

DCL[®]

DEMAND CONTROL LIGHTING

*DEMAND*flex[®]

Technical Product Information

DCL® with DEMANDflex®

DEMANDflex® ballasts are high efficiency program start ballasts with the flexibility to be tuned at the circuit level to fixed power levels during installation. They are fully compatible with occupancy sensors and exceed the CEE requirements for high efficiency program start T8 ballasts. DEMANDflex® ballasts have tuning capabilities with ranges from 100% to 50% power levels, making them applicable for a wide range of lighting installations.

DEMANDflex® ballasts can be tuned to maximize energy savings with fixed light levels. No dimming control wires are associated with DEMANDflex® ballasts making them easy to install in all existing fluorescent lighting applications. And DEMANDflex® ballasts can be integrated with DCL® controls to create the most cost-effective lighting system available.

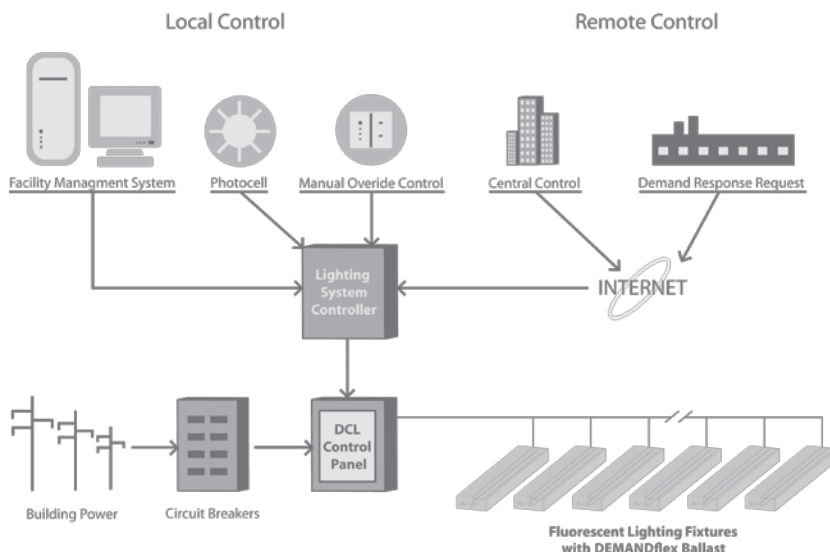
DCL® controls provide local control with energy management systems and external control via the internet for networked managed systems. DCL® controls allow integration with utility demand response programs providing incentives to end-users in exchange for reduction of lighting power levels during periods of peak demand.

DEMANDflex® Ballasts

- **Power level tuning potential to 50%**
 - Set the circuit power level at installation
 - Typical 10% to 15% power reduction
- **Install the same as standard PRS ballasts**
 - No control wires necessary
 - Standard mounting footprint
 - Same wiring as program rapid start ballasts
- **High efficiency program start operation**
 - Exceeds CEE T8 requirements
 - Compatible with occupancy sensors

DCL® Controlled Systems

- **Reduces lighting power by up to 50%**
 - Avoid high peak charges
 - Reduce demand costs
- **Programmable fade rates**
 - Gradual transitions - No disruptions
- **Use existing power connections to communicate to the ballasts**
 - No control wires
- **Implement with various controls and systems**
 - BAS Systems
 - Photo Cells
 - Occupancy sensors
 - Contact Closure



DCL® provides flexibility for a wide variety of control applications.

DCL® System Features and Components

DEMANDflex® Ballast & DCL® Control Configuration

DCL® Control systems use the existing power line to communicate commands to the DEMANDflex® ballasts. Each 20-Amp lighting circuit has its own controller and the controllers are combined together in control panels which hold up to 12 circuit controllers. Individual circuit controllers are also available as stand alone devices (Single Circuit Controls) when panels are not practical.

