

'Dusk Till Dawn' Self-Dimming Lighting.

INSTALLATION AND OPERATING INSTRUCTIONS

Congratulations on your purchase of a D-Deltec 'Dusk Till Dawn' Light unit.

This light unit contains a unique chip, which allows operation through various daily cycles without the need for any sophisticated external timer or computer system.

Functional Description:

Sunrise Simulation

To simulate sunrise, the lamp starts from moonlight or an off position and initiates the sunrise at 3% intensity, (This is the minimum possible to light a fluorescent tube).

From 3% the intensity increases very gradually to 100% over a 30-minute period.

Cloud Simulation

To simulate cloud or weather passage, the lamp dims down to 60% intensity over a period of up to 15 seconds.

The light remains at low intensity until a control input is given to return to 100% intensity; again this happens over a 15 second period.

The factory-preset number of cloud cycles per day is 5.

During custom setting the number of cloud cycles per day can be set between 0 and 12.

Sunset Simulation

To simulate sunset, the lamp starts at 100% intensity and dims to 12% intensity over a 30-minute period.

The light then switches off or stays at low intensity for the moon simulation.

Moonlight Simulation

To simulate the natural monthly changes in intensity of the moon, the 'Dusk Till Dawn' chip is programmed with an automatic moonlight cycle, which starts at 7% intensity on the first day, (full moon), and gradually dims down to 3% intensity, (new moon), over a 14 day period. The intensity then increases progressively up to the next full moon, which occurs after a further 14 days to complete the 28-day lunar cycle.

The lunar cycle is continuous after the dimming period ends and lasts until the sunset period starts. This may appear as if the light does not switch off at the end of the sunset period but is the normal mode of operation.

Component Information

Power Cables

All light units with the integrated "Dusk till Dawn" dimmable function have two specific 230V-power cables. One cable is a permanent live feed, (un-switched), and the other with the switch is the control feed.

(On light units with more than one set of additional banks of lights and therefore cables, i.e. multi-tube T5 pendant units, the wires will be marked accordingly for identification purposes.)

Control Switch

The control switch on the switched power lead is used to programme custom operation parameters of the dimming chip via a series of manually entered 'ON and OFF' switch actions as described later.

The control switch should always terminate in the ON position at all times or the unit will not operate.

Timer (not included)

A simple plug timer, ('Smiths' timer or similar), is all that is required to 'trigger' the pre-programmed lighting functions at a specific time of day, (although a digital timer or IKS unit could be used if preferred).

Each time the plug timer changes either from OFF to ON or from ON to OFF, the internal chip senses the power change as a trigger and automatically moves the function on to the next step in the programme.

Verification of Control Switch

Some models are supplied with a plain toggle switch without identification on the switch of which way is ON and which way is OFF.

To determine the direction of operation, plug the permanent supply into a mains socket, after 10 seconds plug in the switched supply, (no timer at this stage).

If the switch is depressed in the ON position **the light will start to illuminate within 1 minute**, if it does not then it is in the OFF position.

Toggle the switch and it will now illuminate within 1 minute. Mark the switch with a sticker or identification mark as future reminder of which direction is on.

Getting to Understand your Light Unit – The Simulation Test.

Once you understand how your light works it is very simple to operate however it may seem complicated at first.

In order to understand its operation we will run you through a simple test procedure that we use to check random sample lights in the factory. (See separate sheet for diagram).

By simulating the plug timer off/on effect using the control switch we can run through the preset daily cycle

1. Assemble the light and reflectors but do not position on aquarium.
2. Plug in the permanent live. (The one without the switch).
3. Wait 10 seconds.
4. Plug in the second switched plug directly into the mains.
5. The light should start to rise in intensity within 1 minute if the control switch is to on. If not then toggle the switch once and the light will now start to illuminate.
6. Allow the intensity to rise for 30 minutes to full brightness.
7. Toggle the switch from ON to OFF within 1 second. The light has now entered the first cloud cycle and will be seen to dim to 60% intensity.
8. After 30 seconds toggle the switch from OFF to ON within 1 second. The first cloud cycle ends and the bulb returns to full intensity.
9. This should be repeated until 5 cloud cycles have been observed. Use the attached diagram as a guide and tick off the cycles as they happen. Wait for 30 seconds between each switch action to allow the cycle to end before starting the next.
10. At this point the switch is set to ON and the lights are on full illumination. Toggle the switch to OFF and the light will start to go through the sunset phase, dimming over half an hour.
11. Without making any further inputs the light will dim to minimum illumination and then enter the moonlight cycle where it will sit at constant low illumination until the next input.
12. The next switch to ON will set the unit once again into the sunrise mode and back through the cycle.
13. Unplug the unit fully and move on to the Quick Start Section.

