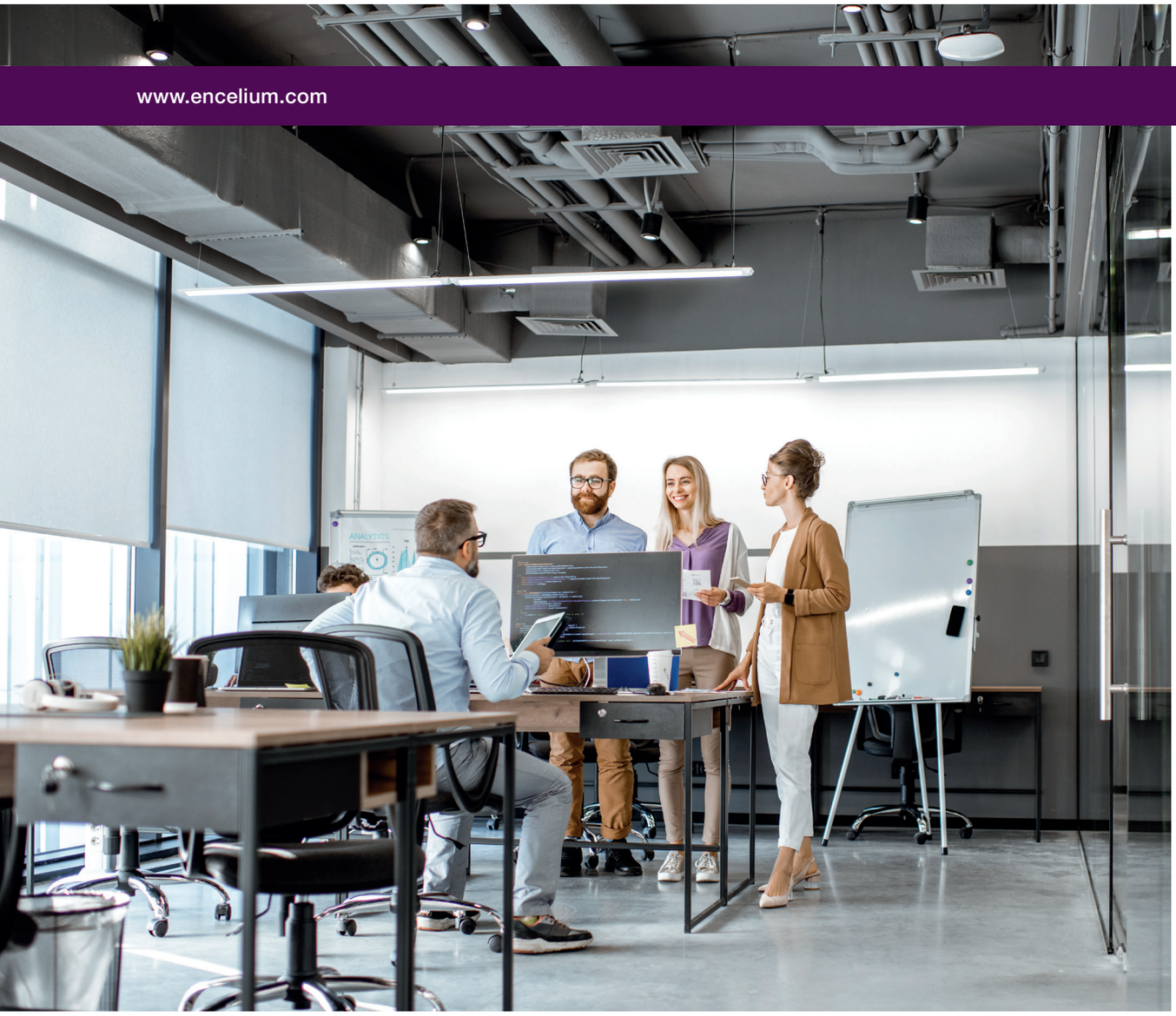


Encelium Energy Code
ASHRAE 90.1-2010 Design Guide

ENCELIUM

Encelium Energy Code

ASHRAE 90.1-2010 Design Guide

We have developed a broad range of tools to help you understand the complexity of design codes as well as help you design your next project.

The ASHRAE 90.1-2010 Design Guide provides a comprehensive overview of how to design a space with the Encelium Lighting Management System for a range of applications in office, education, and healthcare market segments.

In addition, this guide provides overviews for both Encelium wired and wireless system architectures.

For integration in your design, please **click here** to access the latest Encelium CAD design blocks.

For download of the ASHRAE 90.1-2010 CAD layouts please **click here**.

Encelium Energy Code

ASHRAE 90.1-2010 Design Guide 02
ASHRAE 90.1-2010 Application Summary 03
Wired System 04
Wired System, Atrium 05
Wired System, Break Room 06
Wired System, Classroom 07
Wired System, Corridor 08
Wired System, Large Conference Room 09
Wired System, Open Office 10
Wired System, Private Office 11
Wired System, Restroom & Private Washroom 12
Wired System, Small Conference Room 13
Wired System, Stairwell 14
Wireless System 15
Wireless System, Atrium 16
Wireless System, Break Room 17
Wireless System, Classroom 18
Wireless System, Corridor 19
Wireless System, Large Conference Room 20
Wireless System, Open Office 21
Wireless System, Private Office 22
Wireless System, Restroom & Private Washroom 23
Wireless System, Small Conference Room 24
Wireless System, Stairwell 25

ASHRAE 90.1-2010 Application Summary

The summary listed below is suggested to meet the primary code requirements and the functional needs for the space. These solutions are one of the many compliant options available to meet the lighting and control requirements.

Diagram Key:

● = New Construction = Lighting Retrofit[1] = New Construction and Lighting Retrofit[1]

			Atrium	Conference, Break Room	Classroom, Lecture Hall, Training Room	Corridor[2]	Lobby	Open Office (>250 sq. ft)	Private Office	Restroom	Stairwell[2]	Parking Garage[3]	Facade/ Landscape	Other[4]
Manual Control	Switch									●				
	Dimmer or Scene Control		●	●	●	●	●[5]	●	●		●			
Automatic ON/OFF Control	Timeclock												●	●
	Occupancy Sensor											●		
	Settings	Full ON												
		Partial ON						●						
		Manual ON	●											
		Full OFF											●	●
		Partial OFF				●						●		●
Other	Daylight Responsive Control		●	●	●	●	●	●		●	●	●		
	Receptacle Control				●			●	●					
	Demand Response													

[1] Retrofit requirements indicated are for lighting alterations greater than 10% of the connected load in a space.

[2] To comply with some life safety code requirements for egress illumination, automatic full OFF is not suggested. For non-egress areas, the occupancy sensor should turn the lights to full OFF and a switching control may be used.

[3] When typically occupied, the sensor provides Partial OFF functionality. When typically unoccupied, the sensor provides Full OFF functionality. For entrances and exits, daylight responsive control is not required nor recommended, and the maximum light level is set to 50% at night.

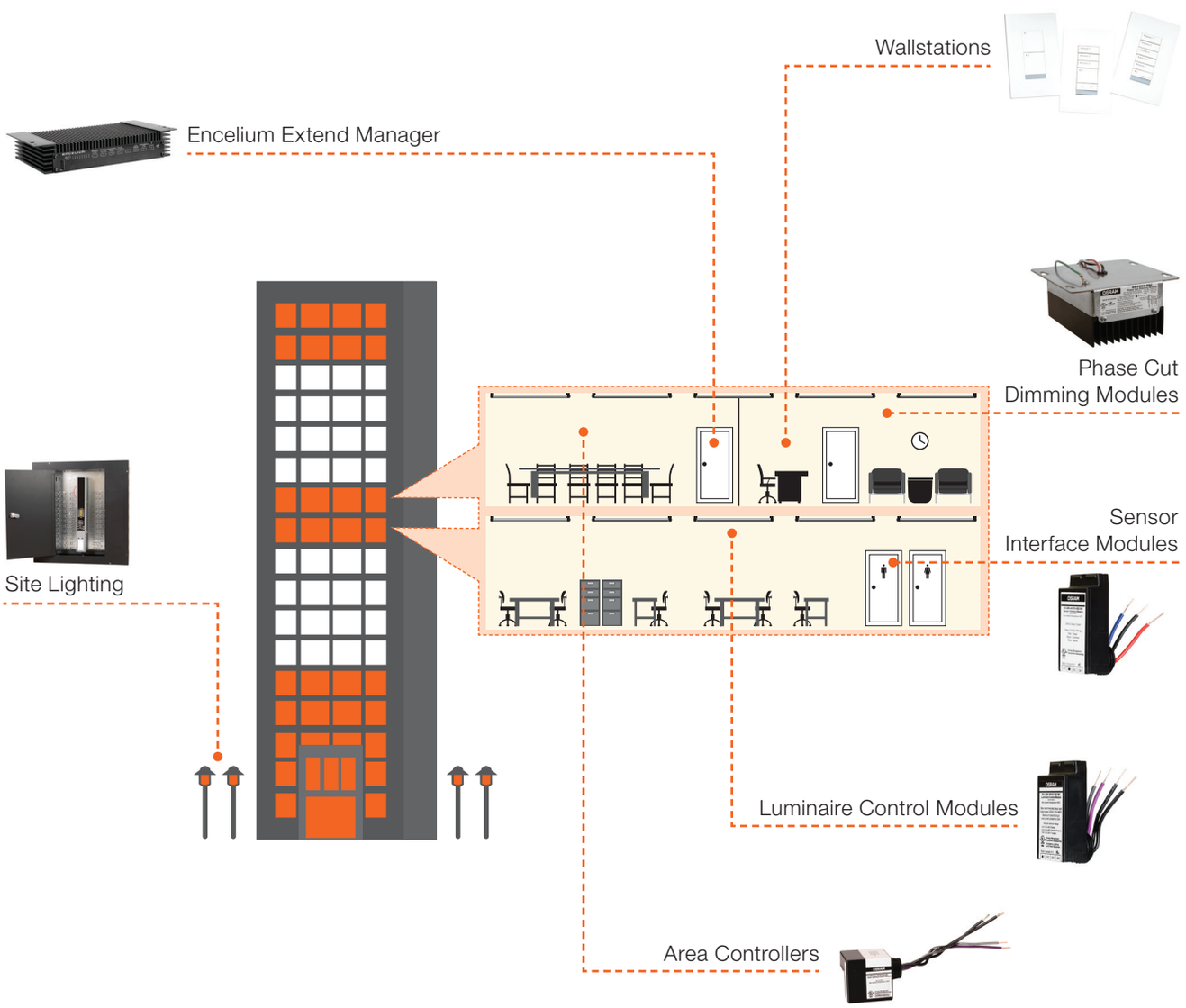
[4] Astronomical timeclock shall ensure all lights are off during daylight hours. Lights should be scheduled to Partial OFF during night hours.

[5] Multi-level or dimming capability is not required in non-daylit lobbies.

