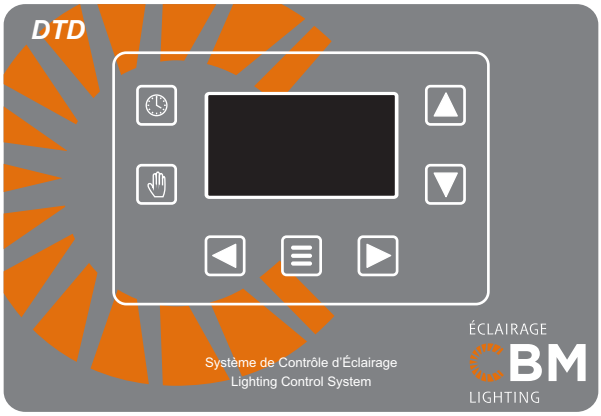
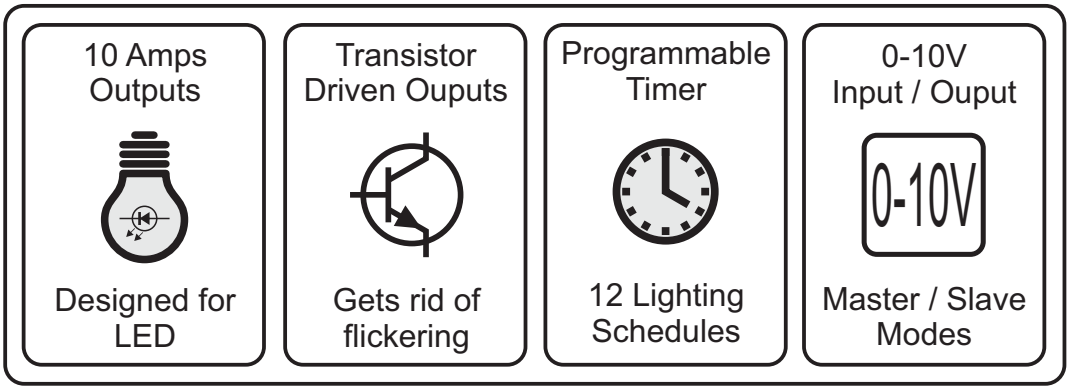
ÉCLAIRAGE CBM LIGHTING

DTD-1 / DTD-2

Lighting Control System

User's Manual V2.3





The DTD-1 offers one 10 Amps lighting output
while the DTD-2 offers two 10 Amps lighting outputs
compatible with American and European standards
(120V / 240V, 50Hz / 60Hz)
This lighting control system is specially designed for LED type lamps.
The transistor driven output technology eliminates annoying flickering
of LED lamps, as seen with traditional TRIAC based dimmers