Quick Start using Factory Settings

The lighting unit is supplied with 'Preset Factory Settings', use of which is recommended during initial familiarisation with the programming.

- Sunrise / Sunset Period – 30 minutes.
- Number of cloud cycles – 5 per day.
- Moonlight Simulation – On

Step 1 - Set Plug Timer

The first step is to set the timer to synchronise the pre-set programme with periods through the day.

We have chosen 12-hour lighting schedule as an average photoperiod with the cloud cycles having a varying duration and spread more or less equally through out the day.

Please use the attached diagram as an aid in setting your timer clock.

Plug Timer Settings for 'Quick Set' using the 'Preset Factory Programme'.

- | | |
|-------------|---|
| 09.00 - ON | - Sunrise period starts to rise over 30 minutes to full intensity. |
| 09.30 | - Light is at full intensity. |
| 12.15 - OFF | - First cloud cycle starts – 60 minutes. |
| 13.15 - ON | - First cloud cycle ends. |
| 14.15 - OFF | - Second cloud cycle starts – 15 minutes. |
| 14.30 - ON | - Second cloud cycle ends. |
| 15.30 - OFF | - Third cloud cycle starts – 15 minutes. |
| 15.45 - ON | - Third cloud cycle ends. |
| 16.45 - OFF | - Fourth cloud cycle starts – 15 minutes. |
| 17.00 - ON | - Fourth cloud cycle ends. |
| 18.00 - OFF | - Fifth cloud cycle starts – 15 minutes. |
| 18.15 - ON | - Fifth cloud cycle ends. |
| 20.30 - OFF | - Sunset period starts to dim lights over a 30-minute period |
| 21.00 | - End of sunset period – moon cycle begins and runs until 09.00 the next day. |

Step 2 - Verification of control switch position

Verify that the Control Switch is in the ON position as described on the previous page under component information.

Step 3 - Connection to Power Supply

Insert the permanent power supply plug into a permanently "ON" mains socket,

Wait for 10 seconds then connect the plug on the switched control lead into a time-controlled mains socket, using a Smiths timer or similar and ensure that the control switch is switched on.

Step 4 - Synchronising Programme with the Plug Timer

It is necessary to synchronise the Dusk till Dawn chip to the time of day during which the unit has been plugged in as there is no internal clock. We assume that the timer is programmed as shown above, set at the correct time and switched on.

Synchronisation must be carried out during a sector on the plug timer where it is switched to ON ie when the lights are at full illumination.

The light always starts its sequencing at the start of the sunrise cycle.

If on the example above the unit is plugged in at 17.30 the programme will start in the Sunrise mode, rather than between the fourth and fifth cloud cycle where it should be, which is obviously not correct.

To move the programme on to the next sector, flick the control switch to OFF to simulate the power change from the plug timer. The programme will now start the first cloud cycle.

Wait for 10-20 seconds and switch the control switch to ON, the programme will now be at the end of the first cloud cycle sector.

Continue this action of switching the control power OFF and ON with a 3-4 second interval between each change until the correct sector is reached.

Important Note: When synchronising the unit to the correct sector, it is important that the time at which the procedure is carried out coincides with the control switch terminating in the 'ON' position or the unit will not receive any subsequent signals if it is set to 'OFF'.

The unit is now synchronised and should be operating correctly.

Hint: On the example above, the best time to set up the light is at 09.00 as the light will be automatically synchronised.