Wired System

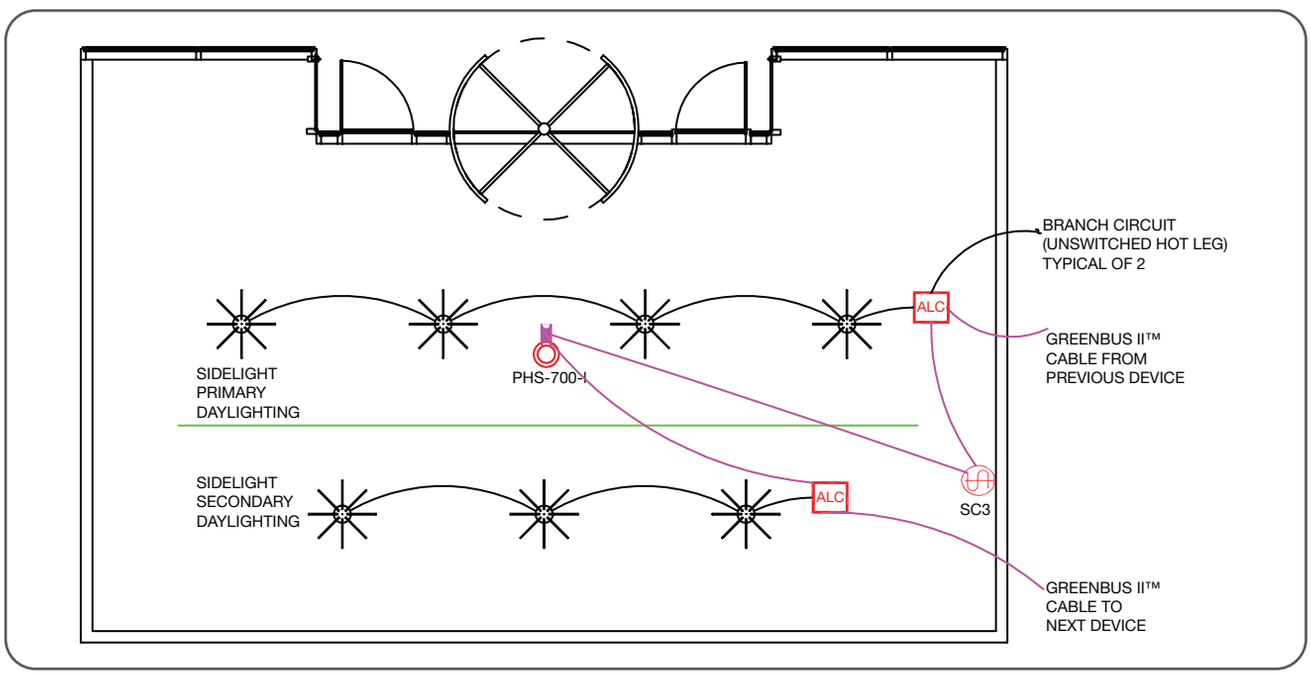
The simplest wired control ever

GreenBus is a distributed intelligence system designed to control a range of sources, provide high-bandwidth and the ultimate flexibility. It integrates low voltage power delivery and communication on a single bus. A two-wire non-polarized, input/output insensitive wiring scheme enables faster install time without the need for specialized training. It is truly the simplest wired system ever.



Atrium

ASHRAE 90.1-2010
Zonal Control
Wired System



LEGEND - ENCELIUM SYSTEM GB2 COMPONENTS

QTY	SYMBOL	DESCRIPTION
1	PHS-700-1	PHOTO SENSOR, INDOOR, CEILING MOUNT, INTERFACE W/ENCELIUM SENSOR INTERFACE MODULE (SIM). NOTE: SENSORS MUST BE LOCATED ACCORDING TO FURNITURE LAYOUT. CONSULT ENCELIUM TECHNOLOGIES INC.
1	SC3	ENCELIUM LOW VOLTAGE - SCENE CONTROL WALL STATION (SC3) - THREE SCENES.
2	ALC	AREA LIGHTING CONTROLLER - HEAVY DUTY RELAY W/0-10V DIMMING (ALC).
		GREENBUS™ CABLE. PRE-TERMINATED (18AWG X 2) MAXIMUM CONNECTED LENGTH OF WIRING IS 2500FT. PER CHANNEL.

SEQUENCE OF OPERATION

1. MANUAL ON/OFF AND FULL RANGE DIMMING CONTROL OF GENERAL LIGHTING WITH WALL SWITCH. OPTIONAL 3 SCENE CONTROL.
2. TIME SCHEDULE TURNS LIGHTS ON TO 50% DURING NORMALLY OCCUPIED HOURS.
3. AUTOMATIC DAYLIGHT RESPONSIVE CONTROL FOR SIDE LIGHTING.
   - NOT REQUIRED IF ROOM HAS <240SQFT OF GLAZING OR LIGHTING LOADS <120W, IN THE SIDELITE ZONE.

DESIGN CONSIDERATIONS

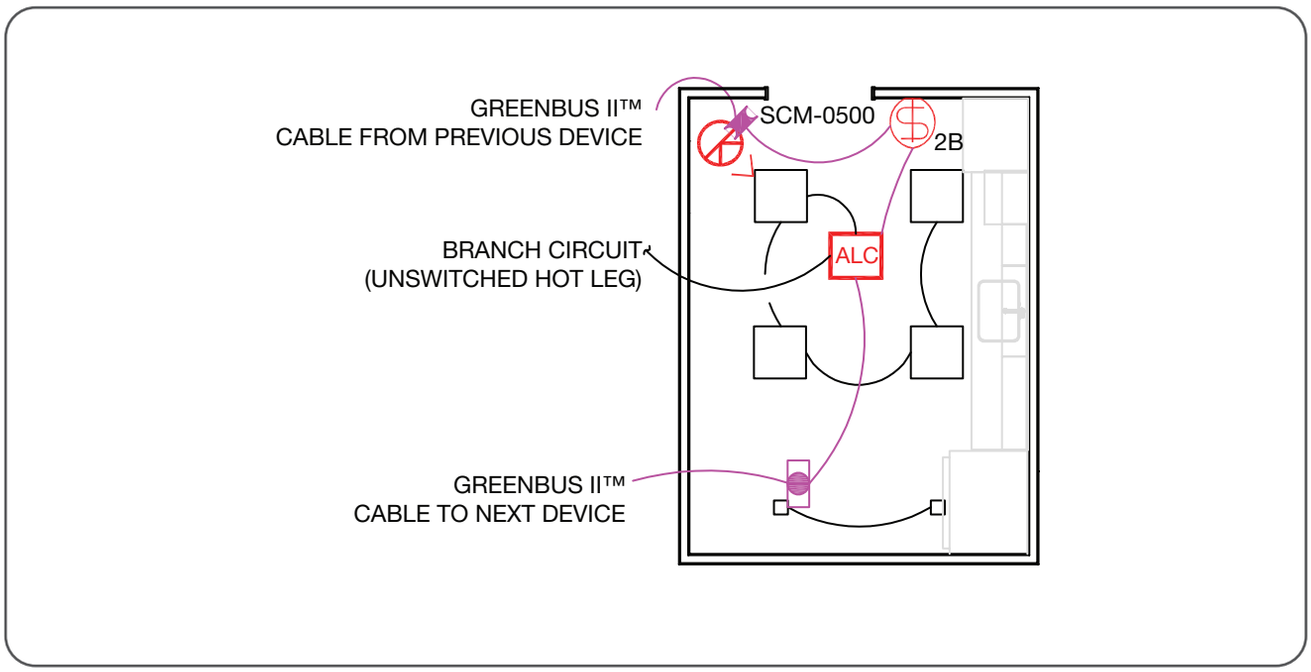
1. ENCELIUM BACKBONE IS NEEDED VIA SYSTEM SUPPORT UNIT (SSU) ALONG WITH A NETWORK SWITCH. (REF DATA SHEET. LMS054R3)
2. ENCELIUM EXTEND MANAGER (EEM) IS NEEDED WHICH CAN ACCOMMODATE UP TO 800 INDEPENDENT DEVICES. (REF DATA SHEET. LMS093R2)
3. IF EMERGENCY UL924 RATED DEVICE IS REQUIRED, ENCELIUM EXTEND MANAGER (EEM) IS RATED FOR CENTRAL SENSE, IF LOCAL SENSE IS REQUIRED A THIRD-PARTY DEVICE WILL BE NEEDED. (REF DATA SHEET. 1ESRN)

TYPICAL DESIGN WITH CONTROL INTENT

ILLUSTRATION ONLY, ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR APPLICATION SPECIFIC WIRING.

Break Room

ASHRAE 90.1-2010
Zonal Control
Wired System



LEGEND - ENCELIUM SYSTEM GB2 COMPONENTS

QTY	SYMBOL	DESCRIPTION
1	SCM-0500	OCCUPANCY/VACANCY SENSOR PIR/ ULTRASONIC MULTI-TECH, 180 DEG, 500 SQ. FT. COVERAGE, LOW VOLTAGE, CEILING MOUNT OCCUPANCY/VACANCY, W/ ENCELIUM SENSOR INTERFACE MODULE (SIM).
1	2B	ENCELIUM LOW VOLTAGE - 2 BUTTON SWITCH WALL STATION - (2B).
1	ALC PL	AREA LIGHTING CONTROLLER - HEAVY DUTY RELAY FOR PLUG LOAD (ALC).
1		SENSOR INTERFACE MODULE (SIM).
		GREENBUS™ CABLE. PRE-TERMINATED (18AWG X 2) MAXIMUM CONNECTED LENGTH OF WIRING IS 2500FT. PER CHANNEL.