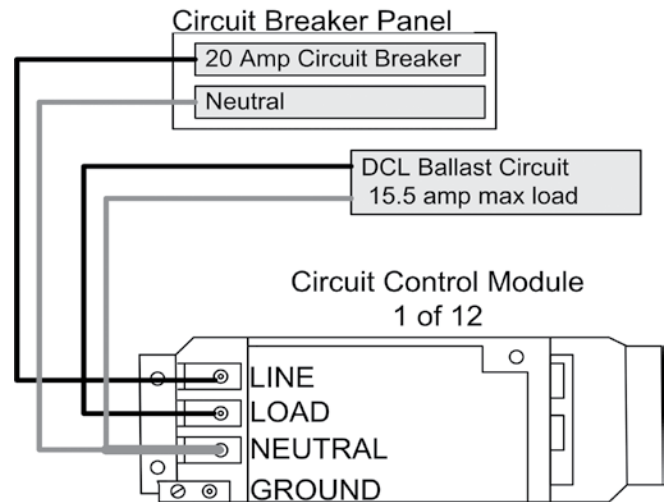
The DCL® control panels and single control modules are connected between the lighting panel and fluorescent ballasts. The control modules communicate with the ballasts on the circuit. Since each circuit has its own controller, the circuits can be controlled at different power levels. This increases the flexibility of the lighting management system, maximizing savings in one location without affecting the lighting in other parts of the facility.

DCL® Circuit controllers receive commands from a lighting control unit. Depending on the configuration, the lighting control unit may be integrated with local controls such as occupancy sensors, photo cells, and manual controls, or it may be connected to a building's energy management system. Multiple configurations can be developed to meet the specific requirements of the facility.

Circuit Tuning (For installations without DCL® Controls)

Some projects may initially install DEMANDflex® ballasts and tune their lighting circuits preserving an option to install controls at a later date. The tuning process uses a commissioning kit which includes a single circuit controller, interface device and cable. Circuits are programmed one at a time to selected power levels. The tuned levels should be documented during this process.

Circuit Controller Connection within the Lighting Circuit



The Circuit Controller is connected between the lighting circuit breaker panel and the lighting fixtures. The Circuit Controller may be incorporated in a DCL® panel or installed separately as a stand-alone device. Tuning applications will temporarily connect a controller to program the ballasts.

DEMANDflex® Ballasts

		"Max. Power (Watts)"		"Max. Current (Amps)"		Ballast Factor (Max)	Min. Power (Watts)		Ballast Factor (Min.)	Case Style	Wiring Dia.
		120	277	120	277		120	277			
T8											
(2) F32T8	B232PUNVDRL-A	47	47	.40	.17	0.71	24	24	0.19	A	2a
(2) F32T8	B232PUNVDR-A	57	56	.47	.20	0.87	28	28	0.35	A	2a
(2) F32T8	B232PUNVDRH-A	75	73	.62	.26	1.15	37	36	0.50	A	2a
(3) F32T8	B332PUNVDRL-A	72	72	.59	.25	0.71	36	36	0.22	A	3a
(3) F32T8	B332PUNVDR-A	85	83	.70	.30	0.87	42	41	0.35	A	3a
(3) F32T8	B332PUNVDRH-E	115	111	.95	.41	1.15	57	55	0.50	E	3b
(3) F32T8	B432PUNVDRL-E	93	93	.78	.34	0.71	47	47	0.21	E	4a
(4) F32T8	B432PUNVDR-E	116	112	.96	.41	0.88	58	56	0.35	E	4a

T5HO											
(2) F54T5HO	B254PUNVDR-D	120	120	1.00	.43	1.00	60	60	0.45	D	2b

T5											
(2) F28T5	B228PUNVDRH-D	74	72	.62	.26	1.15	36	36	.48	D	2b
(1) F28T5	B128PUNVDRH-D	37	37	.32	.14	1.15	19	19	.38	D	2c

Dimensions (inches)

Case Style	Length	Width	Height	Mount Length
A	9.50	1.70	1.18	8.89
D	16.88	1.18	1.00	16.20
E	16.88	1.82	1.18	16.28

Nominal dimensions: Contact Universal for drawings.

