PHILIPS DDC116-UL Single System Architecture Lighting Control Solution Installation Guide

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DDC116-UL Single System Architecture Lighting Control Solution

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Product Specifications

- High capacity switching relay: 16 A lighting load, 20 A general load
- Suitable for plenum use: UL 2043 and Chicago rated
- Dry contact input for UL 924 emergency or auxiliary input
- Universal voltage: 100-277 VAC
- Choice of control protocol: DyNet or DMX512
- Standalone control of up to five lighting zones plus plug load

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Product Usage Instructions

Setting up SSA Devices

Follow these steps to set up the Single System Architecture devices:

1. Ensure the power source is disconnected before installation.
2. Connect the devices using dual RJ45 connectors or wire to spring terminals.
3. Refer to the user manual for specific configurations based on the device model.

Configuring the Controller

To configure the controller, follow these steps:

1. Access the DDC116-UL controller settings.
2. Adjust the DIP switches and button settings as required for your lighting control functionality.
3. Refer to the specific settings for different functionalities provided in the user manual.

System Features Overview

The system offers various features for efficient lighting control:

- High capacity switching relay for lighting and general loads.
- Easy installation with plug-in RJ45 sockets and push-down terminals.
- Daisy chain additional devices for expanded control.

Frequently Asked Questions (FAQ)

Q: Can the system be controlled remotely?

A: Yes, the system can be integrated with a Building Management System over BACnet for remote control.

Q: What is the maximum load supported by the system?

A: The system supports a 16 A lighting load and a 20 A general load.

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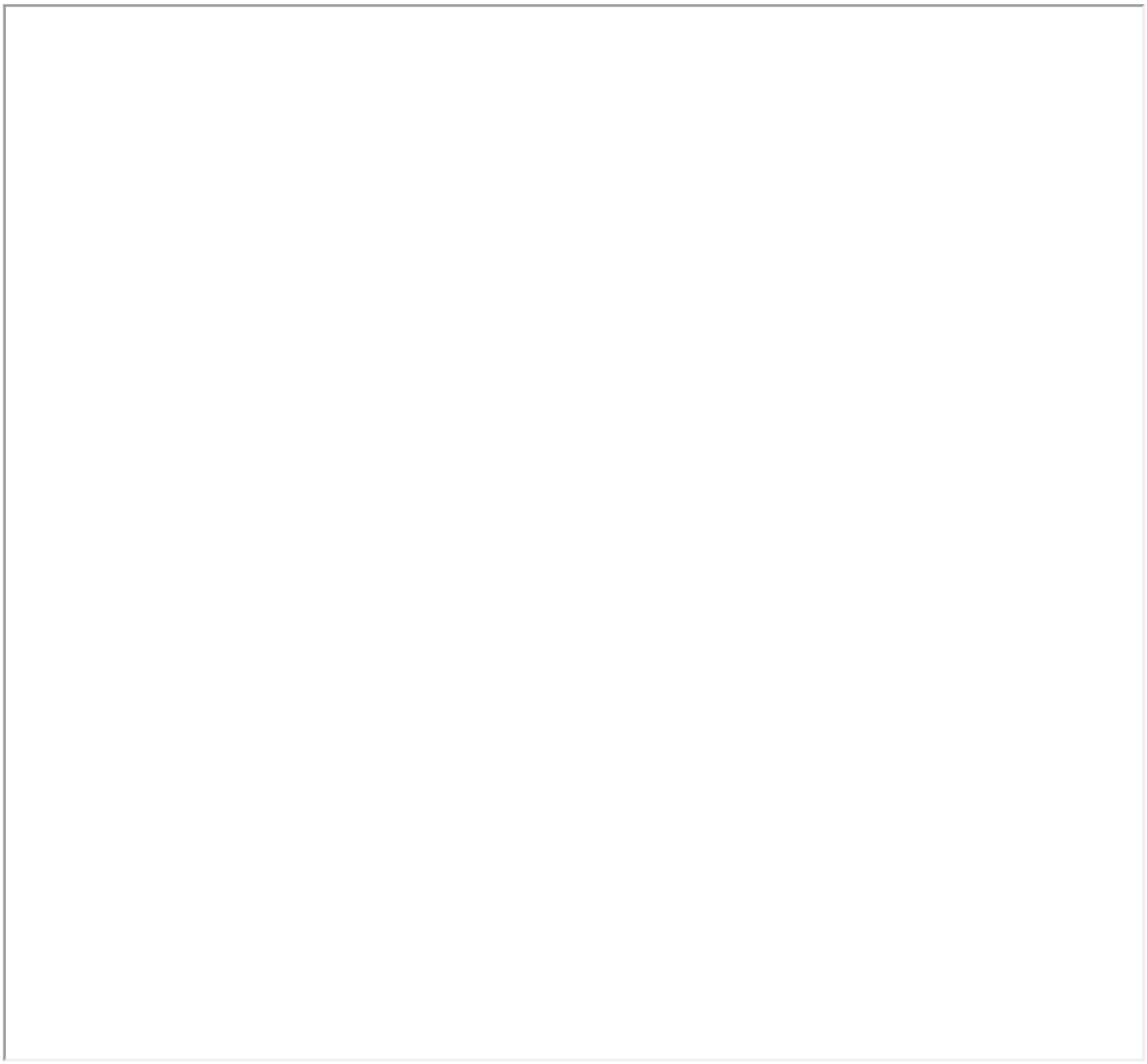
View Fullscreen



