

Installation and User Manual

Agrishift® Lighting Control LEL-0.2 Models

Manual V 3.0
Software V 1.16.01



BUILT FOR YOUR BARN®

once®

GENERAL

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1 General

1.1 System Overview

The AgriShift® lighting controller units are specifically developed to modulate the intensity of LED lighting products. Model LEL-0.2 is a manual controller without an LCD screen interface. It also features two independent bypass switches and an intensity adjustment knob in manual mode. The controller can also be used as additional power outputs commanded from a master controller such as LCL-0.2 or many other barn controllers.


The features of this controller perform just as well as its master controller. Its just that this unit is controlled via the 0 to 10 VDC power extension signal.


The LEL-0.2 comes in two models:

- The LEL-0.2-120V AgriShift® is intended for 120V, single phase operation only.
- The LEL-0.2-240V AgriShift® is intended for 240V, single phase operation only.

1.2 Symbols used

The following symbols will be used in this manual:

	Caution, risk of ELECTRIC SHOCK
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	Caution, risk of DANGER
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2 Installation, Commissioning and Operation

2.1 Technical support

The technical support related to the Solo models can be obtained from your distributor.

2.2 Safety

The technical staff performing an operation on a controller must have read and understood this manual and accept its content.

	<p>Before the commissioning of the controller, all the connections must be checked. All the electrical cables and connections must be inspected to detect any potential defect.</p> <p>The controller must not be operated if one of its components (whatever it is) is defective.</p> <p>The repair or replacement of a defective component can only be done by the technical staff trained for this purpose. The qualification of this technical staff must be previously confirmed and accepted by your distributor.</p>
	<p>The manual switches on these controllers are not a safe way to disconnect the equipment from the electrical network. The lighting control unit only provides control to the equipment by opening or closing circuits, similarly to a light switch in the home that turns the lights on and off, yet does not remove electrical power.</p> <p>It is important to provide a complete disconnection device between the equipment and the controller, or to turn off the power at the source before undertaking any work on the equipment and its electrical wiring.</p>
	<p>The LEL-0.2-120V AgriShift® is intended for 120V, single phase operation only. The LEL-0.2-240V AgriShift® is intended for 240V, single phase operation only.</p> <p>Both A and B outputs must be on the same phase.</p>



The non-compliance with these instructions can cause the complete or partial voiding of the warranty.

2.3 Usage

The LEL-0.2-120V and LEL-0.2-240V controllers are designed to control dimmable lighting systems used in agricultural farm buildings. Any other use of this controller can compromise the safety of the users as well as the integrity of the system itself. Therefore, such usage is prohibited.

2.4 Installation and Positioning

It is essential to respect the following installation instructions and to abide by the applicable local electrical codes:

1. The controller is designed for a wall installation and it absolutely needs to be installed vertically.
2. The heat generated by the modulation circuit is released by the heat spreader located at the back of the device. It is therefore important to make sure that there is no obstacle that obstructs or disrupts the free flow of air 20 cm (8") above and 10 cm (4") below the controller.
3. It is important never to install the controller over a heat source such as a radiator or another controller equipped with a heat sink.
4. The controller must be installed in a location where it will not be exposed to noxious gases or excessive moisture. It shall in no case be sprayed directly.
5. Temperature at the installation site of the controller must lie between 0°C and 40°C (32°F and 104°F) at all times.
6. Relative humidity at the installation site of the controller must lie between 5% and 90% at all times
7. The low voltage cables (control signals, sensors and potentiometers) must be isolated from the high voltage cables.
8. It is absolutely mandatory to connect the ground wire at the location provided for this purpose. An improper grounding could lead to malfunction.

9. The wall where the controller is installed must be flat and able to withstand a temperature of 80°C (180°F). The controller must never be installed directly on a Styrofoam or urethane wall, or any other heat-sensitive material.
10. The controller must be regularly checked to ensure its proper operation. In case of failure, identify any fault symptoms and then contact the product supplier.
11. It is strongly recommended to install the controller in an accessible location at eye level for ease of installation, usage and maintenance.

2.5 Electrical Connection

2.5.1 Electrical Wiring and Connections



TURN OFF POWER AT THE SOURCE BEFORE AND DURING THE CONNECTION TO AVOID ANY RISK OF ELECTROCUTION AND DETERIORATION OF THE CONTROLLER.