SEQUENCE OF OPERATION

1. AUTO ON TO 50% VIA OCCUPANCY SENSING.
2. MANUAL ON/OFF AND FULL RANGE DIMMING CONTROL OF GENERAL LIGHTING.

DESIGN CONSIDERATIONS

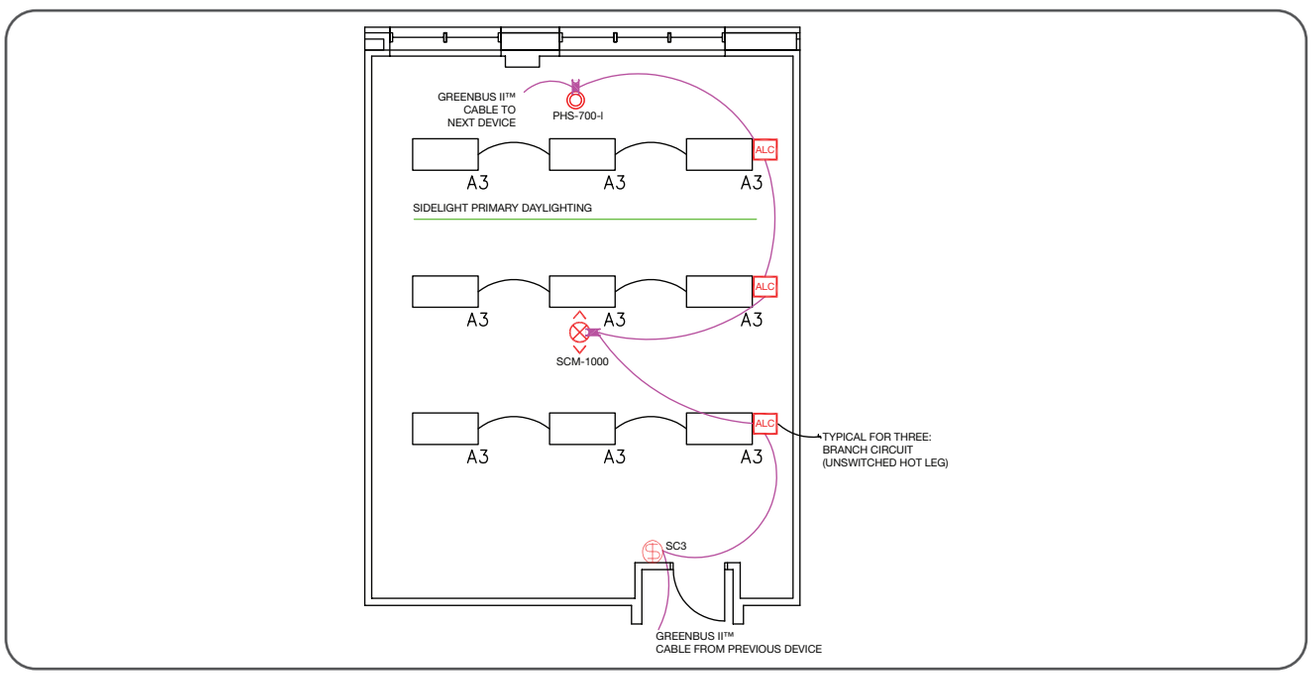
1. ENCELIUM BACKBONE IS NEEDED VIA SYSTEM SUPPORT UNIT (SSU) ALONG WITH A NETWORK SWITCH. (REF DATA SHEET. LMS054R3)
2. ENCELIUM EXTEND MANAGER (EEM) IS NEEDED WHICH CAN ACCOMMODATE UP TO 800 INDEPENDENT DEVICES. (REF DATA SHEET. LMS093R2)
3. IF EMERGENCY UL924 RATED DEVICE IS REQUIRED, ENCELIUM EXTEND MANAGER (EEM) IS RATED FOR CENTRAL SENSE, IF LOCAL SENSE IS REQUIRED A THIRD-PARTY DEVICE WILL BE NEEDED. (REF DATA SHEET. 1ESRN)
4. WHEN THE PRIMARY SIDELIGHT AREA IS 250FT^2 OR LARGER, IT MUST HAVE AUTOMATIC DAYLIGHT RESPONSIVE CONTROLS INSTALLED FOR ALL GENERAL LIGHTING IN THAT AREA.

TYPICAL DESIGN WITH CONTROL INTENT

ILLUSTRATION ONLY, ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR APPLICATION SPECIFIC WIRING.

Classroom

ASHRAE 90.1-2010
Zonal Control
Wired System



LEGEND - ENCELIUM SYSTEM GB2 COMPONENTS

QTY	SYMBOL	DESCRIPTION
1	SCM-1000	OCCUPANCY SENSOR, PIR/ ULTRASONIC MULTI-TECH 360DEG WIDE VIEW, 1000SQFT COVERAGE, LOW VOLTAGE, CEILING MOUNT. W/ ENCELIUM SENSOR INTERFACE MODULE (SIM).
1	PHS-700-1	PHOTO SENSOR, INDOOR, CEILING MOUNT, INTERFACE W/ENCELIUM SENSOR INTERFACE MODULE (SIM). NOTE: SENSORS MUST BE LOCATED ACCORDING TO FURNITURE LAYOUT. CONSULT ENCELIUM TECHNOLOGIES INC.
1	SC3	ENCELIUM LOW VOLTAGE - SCENE CONTROL WALL STATION (SC3) - THREE SCENES.
3	ALC	AREA LIGHTING CONTROLLER - HEAVY DUTY RELAY W/0-10V DIMMING (ALC).
		GREENBUS™ CABLE. PRE-TERMINATED (18AWG X 2) MAXIMUM CONNECTED LENGTH OF WIRING IS 2500FT. PER CHANNEL.

SEQUENCE OF OPERATION

1. AUTO ON TO 50% OR CONTROLLED MANUALLY AUTO ON WHEN OCCUPANCY DETECTED. TURN OFF AFTER VACANCY OF 30MINS.
2. MANUAL ON/OFF AND FULL RANGE DIMMING CONTROL OF GENERAL LIGHTING WITH WALL SWITCH. OPTIONAL 3 SCENE CONTROL.
3. AUTOMATIC DAYLIGHT RESPONSIVE CONTROL FOR SIDE LIGHTING.
4. AUTO OFF ALL LIGHTING WITHIN 30 MINUTES OF OCCUPANTS LEAVING.

DESIGN CONSIDERATIONS

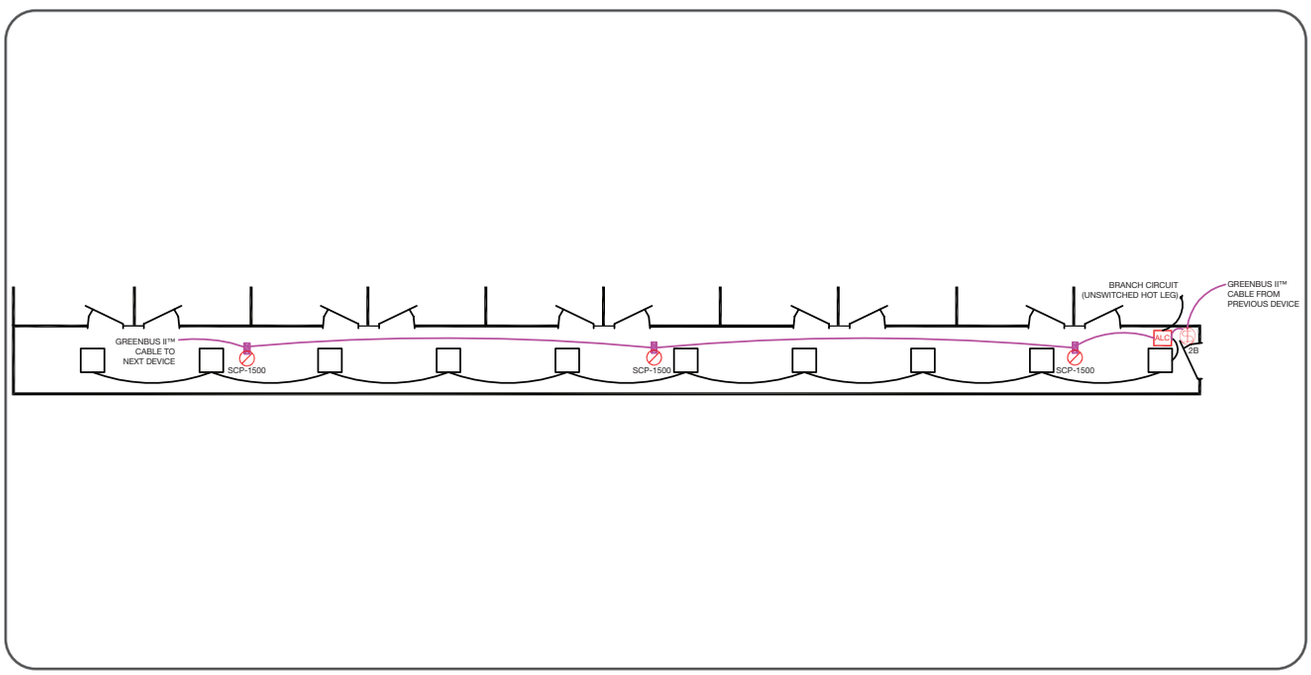
1. ENCELIUM BACKBONE IS NEEDED VIA SYSTEM SUPPORT UNIT (SSU) ALONG WITH A NETWORK SWITCH. (REF DATA SHEET. LMS054R3)
2. ENCELIUM EXTEND MANAGER (EEM) IS NEEDED WHICH CAN ACCOMMODATE UP TO 800 INDEPENDENT DEVICES. (REF DATA SHEET. LMS093R2)
3. IF EMERGENCY UL924 RATED DEVICE IS REQUIRED, ENCELIUM EXTEND MANAGER (EEM) IS RATED FOR CENTRAL SENSE, IF LOCAL SENSE IS REQUIRED A THIRD-PARTY DEVICE WILL BE NEEDED. (REF DATA SHEET. 1ESRN)
4. PER CODE PLUG-LOAD CONTROLS ARE REQUIRED FOR NEW CONSTRUCTION.

TYPICAL DESIGN WITH CONTROL INTENT

ILLUSTRATION ONLY, ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR APPLICATION SPECIFIC WIRING.

Corridor

ASHRAE 90.1-2010
Zonal Control
Wired System



LEGEND - ENCELIUM SYSTEM GB2 COMPONENTS

QTY	SYMBOL	DESCRIPTION
3	SCP-1500	OCCUPANCY SENSOR, PIR, 360DEG. 1500 SQ. FT. COVERAGE, LOW VOLTAGE, CEILING MOUNT. W/ ENCELIUM SENSOR INTERFACE MODULE (SIM).
1	2B	ENCELIUM LOW VOLTAGE - 2 BUTTON SWITCH WALL STATION - (2B).
1	ALC	AREA LIGHTING CONTROLLER - HEAVY DUTY RELAY W/0-10V DIMMING (ALC).
		GREENBUS™ CABLE. PRE-TERMINATED (18AWG X 2) MAXIMUM CONNECTED LENGTH OF WIRING IS 2500FT. PER CHANNEL.

SEQUENCE OF OPERATION

1. LIGHTS AUTOMATICALLY GO TO INDIVIDUAL BRIGHT WHEN OCCUPIED LIGHTS AUTOMATICALLY TURN OFF OR OPTIONAL DIM TO LOW WHEN SPACE BECOMES VACANT.
2. MANUAL ON/OFF AND FULL RANGE DIMMING CONTROL OF ENTIRE SPACE.

DESIGN CONSIDERATIONS

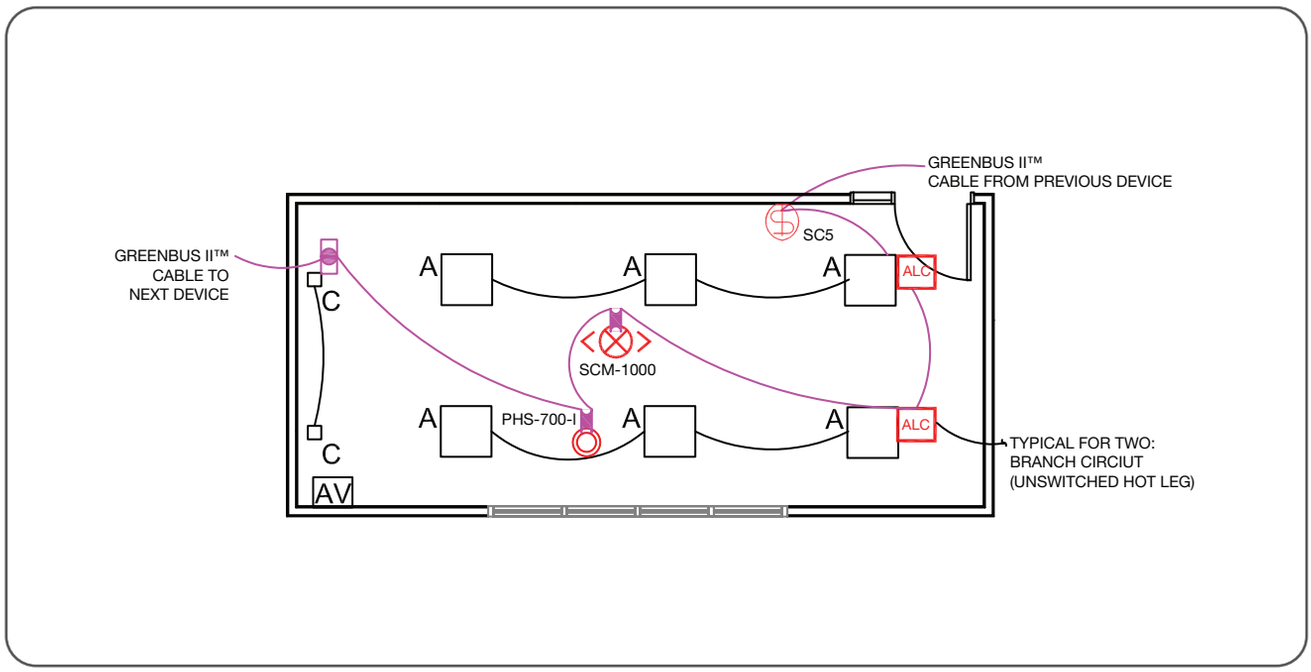
1. ENCELIUM BACKBONE IS NEEDED VIA SYSTEM SUPPORT UNIT (SSU) ALONG WITH A NETWORK SWITCH. (REF DATA SHEET. LMS054R3)
2. ENCELIUM EXTEND MANAGER (EEM) IS NEEDED WHICH CAN ACCOMMODATE UP TO 800 INDEPENDENT DEVICES. (REF DATA SHEET. LMS093R2)
3. TIME BASED CONTROLS CAN BE ENABLED AND INTEGRATION WITH BUILDING MANAGEMENT SYSTEM.
4. IF EMERGENCY UL924 RATED DEVICE IS REQUIRED, ENCELIUM EXTEND MANAGER (EEM) IS RATED FOR CENTRAL SENSE, IF LOCAL SENSE IS REQUIRED A THIRD-PARTY DEVICE WILL BE NEEDED. (REF DATA SHEET. 1ESRN)