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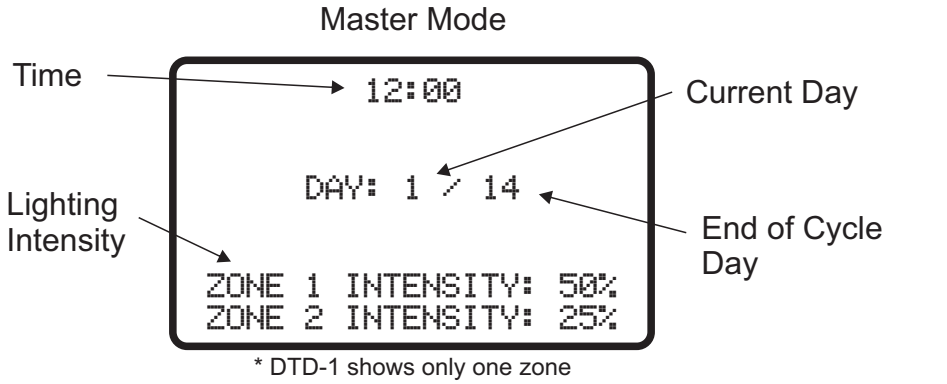
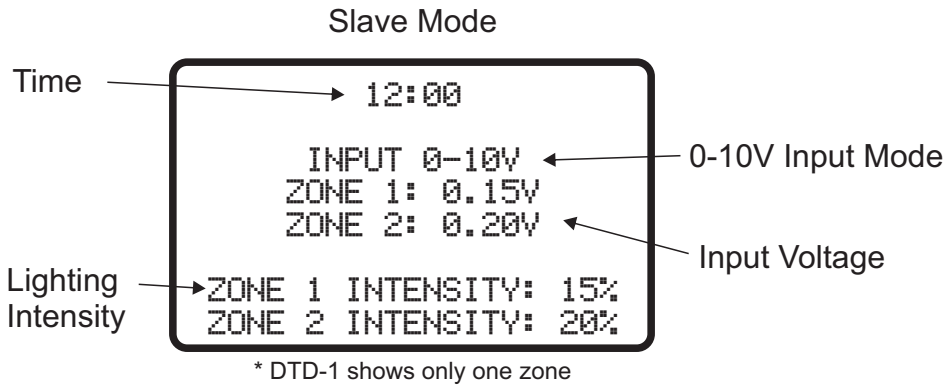
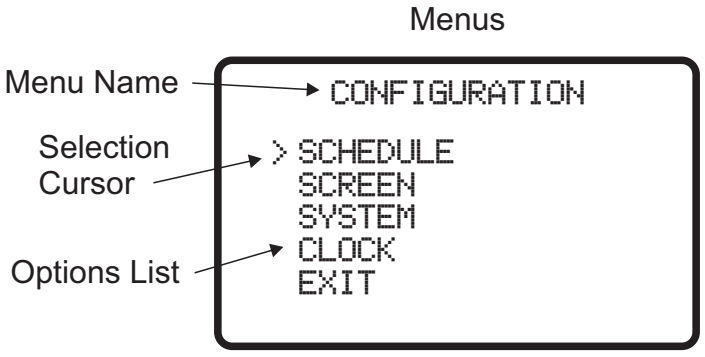
How to use the DTD:

The interface is composed of an LCD display, three buttons below the display for menu access, two buttons to the right of the display to adjust the different settings and two buttons to the left of the display for selecting the operating mode.

Depending on the operating mode, the main screen of the DTD may look like this:





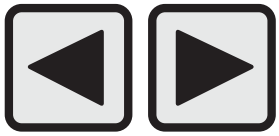


DTD Buttons:



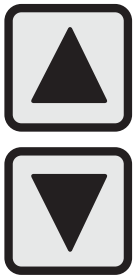
Menu

This button is used to access the different menus. Pressing the menu button will take you from the main screen to the menu selection screen, or from the menu selection to the selected menu screen, back and forth.



Left / Right Arrows

The menu screens have a cursor to select which setting you want to adjust. These arrows will move the cursor around to let you select the desired setting or menu screen. In manual mode, on the main screen of the DTD-2, these arrows will let you choose which zone to control manually.



Up / Down Arrows

These arrows will adjust the value of a setting. On the main screen, in manual mode only, they adjust the intensity of the lighting. In a menu screen, they adjust the value of the selected setting.



Manual

On the main screen, this button is used to switch to manual mode. The display will show “MANUAL” to indicate that the system is now operating in manual mode only. In the schedule programming screen, this button allows to delete the current step.



Timer

On the main screen, this button is used to switch to automatic mode. In Master Mode, the system will resume the programmed schedule. In Slave Mode, the system switches back to 0-10V Input Mode.

On the Clock Adjust screen, holding this button allows the Up / Down arrows to modify the current day instead of the time.

At the end of the schedule, holding this button down for 10 seconds will restart a new cycle by setting the clock to day 1.

DTD Menus and Settings:

Screen Menu:

Language: (Fr / En)
Selects the system language, in french (fr) or in english (en)

Contrast: (1 - 63)
Adjusts LCD contrast. 1 = very light, 63 = very dark. A contrast of 20 should be optimal for this LCD model.