The controller installation must comply with the wiring diagrams provided. These will give all the necessary information for an electrician to perform all the wiring operations. In addition to all the electrical standards in effect, the following conditions must be respected:

1. All the perforations for the passage of the electrical cables must be made from the bottom of the unit.
2. All the perforations made to route the electrical cables must be sealed with putty to prevent moisture condensation inside the controller.
3. Sufficient lengths of wire must be provided to allow the removal of all equipment to perform a service operation.
4. The wires must be identified at both ends with appropriately sized wire markers so they do not slip and do not come off.
5. The power cables will need to be of copper with 600-volt insulation.
6. Only one wire must be inserted in a terminal. Double wires must be spliced on the outside of the terminal.

7. The signal and communication cables must not run along an AC power cable for more than 60 cm (2 ft) to avoid electrical background noise affecting the signal.
8. The probe and communication cable must be of minimum size #22AWG in shielded, twisted and insulated copper with a PVC sheath.
9. To strip a wire, remove 10 mm (0.4") of insulation at the end of the wire.
10. A stranded copper #12AWG grounding conductor must be provided and installed at the required location.

2.5.2 Wiring Diagram

For input/output connection details, please refer to the wiring diagrams shown in Appendix C.

2.6 Starting the System

1. Connect the lighting control unit to the power source and lighting outputs. For connection details, please refer to the wiring diagrams shown in Appendix C.
2. Connect the light controller to the master controller via the 0-10V signal to manage the light intensity from a remote system. To do this, connect the 0-10 V inputs of the light controller to the 0-10V outputs of the master controller, referring to the wiring diagrams shown in figure 3 of Appendix C. Then, configure the master controller as described in the applicable manual for this unit.
3. Set all connected outputs to **AUTO** mode using the control switches on the front panel.



The outputs will not perform accordingly to the master controller lighting setpoint if the control switch is not set on **AUTO** position.

3 User Interface and Operation

3.1 Controls and displays



Controls



Bypass Switch



Manual Intensity Adjustment Knob

Manual bypass switches offer three possible positions:

AUTO: The output is automatically controlled according to the current setpoint coming from the master controller.

OFF: The output is manually disabled.

ON: The output is set on manual operating mode. The intensity is set by the Manual Intensity Adjustment Knob.

This button allows adjusting light intensity when one or more control switches are set into the ON position.

Note: The manual intensity adjustment knob adjusts both lighting outputs simultaneously if both are set on manual mode (Control Switches in the ON position).

Indicators

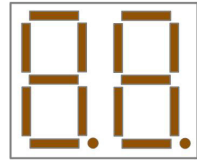


Output LED
indicator

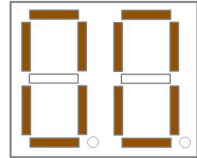
The output LED indicators show at all times the current lighting intensity of their respective outputs (A or B).

The details for the indications they provide are described below:

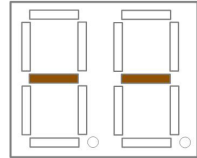
The Output LED indicators are two groups of 7 segment display. One group for each output.



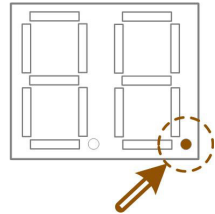
When the intensity is at 100%, it displays 00



When the intensity is at 0% or the control switch is OFF, it displays - -



When the manual control switch is in the position ON or OFF, a small dot (LED at the bottom right hand side) flashes at the frequency of once per second.



Appendix A Specifications

Specifications where the models are not mentioned are common to both.

Power supply	LEL-0.2 - 120V	LEL-0.2 - 240V
Operating voltage and frequency	120VAC, 50/60Hz	240VAC, 50/60Hz
Main fuse	1A-250VAC, fast acting (5x20 mm)	1A-250VAC, fast acting (5x20 mm)

Outputs	LEL-0.2 - 120V	LEL-0.2 - 240V
TRIAC Variable Output (A and B)	10 A (resistive load) 1200 W per channel for a total of 2400 W	
Fuse of variable outputs (x2)	10A slow blow	5A slow blow

The maximum load capacity must be respected. Please refer to the nameplate on the controller.