TYPICAL DESIGN WITH CONTROL INTENT

ILLUSTRATION ONLY, ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR APPLICATION SPECIFIC WIRING.

Large Conference Room

ASHRAE 90.1-2010
Zonal Control
Wired System



LEGEND - ENCELIUM SYSTEM GB2 COMPONENTS

QTY	SYMBOL	DESCRIPTION
1	SCM-1000	OCCUPANCY SENSOR, PIR/ ULTRASONIC MULTI-TECH 360DEG WIDE VIEW, 1000SQFT COVERAGE, LOW VOLTAGE, CEILING MOUNT. W/ ENCELIUM SENSOR INTERFACE MODULE (SIM).
1	PHS-700-1	PHOTO SENSOR, INDOOR, CEILING MOUNT, INTERFACE W/ENCELIUM SENSOR INTERFACE MODULE (SIM). NOTE: SENSORS MUST BE LOCATED ACCORDING TO FURNITURE LAYOUT. CONSULT ENCELIUM TECHNOLOGIES INC.
1	SC5	ENCELIUM LOW VOLTAGE - SCENE CONTROL WALL STATION (SC5) ENCELIUM - FIVE SCENES.
1		LUMINAIRE CONTROL MODULE (LCM).
2	ALC	AREA LIGHTING CONTROLLER - HEAVY DUTY RELAY W/0-10V DIMMING (ALC).
		GREENBUS™ CABLE. PRE-TERMINATED (18AWG X 2) MAXIMUM CONNECTED LENGTH OF WIRING IS 2500FT. PER CHANNEL.

SEQUENCE OF OPERATION

1. AUTO ON TO 50% OR CONTROLLED MANUALLY AUTO ON WHEN OCCUPANCY DETECTED. TURN OFF AFTER VACANCY OF 30MINS.
2. MANUAL ON/OFF AND FULL RANGE DIMMING CONTROL OF GENERAL LIGHTING WITH WALL SWITCH. OPTIONAL 3 SCENE CONTROL.
3. DAYLIGHT HARVESTING IS NOT REQUIRED IF SPACE WITHOUT SIDELIT AREAS <250FT^2.
4. AUTO OFF ALL LIGHTING WITHIN 30 MINUTES OF OCCUPANTS LEAVING.

DESIGN CONSIDERATIONS

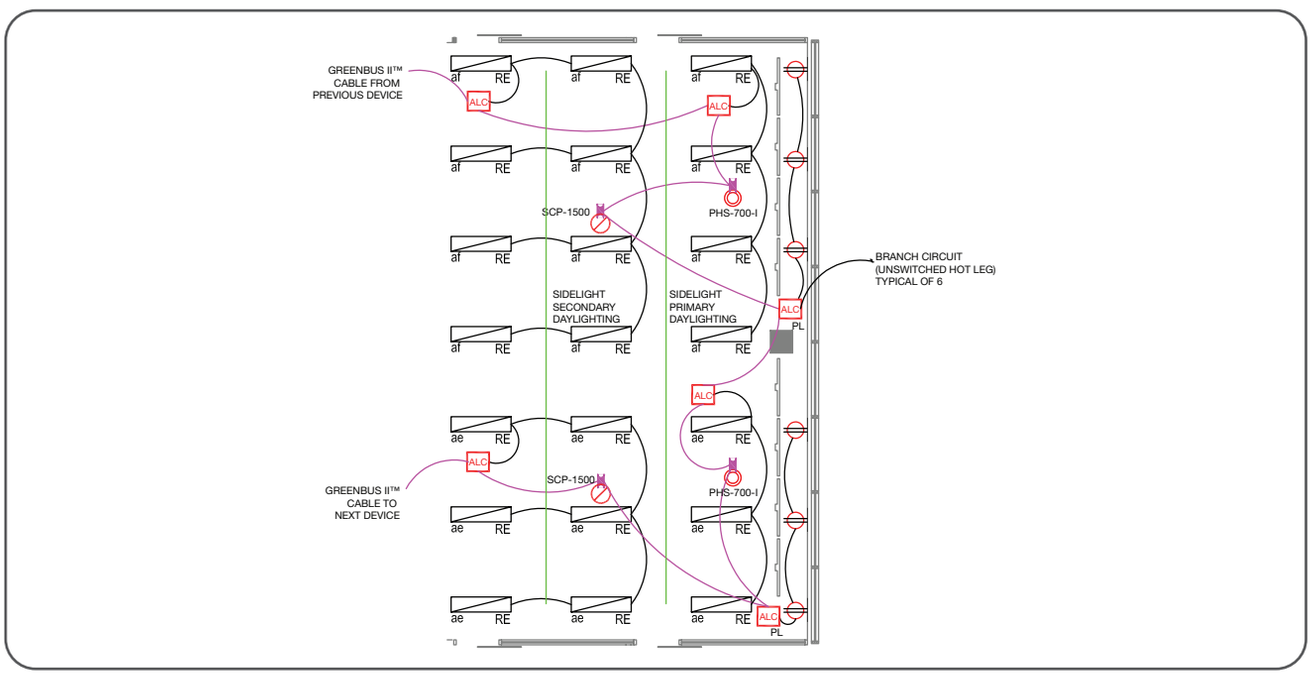
1. ENCELIUM BACKBONE IS NEEDED VIA SYSTEM SUPPORT UNIT (SSU) ALONG WITH A NETWORK SWITCH. (REF DATA SHEET. LMS054R3)
2. ENCELIUM EXTEND MANAGER (EEM) IS NEEDED WHICH CAN ACCOMMODATE UP TO 800 INDEPENDENT DEVICES. (REF DATA SHEET. LMS093R2)
3. IF EMERGENCY UL924 RATED DEVICE IS REQUIRED, ENCELIUM EXTEND MANAGER (EEM) IS RATED FOR CENTRAL SENSE, IF LOCAL SENSE IS REQUIRED A THIRD-PARTY DEVICE WILL BE NEEDED. (REF DATA SHEET. 1ESRN)

TYPICAL DESIGN WITH CONTROL INTENT

ILLUSTRATION ONLY, ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR APPLICATION SPECIFIC WIRING.

Open Office

ASHRAE 90.1-2010
Zonal Control
Wired System



LEGEND - ENCELIUM SYSTEM GB2 COMPONENTS

QTY	SYMBOL	DESCRIPTION
2	SCP-1500	OCCUPANCY SENSOR, PIR, 360DEG, 1500 SQ.FT. COVERAGE. LOW VOLTAGE, CEILING MOUNT. W/ ENCELIUM SENSOR INTERFACE MODULE (SIM).
2	PHS-700-1	PHOTO SENSOR, INDOOR, CEILING MOUNT, INTERFACE W/ENCELIUM SENSOR INTERFACE MODULE (SIM). NOTE: SENSORS MUST BE LOCATED ACCORDING TO FURNITURE LAYOUT. CONSULT ENCELIUM TECHNOLOGIES INC.
4	ALC	AREA LIGHTING CONTROLLER - HEAVY DUTY RELAY W/0-10V DIMMING (ALC).
2	ALC PL	AREA LIGHTING CONTROLLER - HEAVY DUTY RELAY FOR PLUG LOAD (ALC).
4		SENSOR INTERFACE MODULE (SIM).
		GREENBUS™ CABLE. PRE-TERMINATED (18AWG X 2) MAXIMUM CONNECTED LENGTH OF WIRING IS 2500FT. PER CHANNEL.

SEQUENCE OF OPERATION

1. GENERAL LIGHTING AUTO ON TO 50% AND CONTROLLED RECEPTACLES AUTO ON WHEN OCCUPANCY DETECTED.
2. MANUAL FOR ON/OFF AND FULL DIMMING CONTROL OF GENERAL LIGHTING WITH WALL SWITCH, OPTIONAL THREE/SIX ZONE WALL STATION CONTROLLER (ZC3 OR ZC6).
3. AUTOMATIC DAYLIGHT RESPONSIVE CONTROL FOR SIDE LIGHTING.
4. AUTO OFF ALL LIGHTING WITHIN 30 MINUTES OF OCCUPANTS LEAVING.

DESIGN CONSIDERATIONS

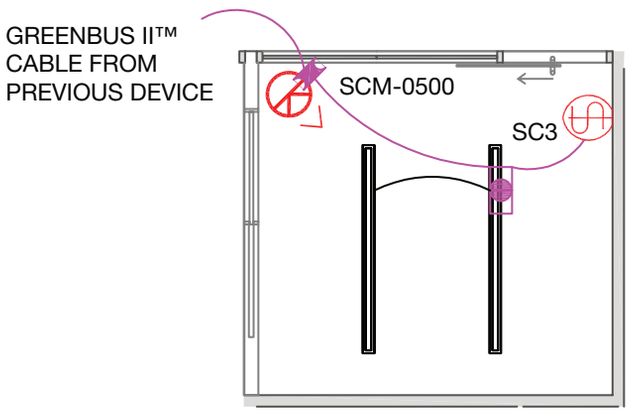
1. ENCELIUM BACKBONE IS NEEDED SUPPORT UNIT (SSU) ALONG WITH A SYSTEM SUPPORT UNIT (SSU), ALONG WITH A NETWORK SWITCH. (REF DATA SHEET. LMS054R3)
2. ENCELIUM EXTEND MANAGER (EEM) IS NEEDED WHICH CAN ACCOMMODATE UP TO 800 INDEPENDENT DEVICES. (REF DATA SHEET. LMS093R2)
3. IF EMERGENCY UL924 RATED DEVICE IS REQUIRED, ENCELIUM EXTEND MANAGER (EEM) IS RATED FOR CENTRAL SENSE, IF LOCAL SENSE IS REQUIRED A THIRD-PARTY DEVICE WILL BE NEEDED. (REF DATA SHEET. 1ESRN)
4. PER CODE PLUG-LOAD CONTROLS ARE REQUIRED FOR NEW CONSTRUCTION.