Single System Architecture

Set-Up Guide

Lighting control made simple

An easy-to-install system that expands to suit different indoor areas

Single System Architecture

Single System Architecture

Contents

Introducing the DDC116-UL, the heart of the Philips Dynalite SSA (Single System Architecture) lighting control solution. The system empowers electrical installers to create lighting control functionality quickly and easily with DIP switches and button settings. Out of the box, the system supports 0-10 V dimming and is reconfigurable to DALI broadcast dimming, making this solution future-proof.
The system enables customers to configure different areas and network specific devices together for codecompliant lighting control functionality without requiring commissioning software. Optionally, customers can use System Builder commissioning software to integrate with a Building Management System over BACnet or to be part of a larger-scale system solution.

System features

High capacity switching relay
16 A lighting load. 20 A general load (plug load).
Suitable for plenum use
UL 2043 and Chicago rated for installation in air-handling plenum spaces. Fits into standard junction box housings.
Dry contact input
For UL 924 emergency or auxiliary input.

Easy to install
Plug in RJ45 sockets and push-down terminals.
Flexible
Control 0-10 V 100 mA Sink or Source and DALI broadcast. Guaranteed current 100 mA, Maximum 250 mA loads.
Daisy chained devices
Connect additional controllers and other SSA devices using dual RJ45 connectors or wire to spring terminals.

Universal voltage
100-277 VAC.
Choice of control protocol
Can be controlled via DyNet or DMX512.

Standalone or networked
Standalone control of up to five lighting zones plus plug load. Can be networked for even larger projects.

DyNet networking

DMX512 networking*

RS-485 DyNet

RS-485 DMX512 *System Builder is required to change the controller’s DMX512 address.

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Flexible mounting solution

The compact plenum-rated design is compatible with standard junction box wiring schemes, reducing your installation effort and project costs.

UL 2043 Plenum-rated

Chicago Plenum-rated

2 in (51 mm)

24-16 AWG

< 65 ft (20 m)
GND AUX/UL924

BLACK GREEN WHITE
RED VIOLET
PINK

= LINE = EARTH = NEUTRAL = SWITCHED LINE = 0-10 V+ / DA+ = 0-10 V- / DA-

12 AWG (2.5mm²) 18 AWG (0.75mm2)

0.2-1.5mm2
Optional

GND D+ D –
+12V

AUX/ GND UL924

DDC116

From previous network device
To next network device
RS-485 DyNet/DMX512

RJ45

In/Out

In/Out

Service LED

Service Switch

BLACK RED VIOLET

GREEN WHITE
PINK*

0-10 V / DALI DRIVER

0-10 V+ / DA+ 0-10 V- / DA-

*0-10 V Dimming Common from luminaire may be pink or as otherwise permitted per section 410.69 of the 2020 NEC.