Inputs	
Analog input	0 - 10 VDC, input resistance: 13kΩ

Casing	
Dimensions	8.7" X 10.6" X 5.5"
Operating temperature	32° to 104°F (0° to 40° C)
Storage temperature	5° to 122°F (-15° to 50° C)
Relative humidity	5 to 90% without condensation

LED Fixtures	
MLL	90 per leg
MLB	90 per leg
MLG	90 per leg
EL	360 per leg
JLL	130 per leg

Appendix B Troubleshooting

1 - The control outputs don't seem to follow the inputs given

1. Make sure that the control switches of the relevant outputs (located on the front panel of the controller) are in the AUTO position.
2. Ensure that the relevant outputs of the master controller are configured properly

2 - Dimming outputs are erratic or jump in large steps/jump instead of changing smoothly.

1. For three-phase installations, be sure both A and B outputs are connected to the same phase of the main power.

3 - LED lights flicker, or strobe at low dimming levels.

1. Set master to transition to off (zero power) when 5 to 10% dimming is reached.

4 - LED lights flicker, flash, pop or behave erratically.

1. Investigate mains power for noise, voltage spikes, or distortion caused by neighboring equipment or dirty power.
2. Consider installing a power conditioner/filter.

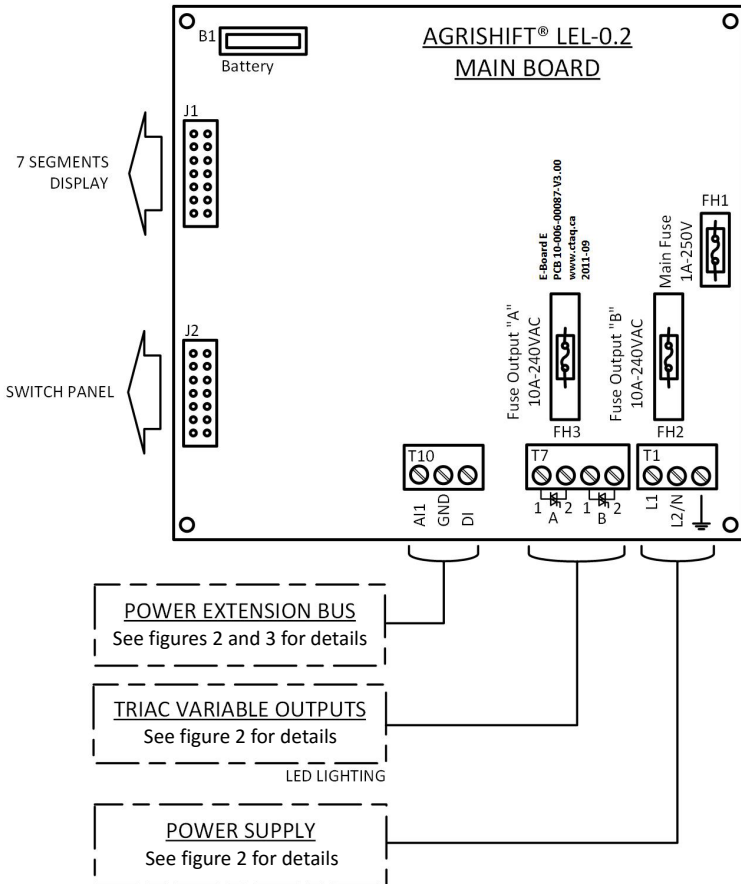
Appendix C Connection Diagrams

This appendix contains all the connection diagrams needed. A list is provided below giving a brief description and a figure reference for each diagram.