TYPICAL DESIGN WITH CONTROL INTENT

ILLUSTRATION ONLY, ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR APPLICATION SPECIFIC WIRING.

Private Office

ASHRAE 90.1-2010
Zonal Control
Wired System



LEGEND - ENCELIUM SYSTEM GB2 COMPONENTS

QTY	SYMBOL	DESCRIPTION
1	SCM-0500	OCCUPANCY/VACANCY SENSOR PIR/ ULTRASONIC MULTI-TECH, 180 DEG, 500 SQ. FT. COVERAGE, LOW VOLTAGE, CEILING MOUNT OCCUPANCY, W/ENCELIUM SENSOR INTERFACE MODULE (SIM).
1	2B	ENCELIUM LOW VOLTAGE - 2 BUTTON SWITCH WALL STATION - (2B).
1		LUMINAIRE CONTROL MODULE (LCM).
		GREENBUS™ CABLE. PRE-TERMINATED (18AWG X 2) MAXIMUM CONNECTED LENGTH OF WIRING IS 2500FT. PER CHANNEL.

SEQUENCE OF OPERATION

1. AUTO ON TO 50% OR CONTROLLED MANUALLY AUTO ON WHEN OCCUPANCY DETECTED. TURN OFF AFTER VACANCY OF 30MINS.
2. MANUAL ON/OFF AND FULL RANGE DIMMING CONTROL OF GENERAL LIGHTING WITH WALL SWITCH.
3. AUTOMATIC DAYLIGHT RESPONSIVE CONTROL FOR SIDE LIGHTING.
   - NOT REQUIRED IF ROOM HAS <240SQFT OF GLAZING OR LIGHTING LOADS < 120W, IN THE SIDELITE ZONE.
4. AUTO OFF ALL LIGHTING WITHIN 30 MINUTES OF OCCUPANTS LEAVING.

DESIGN CONSIDERATIONS

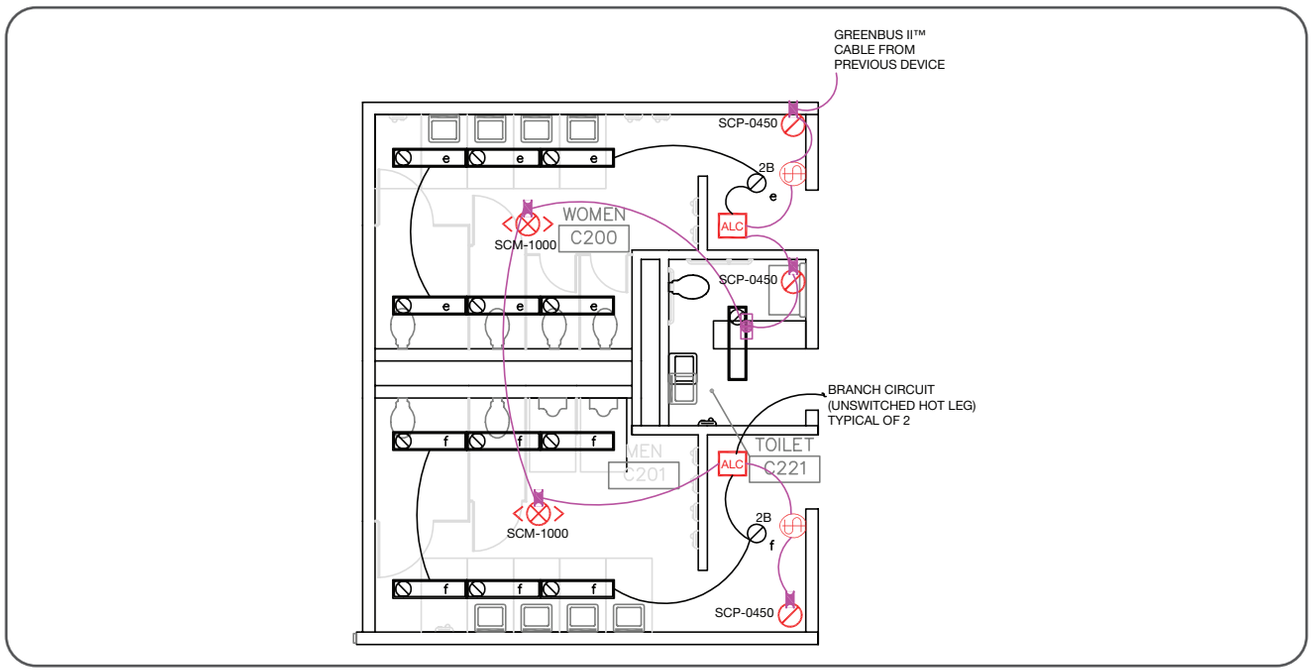
1. ENCELIUM BACKBONE IS NEEDED VIA SYSTEM SUPPORT UNIT (SSU) ALONG WITH A NETWORK SWITCH. (REF DATA SHEET. LMS054R3)
2. ENCELIUM EXTEND MANAGER (EEM) IS NEEDED WHICH CAN ACCOMMODATE UP TO 800 INDEPENDENT DEVICES. (REF DATA SHEET. LMS093R2)
3. IF EMERGENCY UL924 RATED DEVICE IS REQUIRED, ENCELIUM EXTEND MANAGER (EEM) IS RATED FOR CENTRAL SENSE, IF LOCAL SENSE IS REQUIRED A THIRD-PARTY DEVICE WILL BE NEEDED. (REF DATA SHEET. 1ESRN)
4. PER CODE PLUG-LOAD CONTROLS ARE REQUIRED FOR NEW CONSTRUCTION.

TYPICAL DESIGN WITH CONTROL INTENT

ILLUSTRATION ONLY, ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR APPLICATION SPECIFIC WIRING.

Restroom & Private Washroom

ASHRAE 90.1-2010
Zonal Control
Wired System



LEGEND - ENCELIUM SYSTEM GB2 COMPONENTS

QTY	SYMBOL	DESCRIPTION
2	SCM-1000	OCCUPANCY SENSOR, PIR/ ULTRASONIC MULTI-TECH 360DEG WIDE VIEW, 1000SQFT COVERAGE, LOW VOLTAGE, CEILING MOUNT. W/ ENCELIUM SENSOR INTERFACE MODULE (SIM).
1	SCP-0450	OCCUPANCY SENSOR, PIR, 360DEG, 450 SQ. FT. COVERAGE, LOW VOLTAGE CEILING MOUNT. W/ ENCELIUM SENSOR INTERFACE MODULE (SIM).
2	2B	ENCELIUM LOW VOLTAGE - 2 BUTTON SWITCH WALL STATION - (2B).
1		LUMINAIRE CONTROL MODULE (LCM).
2	ALC	AREA LIGHTING CONTROLLER - HEAVY DUTY RELAY W/0-10V DIMMING (ALC).
		GREENBUS™ CABLE. PRE-TERMINATED (18AWG X 2) MAXIMUM CONNECTED LENGTH OF WIRING IS 2500FT. PER CHANNEL.

SEQUENCE OF OPERATION

1. FOR EACH RESTROOM INDEPENDENTLY, LIGHTING AUTO ON TO 100% WHEN OCCUPANCY DETECTED. TURN OFF AFTER VACANCY OF 30MINS.
2. MANUAL ON/OFF AND FULL RANGE DIMMING CONTROL OF GENERAL LIGHTING WITH WALL SWITCH.

DESIGN CONSIDERATIONS

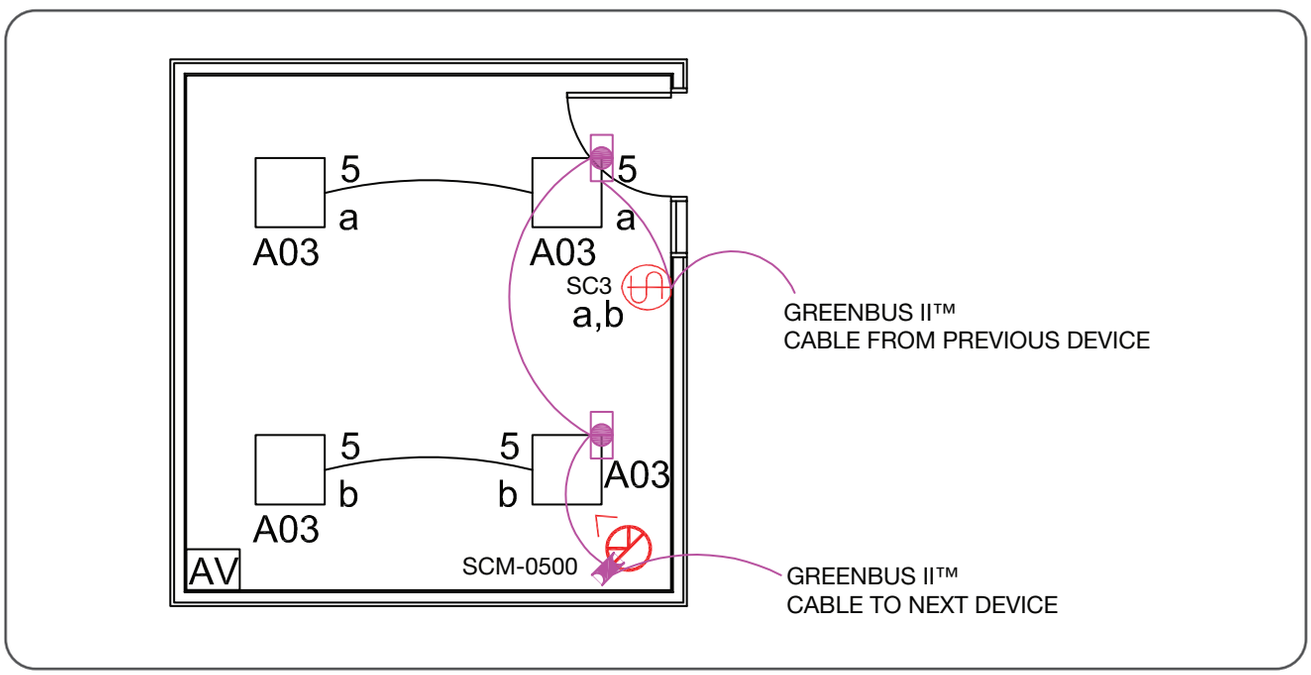
1. ENCELIUM BACKBONE IS NEEDED SYSTEM SUPPORT UNIT (SSU) ALONG WITH A NETWORK SWITCH. (REF DATA SHEET. LMS054R3)
2. ENCELIUM EXTEND MANAGER (EEM) IS NEEDED WHICH CAN ACCOMMODATE UP TO 800 INDEPENDENT DEVICES. (REF DATA SHEET. LMS093R2)
3. IF EMERGENCY UL924 RATED DEVICE IS REQUIRED, ENCELIUM EXTEND MANAGER (EEM) IS RATED FOR CENTRAL SENSE, IF LOCAL SENSE IS REQUIRED A THIRD-PARTY DEVICE WILL BE NEEDED. (REF DATA SHEET. 1ESRN)

TYPICAL DESIGN WITH CONTROL INTENT

ILLUSTRATION ONLY, ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR APPLICATION SPECIFIC WIRING.