Brightness: (0% - 100%)
The brightness fo the LCD backlighting.

System Menu:

Mode: (Master / Slave)
Selects the operating mode. In Master Mode, the system controls the lighting output according to the programmed schedule. In Slave Mode, the lighting output level is controlled from the voltage on the 0-10V inputs.

Smoothing: (Yes / No)
Selects if smoothing of the transitions should be performed. When smoothing is off, level changes are quick and sharp. With smoothing on, level changes are smooth and slow. This may help to reduce fluctuations in intensity from an unstable power source.

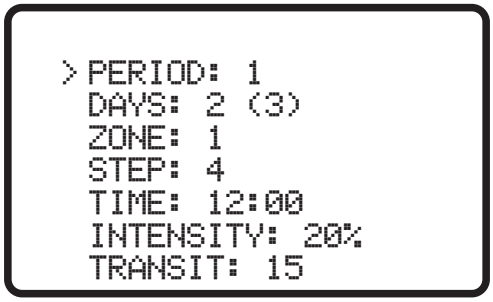
Phase: (FWD / REV)
The dimmer can operate in forward or reverse phase cutting modes. Some lamps will perform better in one mode versus the other. It’s up to you to determine which mode fits your lighting system best.

Light Type: (STD / DEL)
The type of lamps connected to the controller must be carefully selected. The power curve for a standard lamp (STD for incandescent and CFL) is not the same as for LEDs. Your lighting will still work fine, but the intensity will not be optimal for a given output power.

Clock Menu:
Here you can adjust system time. You can also adjust the current day if you hold the timer buttons while pressing the up / down arrows.

Schedule Menu:

This is where you go to edit your program. The schedule is made up of up to 8 periods, that will automatically switch as days go by. Every period is repeated for a number of days before the next period takes on. Each day is divided into steps. Up to 12 steps can be programmed every day.



Period: This is the period number that you want to edit. To be able to go to the next period, the number of days of this period must be higher than 0. A period with 0 days marks the end of the schedule.

Days: The number of days to repeat this period. You can see in parenthesis the day at which the schedule will end. In the example above, the period will repeat for 2 days, and the schedule will end on day 3.

Zone: The zone in which you want to program the next steps. DTD-1 only has access to zone 1. DTD-2 can program both zones.

Step: The number of the step you are editing. Each step has a time, an intensity and a transition. You can edit up to 12 steps per day.

Time: Time at which this step starts

Intensity: The level of lighting desired for this step

Transit: Transition time in minutes, to go from the current intensity up (or down) to this step's desired intensity. A transition of 0 will switch light level instantly.

Note: If you adjust the time or transition of a step that would overlap on a later step, it may override that step. Always verify all the steps before you exit programming mode.

At first this may look like a daunting task, but you'll find a programming card in this manual that you can photocopy to help you plan your schedule, and make it easier to program. Once you have filled this card, simply copy all the data to the schedule programming screen. This will also give you a hard copy of what's programmed in the controller in case something goes bad.

Programming Worksheet

Period Number _____

Number of Days _____

Zone _____

Steps	1	2	3	4	5	6	7	8	9	10	11	12
Start Time												
Intensity %												
Transition in minutes												

Period Number _____

Number of Days _____

Zone _____

Steps	1	2	3	4	5	6	7	8	9	10	11	12
Start Time												
Intensity %												
Transition in minutes												

Period Number _____

Number of Days _____

Zone _____

Steps	1	2	3	4	5	6	7	8	9	10	11	12
Start Time												
Intensity %												
Transition in minutes												

Period Number _____

Number of Days _____

Zone _____

Steps	1	2	3	4	5	6	7	8	9	10	11	12
Start Time												
Intensity %												
Transition in minutes												

Inside the DTD:

Fuses: An essential component for the safety of the system. Fuses protect other electronics components in the event of a short circuit. **Never use a fuse with a higher rating than what's recommended** or damage can occur to the system and to other connected equipment. If a fuse blows, check for a short circuit somewhere in the connections to the external devices or the wiring itself. A device connected to the system could be faulty.