Custom Programming of the Dusk till Dawn Unit

Description

It is possible to custom set your Dusk till Dawn unit to your own set of parameters by following the outlined procedures on the subsequent pages.

At any stage the chip can be returned to its factory pre-set position by following the 'Function 1' instructions.

Further Information on Operation of the Control Switch

The switch on the control cable is used to access and change the optional functions. Assuming that the switch starts in the ON position each "OFF/ON" action is defined as switching to OFF and back to ON again and must to be carried out within one second.

For multiple 'OFF/ON' inputs the pause between each 'OFF/ON' switch action and the next one must also not exceed one second.

Function 1 - Return to Factory Settings

The unit is supplied with preset Factory Settings as discussed earlier:

Sunrise / Sunset Period – 30 minutes.

Number of cloud cycles – 5 per day.

Moonlight Simulation – On

To return to factory settings at any time switch the control switch OFF/ON 10 or more times in series whilst the tubes are fully illuminated.

To indicate that the light has returned to factory settings the light will glow bright then medium intensity then switch off.

Unplug both power feeds and start again as described in the quick set section.

Function 2 - Light on 100% Intensity During Sunrise

This function can be used to switch the light on to 100% intensity at any time during the sunrise without changing the preset programming.

It can also be used at other times but only when the control switch has power on to it. At these times the light is at full intensity already.

The function can also be utilised at other times without losing the programme by overriding the timer plug however synchronisation may be affected.

Action – Flick the control switch OFF/ON 3 times.

Result – The light changes immediately to 100% Intensity.

Action – Flick the control switch OFF/ON once.

Result – Return to normal operation.

Function 3 – Custom Setting of Cloud Simulation Frequency

Action – Flick the control switch OFF/ON 5 times.

Result –The light changes to 'cloud programming mode' and illuminates to 50% intensity for 10 seconds then begins a number of 1-second pulses to 90% intensity to indicate the number of cloud cycles that have been set.

For example 5 pulses signifies 5 cloud cycles. The light then returns to 50% intensity for 10 seconds before pulsing again.

Action – Flick the control switch OFF/ON one or more time.

Result – The number of cloud cycles and therefore pulses increases to 6. The cycles and pulses increase by one for each time that the OFF/ON switch action is carried out up to a maximum of 12 cloud cycles.

Action – Flick the control switch OFF/ON once more after the 12 cloud pulses, (13 OFF/ON switches).

Result – The unit is now switched to 'no cloud cycles' and the light dims to a constant 12% intensity.

Note that the cloud switching operates as a constant loop and after 'no clouds' will return to 1 cloud cycle, 2 cloud cycles etc with subsequent switch operations. To change to 'no clouds' from factory setting it is only necessary to flick the control switch 8 times as the programme is already set at 5 clouds.

Action – Remove the permanent power plug and timer plug and start again as described in the quick set section.

Result – The unit exits cloud programming mode and saves the set information.

Function 4 – On / Off Setting of Moonlight Simulation

Moonlight simulation can be set to either on or off as required.

Action – Flick the control switch OFF/ON 7 times.

Result – The light unit enters 'moonlight programming mode' and indicates this by illuminating the tube at full intensity then medium intensity then dim then off. The light is now set to 'moonlight cycle off'.

Action – Flick the control switch OFF/ON again 7 times.

Result – The light unit enters 'moonlight programming mode' again and this time the light increases in illumination twice and then switches off. The light is now set to 'moonlight cycle active'.

The moonlight cycle works on a 'toggle' basis. Each time the moonlight-programming mode is entered it toggles to the next position of either OFF/ON. The moonlight-programming mode can be entered at any time in the lighting cycle.

Action – Remove the permanent power plug and timer plug and start again as described in the quick set section.

Result – The unit exits moonlight programming mode and saves the set information.

Operation after Custom Programming

After custom programming unplug the unit fully to store the changes and then follow the 'Quick Start' instructions to run your light unit.

Note that if you have added or removed cloud cycles from the programme it will be necessary to make the same change on your plug timer or the lighting sequences will go out of phase.