Small Conference Room

ASHRAE 90.1-2010
Zonal Control
Wired System



LEGEND - ENCELIUM SYSTEM GB2 COMPONENTS

QTY	SYMBOL	DESCRIPTION
1	SCM-0500	OCCUPANCY/VACANCY SENSOR PIR/ ULTRASONIC MULTI-TECH, 180 DEG, 500 SQ. FT. COVERAGE, LOW VOLTAGE, CEILING MOUNT OCCUPANCY, W/ ENCELIUM SENSOR INTERFACE MODULE (SIM).
1	SC3	ENCELIUM LOW VOLTAGE - SCENE CONTROL WALL STATION (SC3) - THREE SCENES.
2		LUMINAIRE CONTROL MODULE (LCM).
		GREENBUS™ CABLE. PRE-TERMINATED (18AWG X 2) MAXIMUM CONNECTED LENGTH OF WIRING IS 2500FT. PER CHANNEL.

SEQUENCE OF OPERATION

1. AUTO ON TO 50% OR CONTROLLED MANUALLY AUTO ON WHEN OCCUPANCY DETECTED. TURN OFF AFTER VACANCY OF 30MINS.
2. MANUAL ON/OFF AND FULL RANGE DIMMING CONTROL OF GENERAL LIGHTING WITH WALL SWITCH. OPTIONAL 3 SCENE CONTROL.
3. AUTO OFF ALL LIGHTING WITHIN 30 MINUTES OF OCCUPANTS LEAVING.

DESIGN CONSIDERATIONS

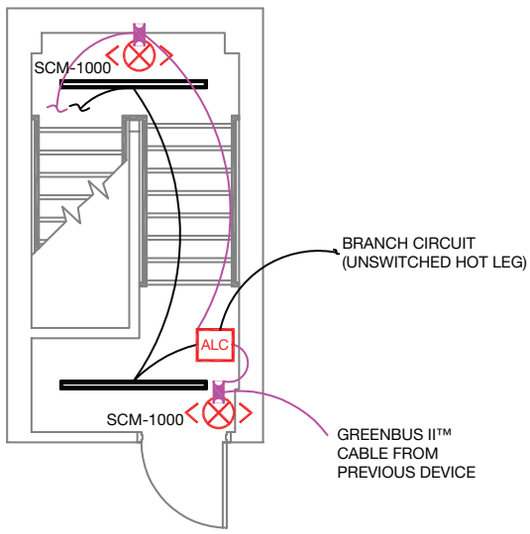
1. ENCELIUM BACKBONE IS NEEDED SYSTEM SUPPORT UNIT (SSU) ALONG WITH A NETWORK SWITCH. (REF DATA SHEET. LMS054R3)
2. ENCELIUM EXTEND MANAGER (EEM) IS NEEDED WHICH CAN ACCOMMODATE UP TO 800 INDEPENDENT DEVICES. (REF DATA SHEET. LMS093R2)
3. IF EMERGENCY UL924 RATED DEVICE IS REQUIRED, ENCELIUM EXTEND MANAGER (EEM) IS RATED FOR CENTRAL SENSE, IF LOCAL SENSE IS REQUIRED A THIRD-PARTY DEVICE WILL BE NEEDED. (REF DATA SHEET. 1ESRN)
4. DAYLIGHT HARVESTING IS NOT REQUIRED IF SPACE WITHOUT SIDE LIT AREAS <250FT^2.

TYPICAL DESIGN WITH CONTROL INTENT

ILLUSTRATION ONLY, ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR APPLICATION SPECIFIC WIRING.

Stairwell

ASHRAE 90.1-2010
Zonal Control
Wired System



LEGEND - ENCELIUM SYSTEM GB2 COMPONENTS

QTY	SYMBOL	DESCRIPTION
2	SCM-1000	OCCUPANCY SENSOR, PIR/ ULTRASONIC MULTI-TECH 360DEG WIDE VIEW, 1000SQFT COVERAGE. LOW VOLTAGE, CEILING MOUNT. W/ ENCELIUM SENSOR INTERFACE MODULE (SIM). ONE AT EACH STAIRWELL LANDING.
1	ALC	AREA LIGHTING CONTROLLER - HEAVY DUTY RELAY W/0-10V DIMMING (ALC). ONE PER CIRCUIT.
		GREENBUS™ CABLE. PRE-TERMINATED (18AWG X 2) MAXIMUM CONNECTED LENGTH OF WIRING IS 2500FT. PER CHANNEL.

SEQUENCE OF OPERATION

1. LIGHTS AUTOMATICALLY GO TO FULL BRIGHT WHEN OCCUPANCY DETECTED. DIMMED TO 50% WHEN SPACE BECOMES VACANT.
2. ALL LIGHTS WILL AUTOMATICALLY TURN ON TO MAXIMUM LIGHT LEVEL. MAXIMUM LIGHT LEVEL IS SET TO 80%.
3. ALL LIGHTS WILL DIM TO MINIMUM LIGHT LEVEL 15 MINUTES AFTER ALL OCCUPANTS EXIT. MINIMUM LIGHT LEVEL IS SET TO 10%.

DESIGN CONSIDERATIONS

1. ENCELIUM BACKBONE IS NEEDED SYSTEM SUPPORT UNIT (SSU) ALONG WITH A NETWORK SWITCH. (REF DATA SHEET. LMS054R3)
2. ENCELIUM EXTEND MANAGER (EEM) IS NEEDED WHICH CAN ACCOMMODATE UP TO 800 INDEPENDENT DEVICES. (REF DATA SHEET. LMS093R2)
3. IF EMERGENCY UL924 RATED DEVICE IS REQUIRED, ENCELIUM EXTEND MANAGER (EEM) IS RATED FOR CENTRAL SENSE, IF LOCAL SENSE IS REQUIRED A THIRD-PARTY DEVICE WILL BE NEEDED. (REF DATA SHEET. 1ESRN)

TYPICAL DESIGN WITH CONTROL INTENT

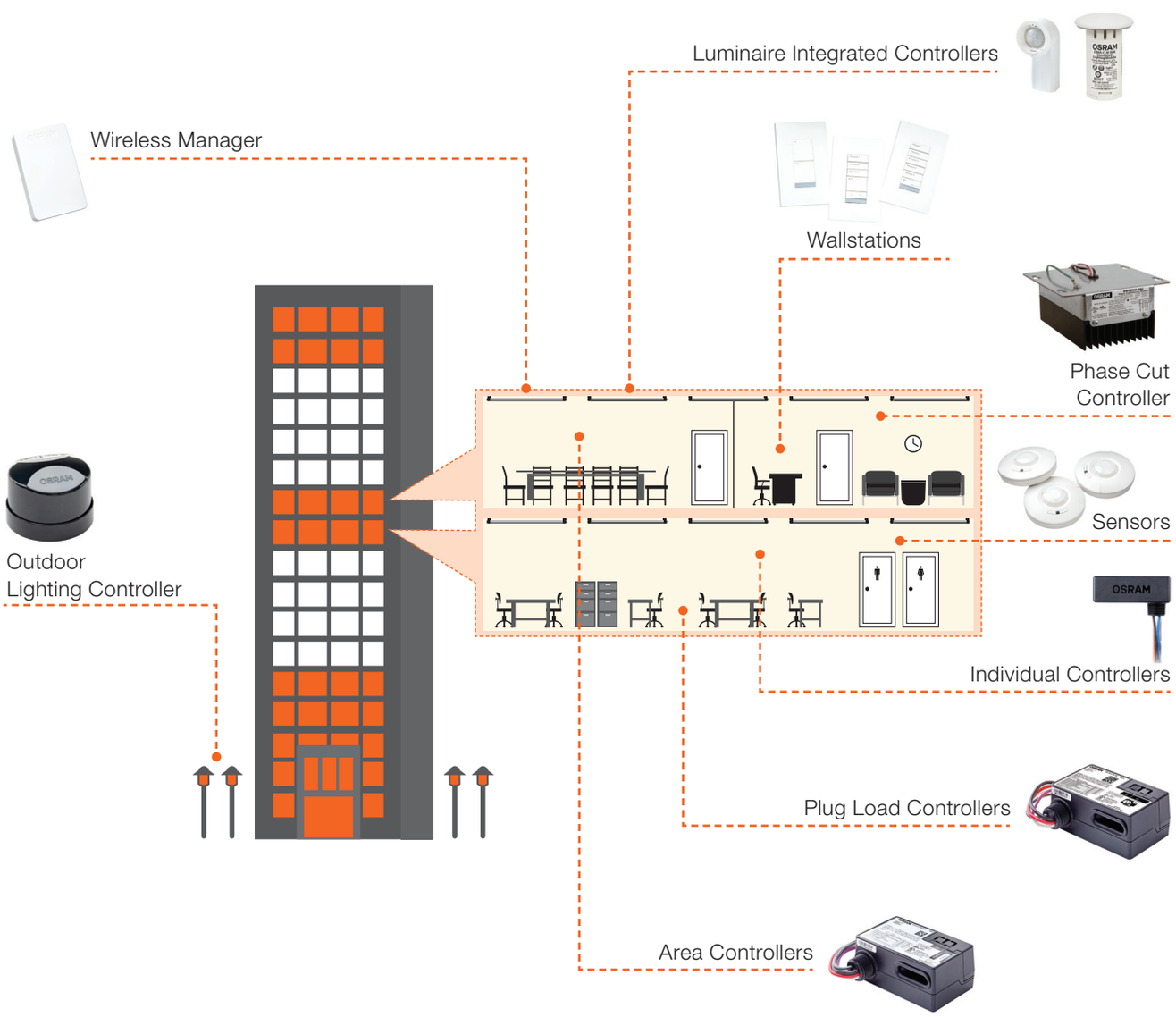
ILLUSTRATION ONLY, ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR APPLICATION SPECIFIC WIRING.