DCL® Controls

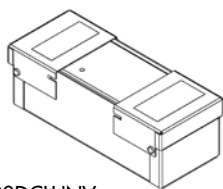
Model	Description
LP12DCLUNV-xx**	Circuit Control Panel
SC20DCLUNV**	Single Circuit Controller
MC20DCLUNV**	Open Style Single Circuit Controller
RSMDCLS1	Contact Interface Controller
WTPDCL51 ^A	Time/Photo Controller
WPS5527K	Photo Sensor for WTPDCL

xx = number of circuits (03 - 12)

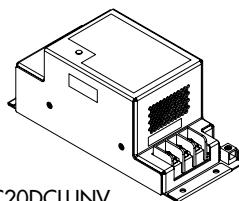
* For additional lighting system controllers, contact Universal Lighting.

** Modbus versions of these controls are available.

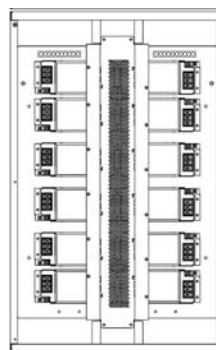
^A Consult Universal for configuration options.



SC20DCLUNV
Single Circuit Controller



MC20DCLUNV
Open Style,
Single Circuit Controller



LP12DCLUNV-xx
Circuit Control Panel

LP12DCLUNV-xx		
Dimensions		Mounting
Length	32"	24"
Width	20"	16"
Depth	4.3"	—
The quantity of individual controllers installed is determined by the model number.		

SC20DCLUNV		Mounting Pattern	
Dimensions			
Length	9.66"	1.50	2.50
Width	3.98"	X	X
Depth	3.21"	X	X