Useful Hints, Notes and Reminders

1. The first time that the unit is used the dawn may rise very fast however subsequent sunrises will have a 30 minute duration.
2. All custom programming is retained even in the case of a power failure unless the unit is reset. It may be necessary however to resynchronise the unit as it will start at sunrise when the power is returned.
3. It is possible to modify the duration photoperiod and cloud duration without modifying the preset factory programme simply by changing the socket timer.
4. The best time to synchronise the light is at your chosen sunrise time.
5. Function 1 - Will reset everything back to the factory options and is useful as a fresh starting point if you lose track of how the unit has been custom programmed.
6. Function 3 - It is important that the customer programs the same number of clouds on the timer as for the light or the sequences will go out of phase.
7. The maximum length of time for a single cloud cycle is 4 hours.
8. Function 4 – Each time you access this function it toggles between 'moonlight on' and 'moonlight off'.
9. Always synchronise the light unit with the plug timer.
10. Each time the 'moonlight on' function is accessed the programme starts from a full moon. This feature could be used, if desired, to synchronise the programme with the actual observed lunar cycle.
11. The chip always allows one more OFF/ON input during programming than described to allow for error.
12. Protect the computer chip on your unit from power surges by using a surge protector, available from most computer shops.



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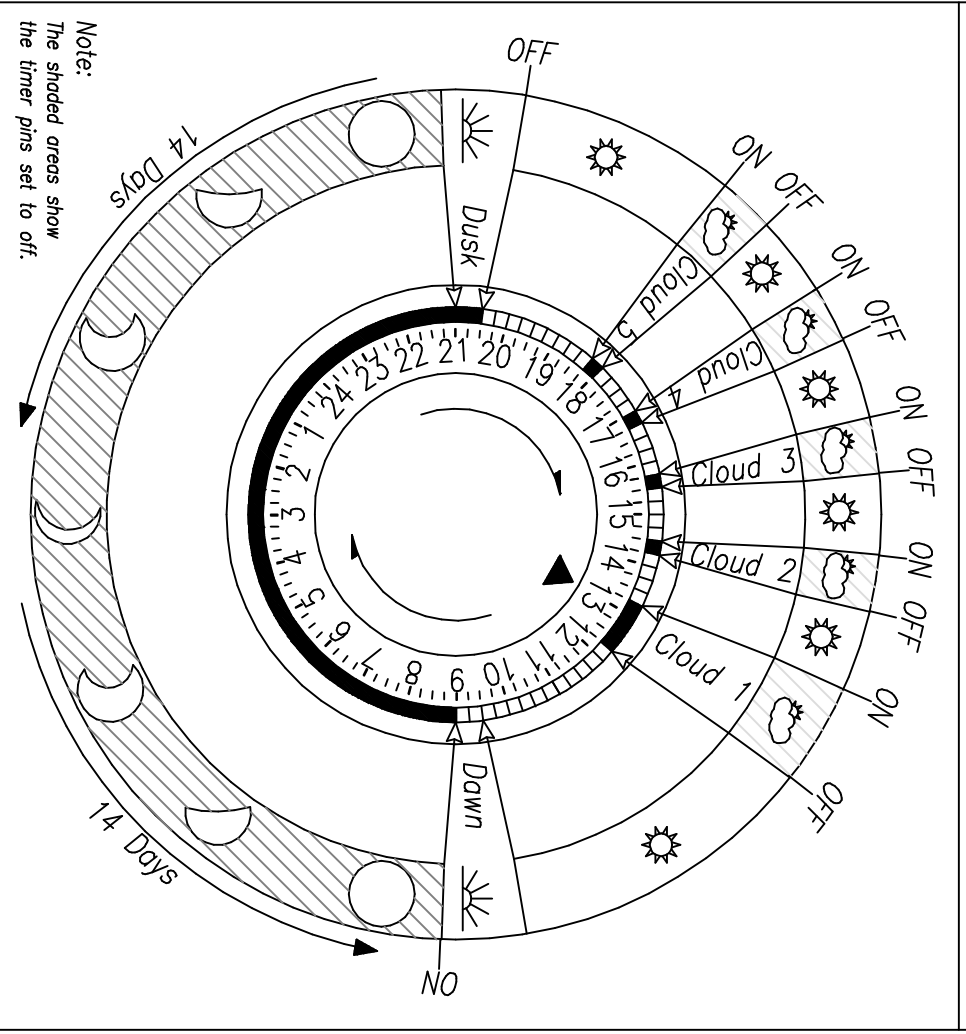
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STEP	SWITCH POSITION	ACTION / FUNCTION	TUBE STARTS	TUBE ENDS
1.	START			
2.		Wait 10 seconds		
3.				
4.				
5.		Sunrise Simulation 		
6.		Cloud 1 Start Simulation 		
7.		Cloud 1 End Simulation 		
8.		Cloud 2 Start Simulation 		
9.		Cloud 2 End Simulation 		
10.		Cloud 3 Start Simulation 		
11.		Cloud 3 End Simulation 		
12.		Cloud 4 Start Simulation 		
13.		Cloud 4 End Simulation 		
14.		Cloud 5 Start Simulation 		
15.		Cloud 5 End Simulation 		
16.		Sunset Simulation 		
17.		Moonlight Simulation 		
18.		Sunrise Simulation 		
19.	END			