Wireless System

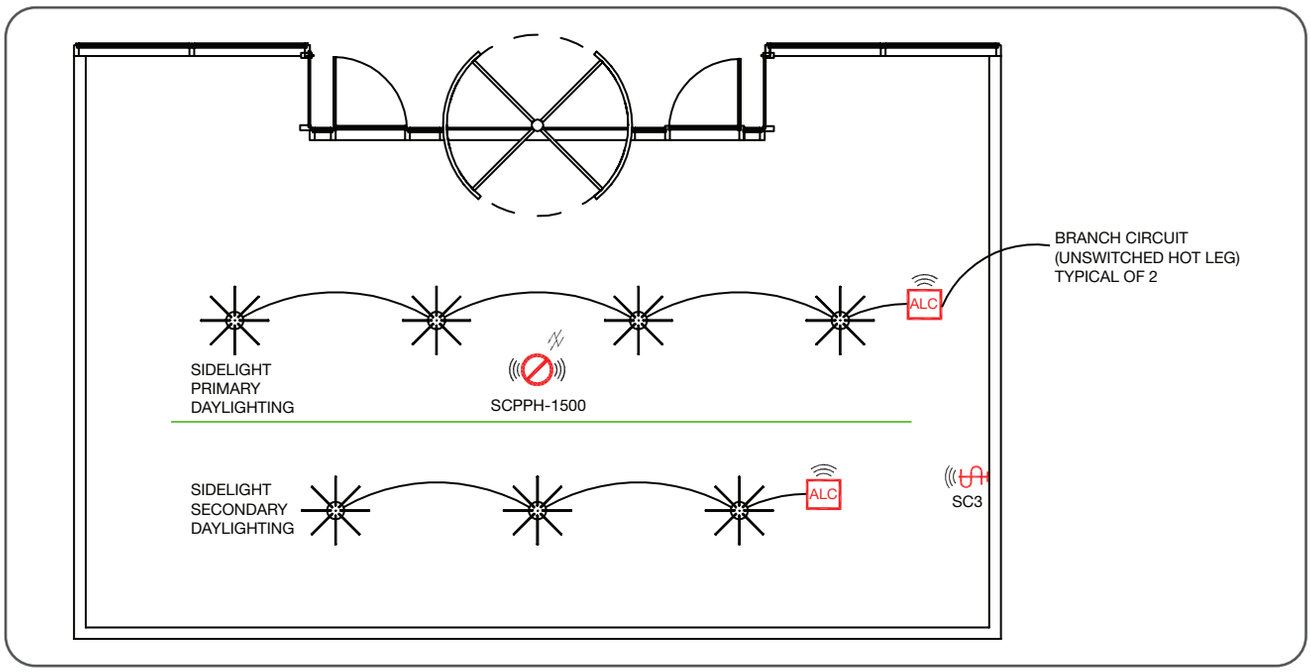
Design a system that adapts

Encelium wireless is a simple, reliable and a truly scalable lighting controls system for indoor and outdoor applications. Using a handful of components, it enables a space to meet code and beyond. The mesh topology, self-healing capability and auto channel hopping allow deployments of thousands of nodes in a building. Moreover, with native GreenBus fundamentally built into every device, adopting a wireless system without batteries has never been easier.

With a large breadth of wireless devices including luminaire integrated controls, Encelium Wireless radically simplifies install for electrical contractors.



Atrium



LEGEND - ENCELIUM SYSTEM WIRELESS COMPONENTS

QTY	SYMBOL	DESCRIPTION
1	SCPPH-0450	ENCELIUM WIRELESS OCCUPANCY SENSOR, PIR, 360DEG, 450 SQ. FT. COVERAGE, SELF-ADJUSTING, LOW VOLTAGE, CEILING MOUNT. WITH INTEGRATED DAYLIGHT SENSOR ( ) FEATURE CAN BE ENABLED/ DISABLED VIA POLARIS.
1	SC3	ENCELIUM WIRELESS 3-SCENE CONTROLLER (WALL CONTROLLER), 3-SCENES, CONFIGURABLE.
2	ALC	WIRELESS AREA LIGHTING CONTROLLER (WALC).

SEQUENCE OF OPERATION

1. MANUAL ON/OFF AND FULL RANGE DIMMING CONTROL OF GENERAL LIGHTING WITH WALL SWITCH. OPTIONAL 3 SCENE CONTROL.
2. TIME SCHEDULE TURNS LIGHTS ON TO 50% DURING NORMALLY OCCUPIED HOURS.
3. AUTOMATIC DAYLIGHT RESPONSIVE CONTROL FOR SIDE LIGHTING.
   - NOT REQUIRED IF ROOM HAS <240SQFT OF GLAZING OR LIGHTING LOADS <120W, IN THE SIDELITE ZONE.

DESIGN CONSIDERATIONS

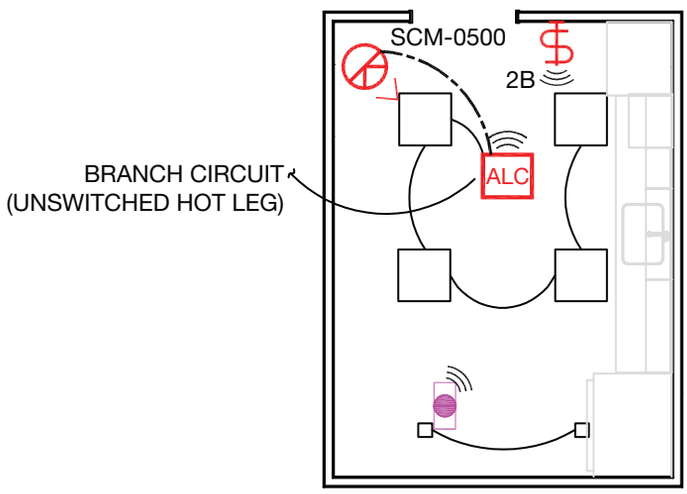
1. ENCELIUM BACKBONE IS NEEDED SYSTEM SUPPORT UNIT (SSU) ALONG WITH A NETWORK SWITCH. (REF DATA SHEET. LMS054R3)
2. ENCELIUM WIRELESS MANAGER (EWM) IS NEEDED WHICH CAN ACCOMMODATE UP TO 100 WIRELESS DEVICES. (REF DATA SHEET. LMS102R2)
3. IF BATTERY OPERATED WALL STATION IS NOT PREFERRED, YOU CAN USE A CONNECTED GB2 WALL STATION BY TETHERING OFF A GREENBUS™ CABLE FROM WALC OR WCM GB2 PORT. (REF DATASHEET. LMS056R6)
4. IF EMERGENCY UL924 RATED DEVICE IS REQUIRED, ENCELIUM WIRELESS MANAGER (EWM) IS RATED FOR CENTRAL SENSE, IF LOCAL SENSE IS REQUIRED A THIRD-PARTY DEVICE WILL BE NEEDED. (REF WIRING DIAGRAM. LCM OR ALC FOR UL924)

TYPICAL DESIGN WITH CONTROL INTENT

ILLUSTRATION ONLY, ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR APPLICATION SPECIFIC WIRING.

Break Room

ASHRAE 90.1-2010
Zonal Control
Wireless System



LEGEND - ENCELIUM SYSTEM WIRELESS COMPONENTS

QTY	SYMBOL	DESCRIPTION
1	SCM-0500	OCCUPANCY/VACANCY SENSOR PIR/ ULTRASONIC MULTI-TECH, 180 DEG, 500 SQ. FT. COVERAGE, LOW VOLTAGE, CEILING MOUNT OCCUPANCY, DIRECT CONNECTION TO WIRELESS AREA LIGHTING CONTROLLER (WALC).
1	2B	ENCELIUM WIRELESS 2-BUTTON SWITCH/DIMMER (WALL CONTROLLER), CONFIGURABLE.
1		WIRELESS CONTROL MODULE (WCM).
1	ALC PL	WIRELESS AREA LIGHTING CONTROLLER (WALC), FOR PLUG LOAD. FOR ASHRAE 2013 & 2016.
		THREE WIRE CONNECTION BETWEEN A WIRED DEVICE AND A WIRELESS DEVICE. (18AWG X 3) MAXIMUM 100FT.

SEQUENCE OF OPERATION

1. AUTO ON TO 50% VIA OCCUPANCY SENSOR.
2. MANUAL ON/OFF AND FULL RANGE DIMMING CONTROL OF GENERAL LIGHTING.
3. AUTO OFF ALL LIGHTING WITHIN 30 MINUTES OF OCCUPANTS LEAVING.

DESIGN CONSIDERATIONS

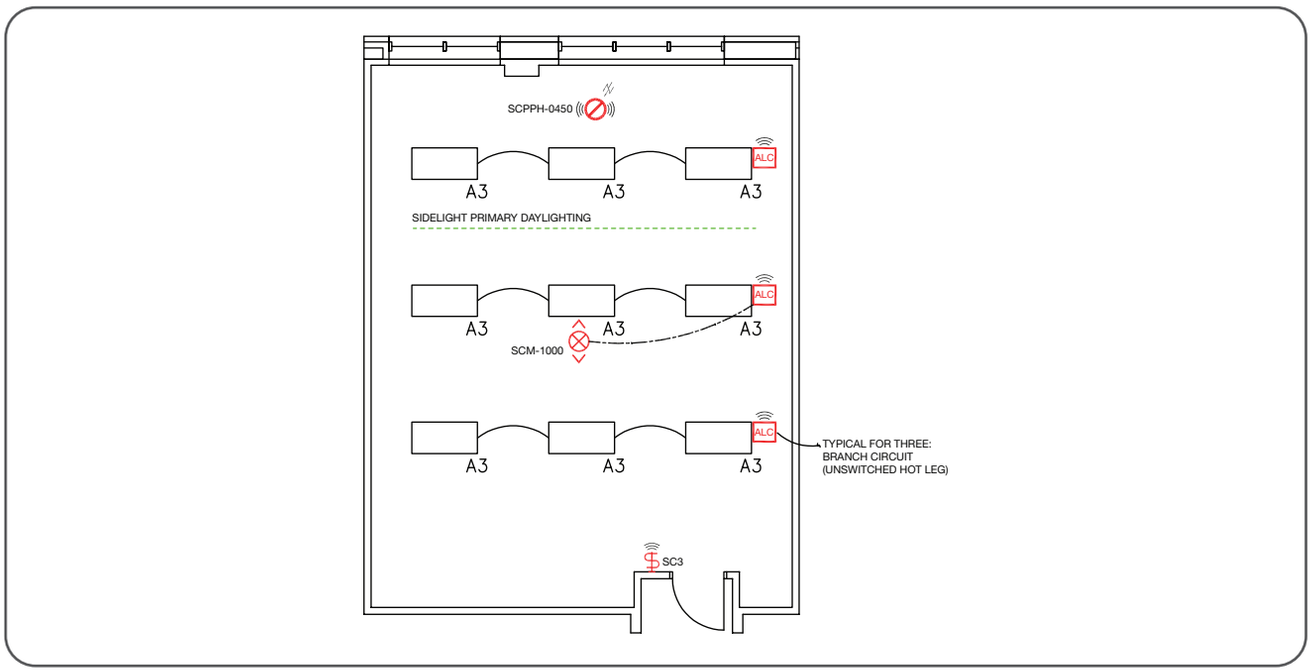
1. ENCELIUM BACKBONE IS NEEDED VIA SYSTEM SUPPORT UNIT (SSU) ALONG WITH A NETWORK SWITCH. (REF DATA SHEET. LMS054R3)
2. ENCELIUM WIRELESS MANAGER (EWM) IS NEEDED WHICH CAN ACCOMMODATE UP TO 100 WIRELESS DEVICES. (REF DATA SHEET. LMS102R2)
3. IF BATTERY OPERATED WALL STATION IS NOT PREFERRED, YOU CAN USE A CONNECTED GB2 WALL STATION BY TETHERING OFF A GREENBUS™ CABLE FROM WALC OR WCM GB2 PORT. (REF DATASHEET. LMS056R6)
4. IF EMERGENCY UL924 RATED DEVICE IS REQUIRED, ENCELIUM WIRELESS MANAGER (EWM) IS RATED FOR CENTRAL SENSE, IF LOCAL SENSE IS REQUIRED A THIRD-PARTY DEVICE WILL BE NEEDED. (REF WIRING DIAGRAM. LCM OR ALC FOR UL924)
5. WHEN THE PRIMARY SIDELIGHT AREA IS 250FT^2 OR LARGER, IT MUST HAVE AUTOMATIC DAYLIGHT RESPONSIVE CONTROLS INSTALLED FOR ALL GENERAL LIGHTING IN THAT AREA.