AUX/UL924 default is Normally Closed (Open = Active). Please remove jumper wire between GND and AUX/UL924 terminals if connecting to emergency or other system. For DMX512, add a 120 Ohm, 0.5 W termination resistor across D+ and D- on the last DMX512 device.

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Single System Architecture

Installers are empowered to provide a complete service by setting the lighting control functionality.

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Lighting controls made simple

Single System Architecture components

DDC116-UL

PAxBPA-SSA

DUS360CR-DA-SSA

The basic system caters for all typical lighting
applications such as corridors, classrooms, open and enclosed offices, meeting rooms, function rooms, and foyers.

DINGUS-UI-RJ45-DUAL and DINGUS-DUS-RJ45-DUAL

DACM-DyNet-SSA

DUS804CS-UP-SSA (O or V)

For more information about installation, refer to individual device installation instructions.

Installer-configured devices
DDC116-UL Single zone 0-10 V/DALI broadcast and relay controller.
DINGUS-UI-RJ45-DUAL and DINGUS-DUS-RJ45-DUAL Quick connections between different wall stations and sensors.
PAxBPA-SSA 2, 4 or 6-button wall stations with seven labeling options.

DACM-SSA User interface communication module with 15 configurations.
DUS360-DA-SSA PIR motion and daylight sensor with configurations selectable via DIP switches
DUS804CS-UP-SSA Ultrasonic motion (occupancy or vacancy).

Single System Architecture

Available functionality
Sensors
· Configurable between Occupancy mode (default) or Vacancy mode.
· Choice of passive infrared or ultrasonic motion detection. · Configurable timeouts of 5, 10, 15, and 20 minutes (default).
· 1 minute grace period on all timeouts. · 1 hour witness mode to test functionality.
· Built-in daylight harvesting. · Flexibility to activate primary and secondary daylight zones.
Occupancy mode Lights turn on if there is motion, lights turn off after the timeout period if there is no motion. Vacancy mode Lights are manually turned on from the switch and turn off after the timeout period if there is no motion.
Primary daylight zone The window zone directly under the sensor.
Secondary daylight zone The zone farther away from the window with a 20% brighter offset.

Wall stations

· Control one or all five lighting zones and plug load zone.
· Recall preset lighting scenes.
· Simple intuitive buttons.
· Ramping buttons only affect zones that are on.

Load controllers

The SSA is oriented around the DDC116-UL's configurability via its network sign-on button (service switch) without requiring computer-based commissioning tools. This simplifies the activation process, saving commissioning costs and labor charges. Multiple DDC116-ULs can be connected into a single system to meet the needs of a single area with multiple lighting groups, daylight harvesting zones, and plug loads. The internal relay saves power by automatically switching off the circuit when lighting loads are dimmed to zero.

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System example classroom application

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1

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DDC116-UL Single Zone Controller DUS360CR-SSA Sensor Daylight DUS804CS-SSA Sensor Occupancy Antumbra 4-Button Station

Antumbra 6-Button Station

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Single System Architecture

Switching and dimming zone output 0-10 V and switched lines RS-485 DyNet
Floor Zones 1 Screen/Presentation zone (default) 2 Generic Lighting Primary Zone 4 Generic Lighting Primary Daylight Zone 6 Plug load

Step 1
Assigning a DDC116-UL to the right zone

Service LED

Setting up Single System Architecture devices
In three steps, you can directly set up devices to harness the power of networked lighting control.

Service Switch

Configuring the controller
Assign the controller to one of the six zones with simple push-button actions.