STEP	SWITCH POSITION	ACTION / FUNCTION	TUBE STARTS	TUBE ENDS
1.	START			
2.		Wait 10 seconds		
3.				
4.				
5.		Sunrise Simulation 		

THE CYCLE CONTINUES FROM THIS POINT TO RUN THROUGH REMAINING FUNCTIONS.
24 HOUR PLUG TIMER DIAGRAM FOR QUICK SET INSTRUCTIONS.



FUNCTION 1. – RETURN TO FACTORY SETTINGS

	START	ACTION	OBSERVED ILLUMINATION OF TUBE
1.		START	
2.		WHEN LIGHTS ARE AT FULL INTENSITY OFF → ON X10	→
3.		UNPLUG	

FUNCTION 2. – LIGHTS ON 100% INTENSITY DURING SUNRISE

	ILLUMINATION	START	ACTION	RESULTING ILLUMINATION OF TUBE
1.			OFF → ON X3	
2.			OFF → ON X1	

FUNCTION 4. – SWITCHING MOONLIGHT SIMULATION FROM FACTORY PRESET 'ON' TO 'OFF'

	START	ACTION	OBSERVED ILLUMINATION OF TUBE
1.		START	
2.		WHEN LIGHTS ARE AT FULL INTENSITY OFF → ON X7	→
3.		UNPLUG	

FUNCTION 4. – SWITCHING MOONLIGHT SIMULATION FROM 'OFF' TO 'ON'

	START	ACTION	OBSERVED ILLUMINATION OF TUBE
1.		START	
2.		WHEN LIGHTS ARE AT FULL INTENSITY OFF → ON X7	→
3.		UNPLUG	

STARTING LIGHT UNIT AFTER CUSTOM SETTING.

AFTER UNPLUGGING THE UNIT, START AS PER QUICK SET INSTRUCTIONS ON NEXT SHEET ALWAYS PLUG IN PERMANENT FEED FIRST, WAIT 10 SECOND THEN PLUG IN SWITCHED FEED.

FUNCTION 3. – SETTING OF NUMBER OF CLOUD CYCLES FROM FACTORY PRESET POSITION

	START	ACTION	OBSERVED ILLUMINATION OF TUBE
1.		START	
2.		WHEN LIGHTS ARE AT FULL INTENSITY OFF → ON X5	→
3.		OFF → ON X1	
4.		OFF → ON X1	
5.		OFF → ON X1	
6.		OFF → ON X1	
7.		OFF → ON X1	
8.		OFF → ON X1	
9.		OFF → ON X1	
10.		OFF → ON X1	
11.		OFF → ON X1	
12.		UNPLUG	

FUNCTION 3. – SWITCHING OFF CLOUD SIMULATION FROM FACTORY PRESET POSITION

	START	ACTION	OBSERVED ILLUMINATION OF TUBE
1.		START	
2.		WHEN LIGHTS ARE AT FULL INTENSITY OFF → ON X5	→
3.		OFF → ON X8	
4.		UNPLUG	