Fuse F1: type TR5, 250V, 1A (Littelfuse #37411000410)
Fuse F2: type 3AB, Slow Blow, 250V 10A (Littelfuse #0326010)
Fuse F3: type 3AB, Slow Blow, 250V 10A (Littelfuse #0326010) (DTD-2 ONLY)

Battery: The system is equipped with a CR2032 type 3V lithium battery. The battery is used to keep the clock running during power failures. It also powers the settings memory of the system. Removing the battery will reset all the settings.

Terminals:

: Variable Lighting Power Output
L2/N : Lighting Output Neutral

: Ground
L1 : Main Power, 120V / 240VAC, 50/60Hz, 1Ø
L2/N : Main Neutral

0-10V Input +/- : 0-10V Input used for Slave Mode.

0-10V Output +/- : 0-10V Output, in master mode, to control a slave unit.

0-10V Sink + / - : 0-10V, for lighting systems compatible with sink type outputs

Minimum Adjust: This little potentiometer lets you adjust the output power at minimum intensity. Since all lamps don't turn on at the same level, this adjustment allows you to get the perfect flicker free low level lighting. Switch the system to manual mode and set the intensity to 1%. Using a small screwdriver, turn the potentiometer to obtain the perfect low light level.

Installation of the DTD-2

We recommend that the installation of this controller be performed by a qualified professional.

Choosing the location:

The enclosure must be mounted on a vertical surface, in an area that will provide sufficient airflow to the heat sinks. We recommend you leave 6 inches (15 centimeters) above and below the heat sinks, free of anything that could block the flow of air through the heat sinks. If the enclosure is confined without enough air reaching through the heat sinks, they could overheat and cause some damage to the controller. As a precaution, make sure to check and remove any dust or spider webs, etc, that could reduce the airflow through the heat sinks.

Choosing Mains Voltage:

The system is powered from zone 1. If you are using only one zone, you must use zone 1. Both zones can be powered from different voltages at the same time. Check the operating voltage of your lamps, and use that same voltage to power the corresponding zone. This system is designed to automatically adapt to voltages ranging from 100VAC to 260VAC, at 50Hz or 60Hz.

Warning: On a tri-phase installation, it is imperative that both zones are connected to the same phase.