Description	Figure
Agrishift® LEL-0.2 - Main Board - Page 1 of 3	Figure 1
Agrishift® LEL-0.2 - System Connections - Page 2 of 3	Figure 2
Agrishift® LEL-0.2 - Power Bus Connections - Page 3 of 3	Figure 3



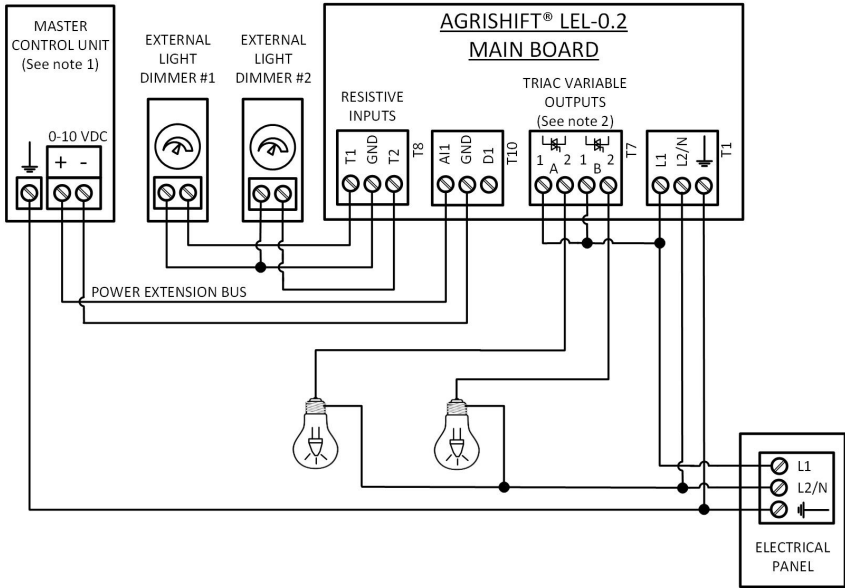
(1) THE ELECTRICAL LOADS DISTRIBUTION MUST BE DETERMINED BY A QUALIFIED ELECTRICIAN AND INSTALLED AS PRESCRIBED BY THE ELECTRICAL CODE.



NOTE: LINE IN (1) FOR BOTH A AND B OUTPUTS SHOULD BE ON THE SAME MAIN PHASE AS L1 FOR THREE-PHASE INSTALLATIONS.

Figure 1: Agrishift® LEL-0.2 - Main Board - Page 1 of 3

 THE ELECTRICAL LOADS DISTRIBUTION MUST BE DETERMINED BY A QUALIFIED ELECTRICIAN AND INSTALLED AS PRESCRIBED BY THE ELECTRICAL CODE.



TECHNICAL SPECIFICATIONS

TRIAC VARIABLE OUTPUT (A & B)

10A MAX (RESISTIVE LOAD)
1200W per Channel, 2400W Total

RESISTIVE INPUT: 0-10 Kilohms

POWER EXTENSION BUS

0-10VDC, SOURCE
MAXIMUM LOAD: 10mA

NOTES

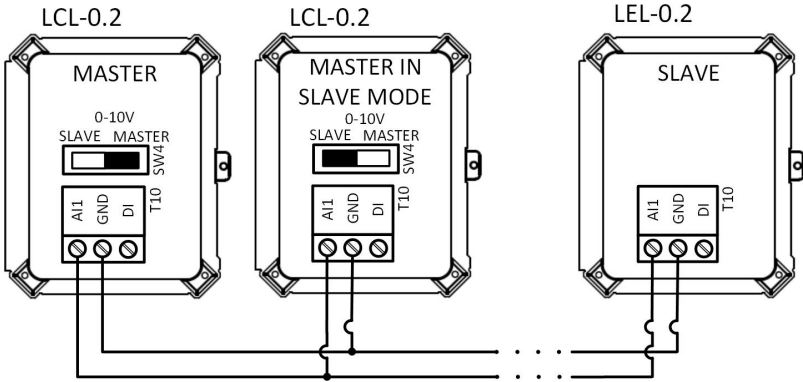
- (1) Refer to figure 3 for power extension connection details.
- (2) Line IN (1) for both A and B outputs should be on the same main phase as L1 for three phase installations.

Figure 2: Agrishift® LEL-0.2 - System Connections - Page 2 of 3



POWER EXTENSION BUS⁽¹⁾

Connection details



NOTE

(1) A MAXIMUM OF 10 UNITS CAN BE WIRED ON THE SAME NETWORK (1 MASTER AND 9 SLAVES MAX)

TECHNICAL SPECIFICATIONS

POWER EXTENSION BUS: 0-10VDC, SOURCE

MAXIMUM LOAD = 10 mA

Figure 3: Agrishift® LEL-0.2 - Power Bus Connections - Page 3 of 3

NOTES



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Document PN: 30-008-00084