in the chapter "1. Clock". The adjustment procedure for the date is the same as described for time adjustment procedure. The displayed day of the week will be calculated from the date automatically and can not be changed independently from the date.

3. Configuration

3.1 Installation site

Each sensor will be assigned to some special parameters by the definition of its installation site. Any mistake during setup will cause malfunctions of the connected devices.

Installation site

Outdoor In this case the integrated sensors for light and temperature are measuring the values of the outside environment. There are no information given about the conditions inside the shed. To use the functions heating and/or ventilation an additional external temperature sensor will be required

Indoor In this case the integrated sensor for light and temperature are measuring the values inside the shed. There are no information given about the conditions of the environment outdoors. To use the function "light control" an additional external light sensor will be required.

3.2 Heating allowed

During low-temperature periods it is possible to temper inside the shed by heating. For that reason it is necessary to permit the heating procedure what can be done under this menu item. The heating function will just be started if the temperature falls below the inputted value for the heating start temperature. The heating runs until the adjusted cut-off temperature will be reached.
The input range is determined and can not be exceeded.

Caution: The required heating power depends on the dimension and architectural quality of the shed. That means an expert should be consulted to evaluate the necessary power. Otherwise it can happen that the heating power is not enough to reach the cut-off temperature and the heating unit runs permanently. It is also recommended to keep the door closed during heating.

3.3 Airing allowed

During high-temperature periods it is possible to temper inside the shed by ventilation. For that reason it is necessary to permit the ventilation procedure what can be done under this menu item. The ventilation function will just be started if the temperature exceeds the inputted value for the ventilation start temperature. The ventilation runs until the adjusted cut-off temperature will be reached. The input range is determined and can not be exceeded.

CAUTION: The required ventilation power depends on the dimension and architectural quality of the shed. That means an expert should be consulted to evaluate the necessary power. Otherwise it can happen that the ventilation power is not enough to reach the cut-off temperature and the fan unit runs permanently. It is also recommended to keep the door closed during ventilation.

3.4 Dimmer

3.4.1 Lamp

The device can control dimmable 12 V LED-lamps as well as fluorescent tubes with an electronic control gear (ECG). The technical characteristics of these devices are very different so that the connected type of lamp has to be selected under this menu item.
An operation of mixed different lamps is not possible. 230 V LED are also not operational.

3.4.2 Adjust light sensor

Under this menu item it is possible to adjust the thresholds of the light sensor what is used by the device to control the dimmer. That means:

↑ Brightness value (%) to turn off the light in the morning

↓ Brightness value (%) to turn on the light in the evening

Please note: As lower the percentage as darker it has to be to reach the switching threshold.
To change the brightness values press the ↵ push button. The functions of the push buttons are the same as described in chapter "1. Clock". The input range is determined and can not be exceeded.

3.4.3. Set switching times

The switching times are used to determine the length of day in the poultry house, that means how long the illumination **and** the daylight are active.

↑ Sunrise – dimmer ON, followed by full light

↓ Sleep – light OFF

The switching time setup procedure is the same as described in chapter "1. Clock". The input range is determined and can not be exceeded.

4. Language

With the push button > it is possible to scroll between the integrated languages. The selection of the desired language can be done by pressing the ↵ push button.

5. Reset settings

The confirmation of "Reset settings" will delete all settings done by the user (except date and time) and will restore the factory settings (→ **3.1 Factory settings**). That will be followed by a restart.