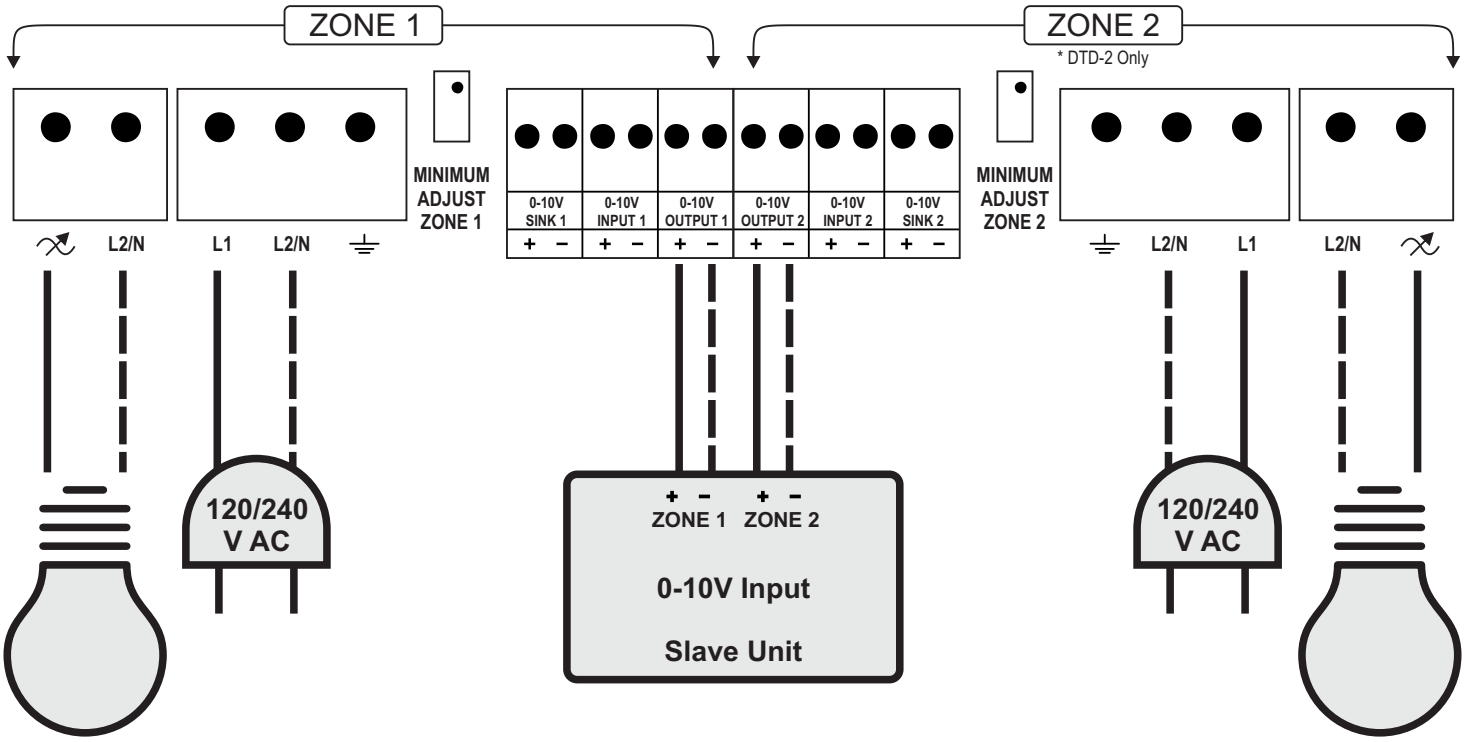
Connecting the lamps to the controller:

Each power output can provide up to 10 Amps for your lamps. For higher durability, it is recommended to load the circuit to a maximum of 80% of its total capacity, or 8 amps in this case. All the lamps must be connected in parallel, and are connected to the controller's power output. Don't use a neutral from the electrical panel for the lamps, instead use the L2/N terminal next to the power output terminal. See wiring diagram.