Wiring Diagrams

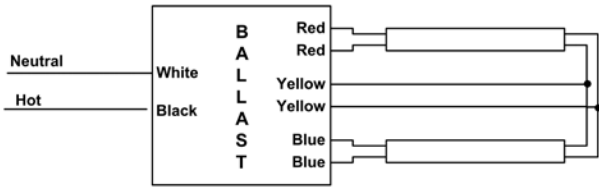


Diagram 2a

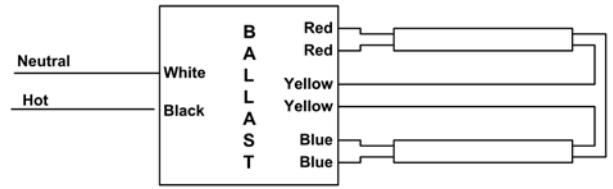


Diagram 2b

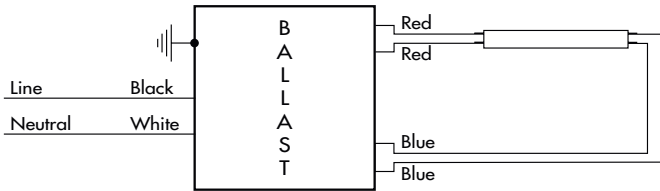


Diagram 2c

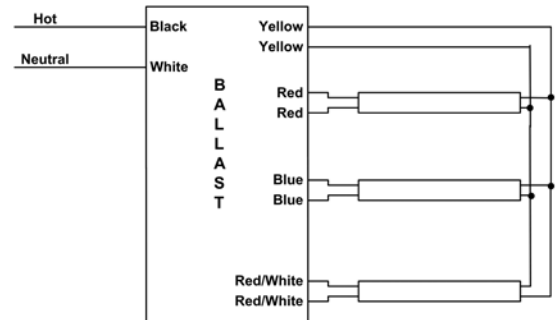


Diagram 3a

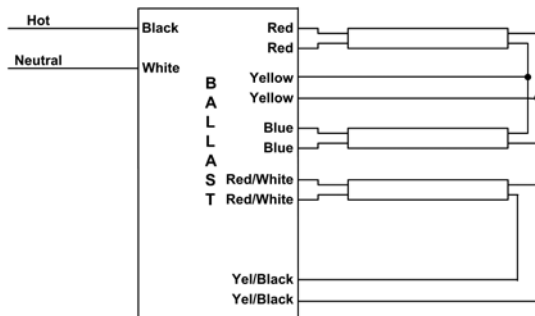


Diagram 3b

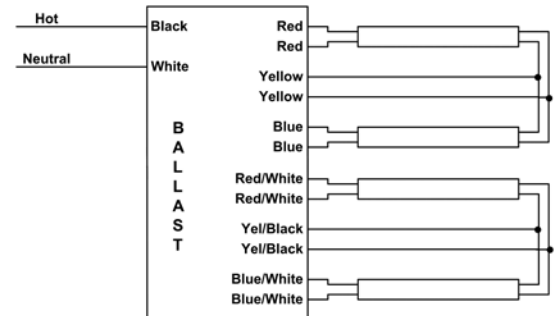


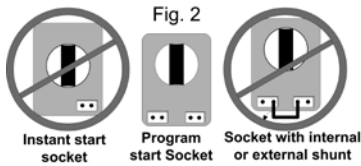
Diagram 4a

DEMANDflex® Ballasts

Installation Guidelines:

Lamp Sockets

Rapid Start type lamps sockets must be used with all DEMANDflex® ballasts. Instant start sockets which are shunted internally or externally will damage ballasts and lamps.



Wiring Configuration

Ballasts must be wired according to the wiring diagram on the ballast label. Special attention should be paid to the wiring of the common filaments. With some models, these are wired in parallel but other models have them connected in series.

Grounding

As with other ballasts, DEMANDflex® ballasts must be grounded. This is accomplished by mounting the ballast to a grounded metal fixture. When grounding ballasts, remove the paint from the ground point of the ballast or use a star washer with the ballast mounting screw. Poor grounding will create problems with the starting of the lamps. Grounding is also necessary to suppress EMI/RFI that is generated within the ballast.

Initial Operation

Burn lamps at full brightness for at least 12 hours before dimming for the first time.

Tuning

The DEMANDflex® commissioning kit (tuning tool) is used to program/tune DEMANDflex® ballasts when DCL® controls are not installed and a lower power level is desirable. When programming the desired power level, this circuit programming tool is temporarily connected in series between the lighting circuit panel and the lighting circuit.

When the tuning tool is connected, simple control buttons are used to adjust the power level with the use of LCD display. When the desired levels are selected, the program command is sent with the press of a button. When the tuning tool is disconnected and the circuit is re-connected, the ballast will operate at its programmed level.

Ballasts intended to be programmed must be powered 'on' and have lamps installed during programming. If DEMANDflex® ballasts on the same circuit need to be tuned to different levels, ballasts can be disconnected at the fixture or by wall switches to accomplish this. DEMANDflex® ballasts can be re-programmed, always maintaining their latest programmed command as their operating level.

Remote Mounting Lead Lengths

DEMANDflex® ballasts should be mounted within the same fixture in which the lamps are operated. The maximum allowable lead length from the ballast to the lamp sockets is 8 feet.

Tandem Wiring

DEMANDflex® ballasts should not be tandem wired. Consult factory for more information on special conditions

Fixture Wiring

The lead lengths in the fixture should be kept as short as possible. In multi-lamp fixtures, the red and blue leads should be kept separate and not be bundled or twisted together.

Installations resulting in twisted, folded, or bundled lamp wires, and applications routing lamp wires in very narrow channels, should be validated by test. This test should be conducted at the target input voltage, and at both the maximum and minimum intensity levels. Test criteria should include acceptable starting performance with cold lamps as well as steady and uniform illumination during and after stabilization of the lamp temperature.