Service switch functions
1 short push Send network ID
3 short pushes Set lights to 100%
4 short pushes Test mode (LED blinking pattern changes and lights flash for 5 minutes)
· 1 short push Toggle control type between 0-10 V (Red LED) and DALI Broadcast (Green LED). · Push and hold for 4 seconds Save control type and exit Test Mode.

Push and hold for 4 seconds Program Mode (Blue LED flash count indicates the controller zone assignment). Program Mode times out after 30 seconds of inactivity, discarding changes.
· Short push Cycle through zone numbers (after each push, the flash count indicates the controller zone assignment). Zone 1 = Screen/Presentation Zone (default) Zone 2 = Generic Lighting Primary Zone Zone 3 = Generic Lighting Secondary Zone Zone 4 = Generic Lighting Primary Daylight Zone Zone 5 = Generic Lighting Secondary Daylight Zone (20% brighter) Zone 6 = Plug Load Zone
· Push and hold for 4 seconds Save changes and exit Program Mode. The device reboots and is ready to start work!

Service LED indications

· Red: Output type = 0-10 V. · Green: Output type = DALI Broadcast. · Slow: 1 flash per second when device is idle. · Medium: 2 flashes per second when DyNet bus is busy. · Fast: 3 flashes per second when a message is addressed to the controller. · Medium: 2 flashes per second, alternating red and blue when in emergency mode.

Single System Architecture

and Auto off after timeout

Step 2

Configuring a sensor

DIP switches

Projects can choose between a PIR or dual-technology PIR and ultrasonic motion sensor. Ultrasonic sensors are available in occupancy or vacancy mode. Timeouts can be set for specific projects and multiple sensors can be used together to cover larger areas*. The inbuilt light sensor on the PIR sensor can also be used for daylight-based dimming (daylight harvesting).

DUS360CR-DA-SSA Settings (default)

ON OFF

876 543 21

1. Motion sensor mode

Vacancy mode Manual on from station and Auto off after timeout

ON OFF

1

Occupancy mode Auto on with occupancy and Auto off after timeout

ON OFF
1

2. Light level sensor

Enabled

ON OFF

2

Disabled ON OFF
2

3. Daylight zone minimum level, if SW 2 is on
Lighting will ON dim to 0% OFF 3
Lighting will ON dim to 20% OFF 3

4 & 5. Timeout

20

ON

Min

OFF

54

15

ON

Min

OFF

54

10

ON

Min

OFF

54

5

ON

Min

OFF

54

6. Auto-on level if SW 1 is on
Ramp lighting ON to 90% OFF 6
Ramp lighting ON to 50% OFF 6
7. Reserved
ON OFF 7
8. Witness mode
Reduce timeouts ON by 90% for 1 hour OFF
8 Normal ON operation OFF
8

DUS804CS-UP-SSA-O/V Ultrasonic Settings
20 minute default timeout or inherits timeout settings from DUS360CR-DA-SSA if used together.

Two different control strategies available:
Occupancy mode response Auto on & Auto off. Vacancy mode response Manual on & Auto off.

*Ultrasonic sensors must be placed at least 60ft (18 m) apart to avoid interacting with each other.

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Step 3
Configuring wall stations with the DACM