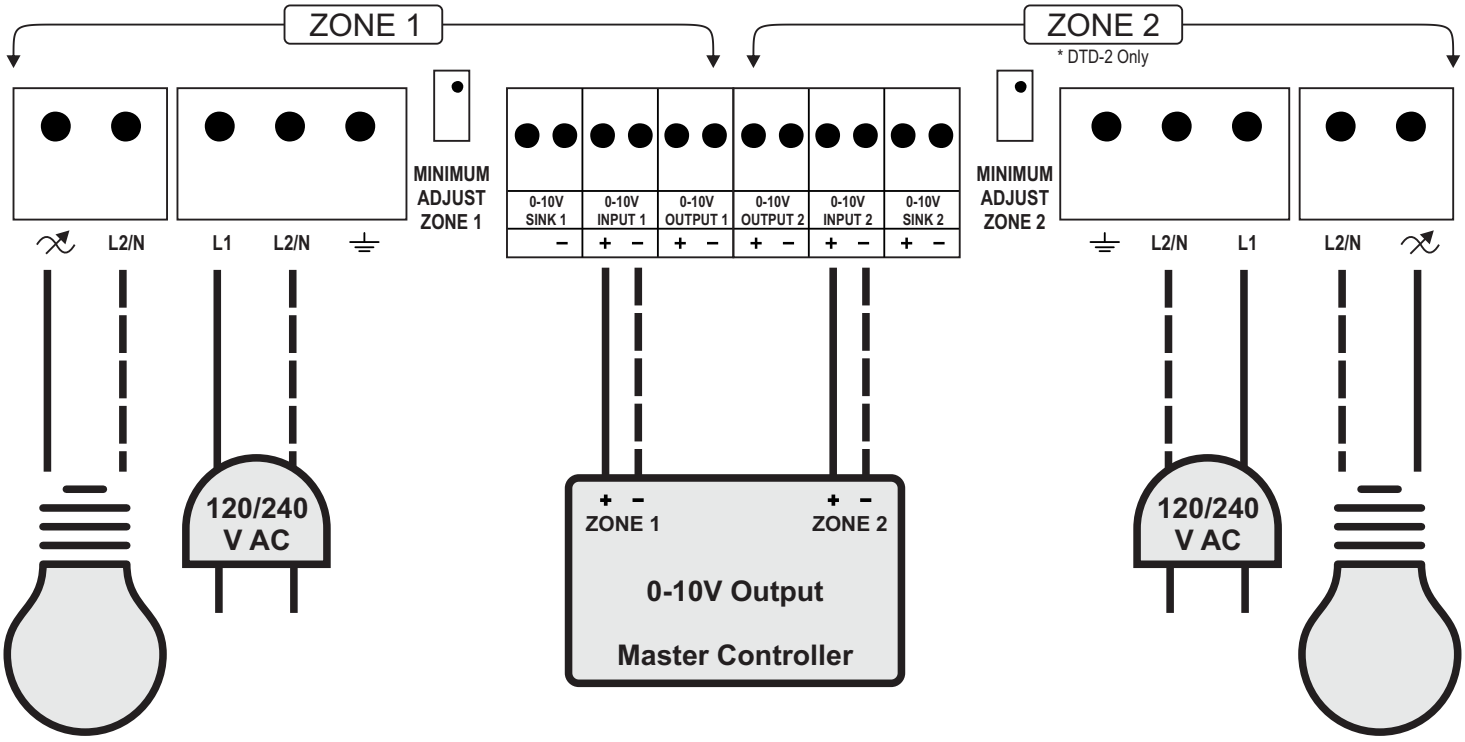
External Devices:

The 0-10V inputs can receive a control voltage from an external master controller. The 0-10V outputs can supply a control voltage to an external slave unit. When connecting external devices, make sure to check the polarity +/- of the 0-10V connections. Keep those connections as short as possible, to avoid ground loop and interference

Wiring Master Mode



Wiring Slave Mode



Adjustment Procedure:
In Manual Mode, set the output intensity to 1%
Using a small screwdriver, adjust the potentiometer
to get the perfect flicker-free low light level

Quick troubleshooting guide:

The controller doesn’t turn on:

Verify power source, the breaker in the electrical panel, make sure there is voltage at the zone 1 power input terminals.

Check fuse F1

The controller turns on, but the lamps don’t:

Make sure the display shows an intensity higher than 0%.

Check if manual mode works. If lighting turns on at higher intensity, your low level calibration is wrong. Make sure the setting “Light Type” matches your lighting. Perform a low level calibration using the “minimum adjust” potentiometer.

In manual mode, at 100% intensity, if lights still don’t turn on, check fuse F2 / F3.

If manual mode works, but master mode always show 0% intensity, there is most likely an error in your program.

In slave mode, if the intensity stays at 0%, check for the 0-10V input voltage. The display should tell you what’s the voltage on the input. If the controller reads 0V at its input, check for voltage on the 0-10V input terminals using a multimeter. If the voltage is 0V, the problem comes from your external master, or the connections.

If there is voltage at the input terminals and the controller doesn’t see it, make sur the polarity of the voltage is good. If so, the controller is faulty.

The controller turns on, lights turn on but don’t dim:

Check if manual mode works. if manual mode doesn’t work, the controller is faulty.

If manual mode works, problem comes from either the programmed schedule, or the external master, much like the problem above.