4. Optional modules

The functions of the electronic light controller (JT-KS) can be enhanced by some optional modules. It is possible to order these modules together with the light controller unit or to retrofit. Following modules are available:

- External light sensor with cable length of 1 – 8 meters (→ Retrofit of an external light sensor)
- External temperature sensor with cable length of 1 meters (→ Retrofit of an external temperature sensor)
- Connection unit for fluorescent tubes with an electronic control gear (ECG)
  Connection unit for electrical heating devices and/or ventilation devices (→ Retrofit of a connection unit)
- Solar set for recharging the power supply batteries (→ Retrofit of a solar set)

4.1 Retrofit of optional modules

It is easy to add optional modules. It is not necessary to have special knowledges of electrical engineering or of hand soldering. All connection will be done by screw joints. Where and how to connect which module is described below. For each cable of the additional modules it is necessary to mount a cable gland at the casing. The required holes **(Ø 7 mm)** for that the customer has to drill himself. The cable glands are included in the delivery and can now be inserted in the prepared holes. A drilling template is available as download at www.anleitung-jt.de.

Caution: Do not destroy some electronic components inside the casing by drilling. The best way to avoid that is to use a depth stop for drilling.

For retrofitting it is necessary to open the casing. It is recommended to unplug the wall plug transformer first. After connecting the modules (resp. connection cables) the casing has to be closed and the wall plug transformer has to be be plugged in again.

4.1.1 Retrofit of an external light sensor

For retrofit of an external light sensor following working steps have to be done:

Mount the external light sensor at a normal exposed place (but not in straight sunlight). Next step is to insert the cable into the casing. Therefore the cable gland has to be used. Last step is to screw the wires onto the cable clamps **"LS+"** and **"LS-"**. The red wire has to be connected to **"LS+"**. It is recommended to pull the cable about 20 mm more into the casing afterwards and to use the tie wrap as a strain-relief tape.

4.1.2 Retrofit of an external temperature sensor

For retrofit of an external temperature sensor following working steps have to be done:

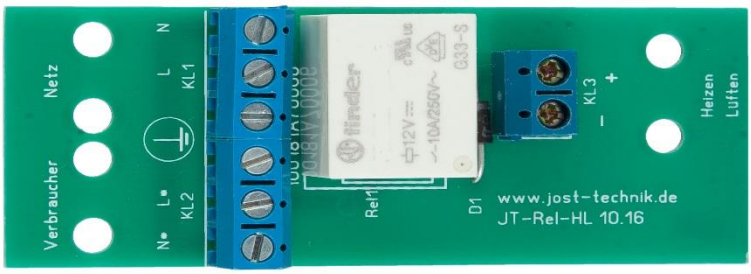
Mount the external temperature sensor at a place which is protected from wind and straight sunlight. Next step is to insert the cable into the casing. Therefore the cable gland has to be used. Last step is to screw the wires onto the cable clamps **"TS+"** and **"TS-"**. The red wire has to be connected to **"TS+"**. It is recommended to pull the cable about 20 mm more into the casing afterwards and to use the tie wrap as a strain-relief tape.

4.1.3 Retrofit of a connection unit

For retrofit of a connection unit following working steps have to be done:

JT-Rel LS Connect the 4-wire cable to the cable clamps **"LS-Röhre(Schalt)"** and **"LS-Röhre(Dimm)".** Pay attention to the polarity.

JT-Rel HL Connect the 2-wire cable to the cable clamp **"Heizen"** (heater) resp. **"Lüften"** (ventilator). Pay attention to the polarity.



Please note: If you want to operate both units (heater, ventilator) the connection unit JT-Rel HL is required twice.

4.1.4 Retrofit of a solar set

A solar set can be used to substitute the 220 V power supply. To connect the solar set the following working steps have to be done:

1. Disconnect the cable of the wall plug transformer from the 12 V clamps and pull it out of the casing.
2. Use a drill with a diameter of 10 mm and drill a hole carefully into the casing. A cable gland is included in the delivery and can now be inserted in the prepared hole.
3. Insert the solar-set connection cable into the casing by using the new cable gland. Next working step is to screw the wires onto the cable clamps. The red wire has to be connected to **"12V +"** and the black wire to **"12V -"**. The device has an integrated polarity protection so that a wrong polarity does not cause any damages. But consider that a normal function of the device will be impossible now.
4. Last step is now to close the casing and to connect the power cord to the cable clamp signed with **"Last"** in the battery box.