15 Station configurations
Set the DACM DIP switches to select your required button functions.

4-Button Options
PA4BPA-WW-L-SSA-onoff-ramp

6-Button Options
PA6BPA-WW-L-SSA-preset-ramp

PA6BPA-WW-L-SSA-2Z

DIP switches
2-Button Options
PA2BPA-WW-L-SSA-onoff

0. All zones On/Off/Raise/Lower ON OFF
123456
1. Zone 1 On/Off/Raise/Lower ON OFF
123456

6. All zones On/Off/Medium/ Low/Raise/Lower ON OFF
123456

PA6BPA-WW-L-SSA-AV-ramp

9. All zones + 2 dedicated zones On/Off ON OFF
123456
PA6BPA-WW-L-SSA-3Z

2. Zone 2 On/Off/Raise/Lower ON OFF
123456

3. Zone 3 On/Off/Raise/Lower ON OFF
123456
4. Zone 4 On/Off/Raise/Lower ON OFF
123456

7. All zones On/Off/AV/Present/ Raise/Lower ON OFF
123456

10. 3 dedicated zones On/Off ON OFF
123456

PA6BPA-WW-L-SSA-AV-present

5. Zone 5 On/Off/Raise/Lower ON OFF
123456

8. All zones On/Off/Medium/ Low/AV/Present ON OFF
123456

11. All zones On/Off ON OFF
123456
12. Zone 1 On/Off ON OFF
123456
13. Zone 2 On/Off ON OFF
123456
14. Zone 3 On/Off ON OFF

123456

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Ordering codes Single System Architecture

Dynalite part code

Description

12NC

DDC116-UL

1 x 0-10 V or DALI broadcast controller with switched power output.

913703376709

DUS360CR-DA-SSA

PIR motion and PE light sensor preprogrammed for Occupancy or Vacancy.

913703389909

DUS804CS-UP-SSA-O

Ultrasonic motion, PIR motion sensor preprogrammed for Occupancy.

913703662809

DUS804CS-UP-SSA-V

Ultrasonic motion, PIR motion sensor preprogrammed for Vacancy.

913703662909

DACM-DyNet-SSA

User Interface comms module preprogrammed for Single System Architecture.

913703668809

PA4BPA-WW-L-SSA-onoff-ramp Antumbra 4 Button NA White finish (On/Off/Raise/Lower). Configurations 0-5.

913703253109

PA6BPA-WW-L-SSA-preset-ramp Antumbra 6 Button NA White finish (On/Off/Medium/Low/Raise/Lower). Configuration 6. 913703253209

PA6BPA-WW-L-SSA-AV-ramp

Antumbra 6 Button NA White finish (On/Off/AV/Present/Raise/Lower). Configuration 7.

913703253309

PA6BPA-WW-L-SSA-AV-present Antumbra 6 Button NA White finish (On/Off/Medium/Low/AV/Present). Configuration 8.

PA6BPA-WW-L-SSA-2Z

Antumbra 6 Button NA White finish (On/Off/Master + Two zones). Configuration 9.

PA6BPA-WW-L-SSA-3Z

Antumbra 6 Button NA White finish (On/Off/3 zones). Configuration 10.

PA2BPA-WW-L-SSA-onoff

Antumbra 2 Button NA White finish (On/Off). Configurations 11-14.

DINGUS-UI-RJ45-DUAL

Suited to DACM – DyNet 2 x RJ45 sockets, pack of 10. Cannot be used with DUS.

DINGUS-DUS-RJ45-DUAL

Suited to DyNet DUS sensor range 2 x RJ45 Sockets, pack of 10.

913703253409 913703253509 913703253609 913703253709 913703334609 913703064409

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Single System Architecture

Ready to leverage the power of Dynalite
Being true network devices, the options are limitless. SSA configuration is fully customizable via System Builder software to serve more advanced project requirements. Expanding with other Dynalite network devices enables other dimming types, BACnet integration, scheduling, head-end software monitoring and management, and more.

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www.dynalite.com

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PDL588-0625-AZZAUS R08

Documents / Resources

	PHILIPS DDC116-UL Single System Architecture Lighting Control Solution [pdf] Installation Guide DDC116-UL, DUS360CR-DA-SSA, DUS804CS-UP-SSA, DDC116-UL Single System Architecture Lighting Control Solution, DDC116-UL, Single System Architecture Lighting Control Solution, Architecture Lighting Control Solution, Lighting Control Solution, Control Solution

References

- User Manual

Philips

Architecture Lighting Control Solution, Control Solution, DDC116-UL, DDC116-UL Single System Architecture Lighting Control Solution, DUS360CR-DA-SSA, DUS804CS-UP-SSA, Lighting Control Solution, Philips, Single System Architecture Lighting Control Solution

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