Starting Aid Distance

Linear lamp fixtures must incorporate a grounded lamp 'Starting aid' (Grounded Fixture Surface). Linear lamp to starting aid spacing must be 1/8 to 3/4 inch. Lamps must not touch any grounded metal. (Lamp support brackets (if any) must not be metal.)

DCL® Controls

Installation Guidelines:

LP12DCLUNV-xx Control Panel

The two digit number at the end of the LP12DCLUNV-xx indicates the number of circuit control modules which are incorporated within the LP12 control panel. Each module is designed for a 20 amp circuit for any voltage ranging from 120 to 277 volts. Proper circuit de-rating to 15.5 amps is required by electrical codes.

The LP12DCLUNV-xx circuit control panel should be mounted adjacent to the lighting circuit panel to simplify installation. Wires that run to the lighting fixtures should be connected to the circuit control panel and new wires should be used to connect the circuit control panel to the lighting circuit panel.

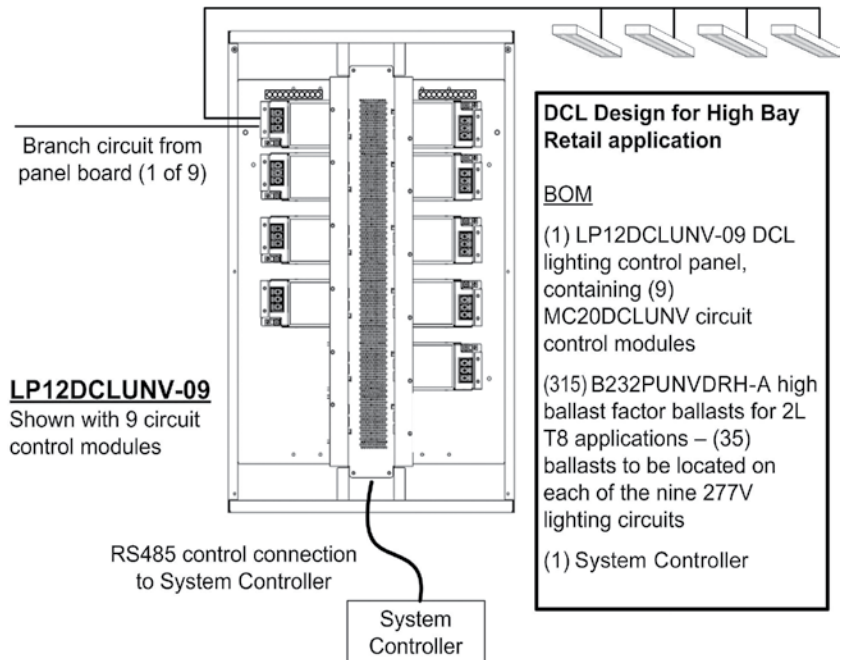
A network cable (CAT 5e) connects the control panel to the system controller.

SC20DCLUNV Single Circuit Control

For applications with few circuits or limited wall space, the SC20DCLUNV single circuit control can be used. This control has one control module and can be mounted in a much smaller space or even in the ceiling plenum. The SC20DCLUNV has wiring compartments which allow for the power connections to be made in compliance with electrical codes.

The SC20DCLUNV is designed for a 20 amp circuit for any voltage ranging from 120 to 277 volts. Proper circuit de-rating to 15.5 amps is required by electrical codes.

A Standard CAT-5E cable is used to connect the SC20DCLUNV to the system controller or other circuit control modules. Two RS-485 plugs on each circuit controller permit multiple circuit controls to be daisy chained.



Lighting System Controls

Lighting System Controls (e.g., RSMDC151 or WTPDC151) should be mounted adjacent to the control panel. A network cable connects the control modules to the system control. When using single circuit controllers, a longer cable may be made using CAT-5E cable and RJ45 connectors. The specified control configuration will determine the connections to the system control module from other network or building controls.

Temperature

The maximum allowable ambient temperature for DCL® controls is 40°C.



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