TYPICAL DESIGN WITH CONTROL INTENT

ILLUSTRATION ONLY, ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR APPLICATION SPECIFIC WIRING.

Classroom

ASHRAE 90.1-2010
Zonal Control
Wireless System



LEGEND - ENCELIUM SYSTEM WIRELESS COMPONENTS

QTY	SYMBOL	DESCRIPTION
1	SCM-1000	OCCUPANCY SENSOR, PIR/ ULTRASONIC MULTI-TECH 360DEG WIDE VIEW, 1000SQFT COVERAGE, LOW VOLTAGE, CEILING/WALL MOUNT, DIRECT CONNECTION TO WIRELESS AREA LIGHTING CONTROLLER (WALC).
1	SCPPH-0450	ENCELIUM WIRELESS OCCUPANCY SENSOR, PIR, 360DEG, 450 SQ. FT. COVERAGE SELF-ADJUSTING, LOW VOLTAGE, CEILING MOUNT. WITH INTEGRATED DAYLIGHT SENSOR ( ) FEATURE CAN BE ENABLED/ DISABLED VIA POLARIS.
1	SC3	ENCELIUM WIRELESS 3-SCENE CONTROLLER (WALL CONTROLLER), 3-SCENES, CONFIGURABLE.
3	ALC	WIRELESS AREA LIGHTING CONTROLLER (WALC).
		THREE WIRE CONNECTION BETWEEN A WIRED DEVICE AND A WIRELESS DEVICE. (18AWG X 3) MAXIMUM 100FT.

TYPICAL DESIGN WITH CONTROL INTENT

ILLUSTRATION ONLY, ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR APPLICATION SPECIFIC WIRING.

SEQUENCE OF OPERATION

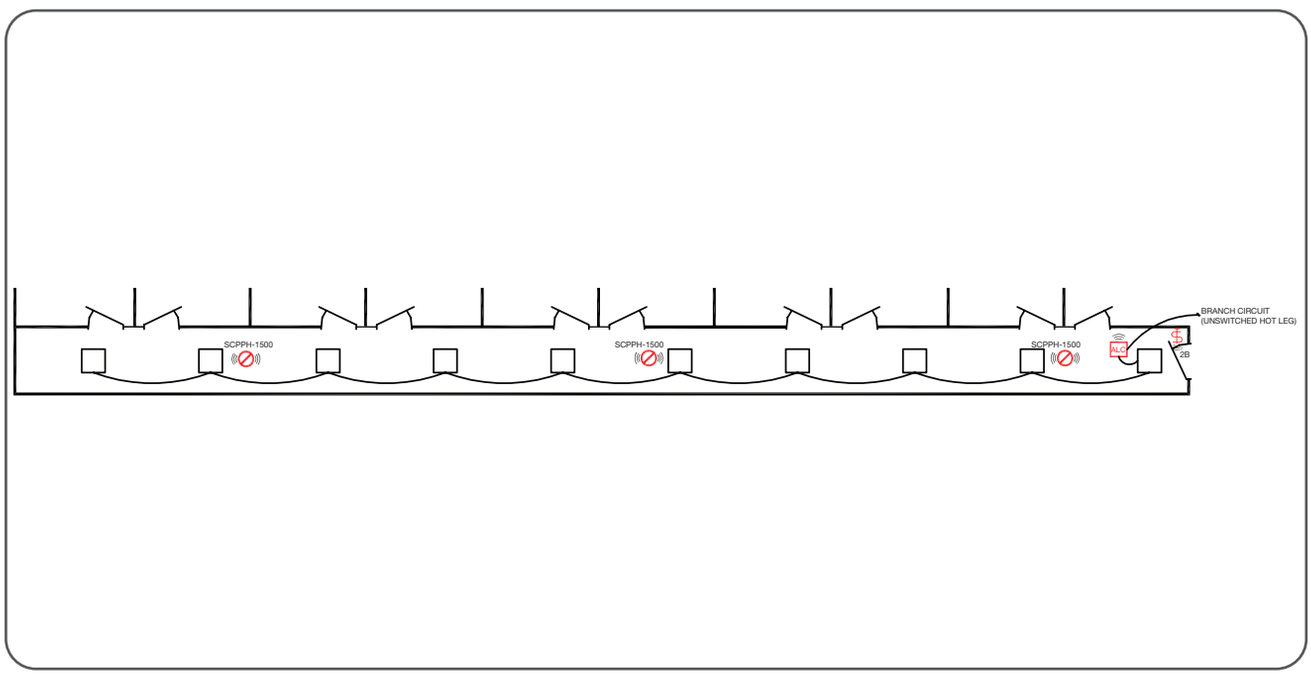
1. AUTO ON TO 50% OR CONTROLLED MANUALLY AUTO ON WHEN OCCUPANCY DETECTED. TURN OFF AFTER VACANCY OF 30MINS.
2. MANUAL ON/OFF AND FULL RANGE DIMMING CONTROL OF GENERAL LIGHTING WITH WALL SWITCH. OPTIONAL 3 SCENE CONTROL.
3. AUTOMATIC DAYLIGHT RESPONSIVE CONTROL FOR SIDE LIGHTING.
4. AUTO OFF ALL LIGHTING WITHIN 30 MINUTES OF OCCUPANTS LEAVING.

DESIGN CONSIDERATIONS

1. ENCELIUM BACKBONE IS NEEDED VIA SYSTEM SUPPORT UNIT (SSU) ALONG WITH A NETWORK SWITCH. (REF DATA SHEET. LMS054R3)
2. ENCELIUM WIRELESS MANAGER (EWM) IS NEEDED WHICH CAN ACCOMMODATE UP TO 100 WIRELESS DEVICES. (REF DATA SHEET. LMS102R2)
3. IF BATTERY OPERATED WALL STATION IS NOT PREFERRED, YOU CAN USE A CONNECTED GB2 WALL STATION BY TETHERING OFF A GREENBUS™ CABLE FROM WALC OR WCM GB2 PORT. (REF DATASHEET. LMS056R6)
4. IF EMERGENCY UL924 RATED DEVICE IS REQUIRED, ENCELIUM WIRELESS MANAGER (EWM) IS RATED FOR CENTRAL SENSE, IF LOCAL SENSE IS REQUIRED A THIRD-PARTY DEVICE WILL BE NEEDED. (REF WIRING DIAGRAM. LCM OR ALC FOR UL924)
5. PER CODE PLUG-LOAD CONTROLS ARE REQUIRED FOR NEW CONSTRUCTION.

Corridor

ASHRAE 90.1-2010
Zonal Control
Wireless System



LEGEND - ENCELIUM SYSTEM WIRELESS COMPONENTS

QTY	SYMBOL	DESCRIPTION
3	SCPPH-1500	ENCELIUM WIRELESS OCCUPANCY SENSOR, PIR, 360DEG, 1500 SQ. FT. COVERAGE, SELF-ADJUSTING, LOW VOLTAGE, CEILING MOUNT. WITH INTEGRATED DAYLIGHT SENSOR (☼) FEATURE CAN BE ENABLED/ DISABLED VIA POLARIS.
1	2B	ENCELIUM WIRELESS 2-BUTTON SWITCH/DIMMER (WALL CONTROLLER), CONFIGURABLE.
1	ALC	WIRELESS AREA LIGHTING CONTROLLER (WALC).

SEQUENCE OF OPERATION

1. LIGHTS AUTOMATICALLY GO TO INDIVIDUAL BRIGHT WHEN OCCUPIED. LIGHTS AUTOMATICALLY TURN OFF OR OPTIONAL DIM TO LOW WHEN SPACE BECOMES VACANT.
2. MANUAL ON/OFF AND FULL RANGE DIMMING CONTROL OF ENTIRE SPACE.

DESIGN CONSIDERATIONS

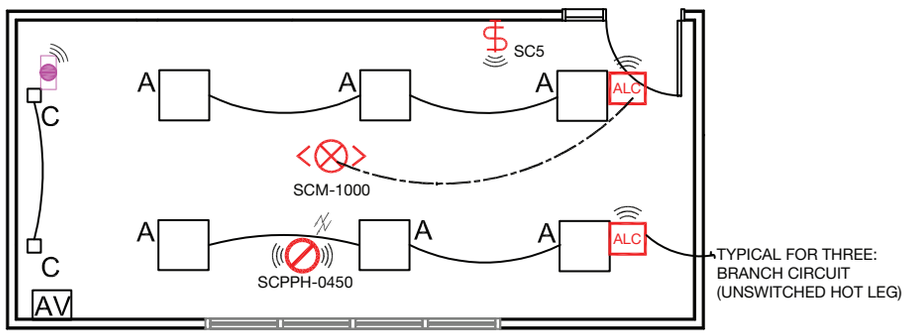
1. ENCELIUM BACKBONE IS NEEDED SYSTEM SUPPORT UNIT (SSU) ALONG WITH A NETWORK SWITCH. (REF DATA SHEET. LMS054R3)
2. ENCELIUM WIRELESS MANAGER (EWM) IS NEEDED WHICH CAN ACCOMMODATE UP TO 100 WIRELESS DEVICES. (REF DATA SHEET. LMS102R2)
3. TIME BASED CONTROLS CAN BE ENABLED AND INTEGRATION WITH BUILDING MANAGEMENT SYSTEM.
4. IF EMERGENCY UL924 RATED DEVICE IS REQUIRED, ENCELIUM WIRELESS MANAGER (EWM) IS RATED FOR CENTRAL SENSE, IF LOCAL SENSE IS REQUIRED A THIRD-PARTY DEVICE WILL BE NEEDED. (REF WIRING DIAGRAM. LCM OR ALC FOR UL924)

TYPICAL DESIGN WITH CONTROL INTENT

ILLUSTRATION ONLY, ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR APPLICATION SPECIFIC WIRING.

Large Conference Room

ASHRAE 90.1-2010
Zonal Control
Wireless System



LEGEND - ENCELIUM SYSTEM WIRELESS COMPONENTS

QTY	SYMBOL	DESCRIPTION
1	SCM-1000	OCCUPANCY SENSOR, PIR/ ULTRASONIC MULTI-TECH 360DEG WIDE VIEW, 1000SQFT COVERAGE, LOW VOLTAGE, CEILING/WALL MOUNT, DIRECT CONNECTION TO WIRELESS AREA LIGHTING CONTROLLER (WALC).
1	SCPPH-0450	ENCELIUM WIRELESS OCCUPANCY SENSOR, PIR, 360DEG, 450 SQ. FT. COVERAGE SELF-ADJUSTING, LOW VOLTAGE, CEILING MOUNT. WITH INTEGRATED DAYLIGHT SENSOR ( ) FEATURE CAN BE ENABLED/ DISABLED VIA POLARIS.
1	SC5	ENCELIUM WIRELESS 5-SCENE CONTROLLER (WALL CONTROLLER), 5-SCENES, CONFIGURABLE.
8		WIRELESS CONTROL MODULE (WCM).
1	ALC	WIRELESS AREA LIGHTING CONTROLLER (WALC).
		THREE WIRE CONNECTION BETWEEN A WIRED DEVICE AND A WIRELESS DEVICE. (18AWG X 3) MAXIMUM 100FT.

TYPICAL DESIGN WITH CONTROL INTENT

ILLUSTRATION ONLY, ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR APPLICATION SPECIFIC WIRING.

SEQUENCE OF OPERATION

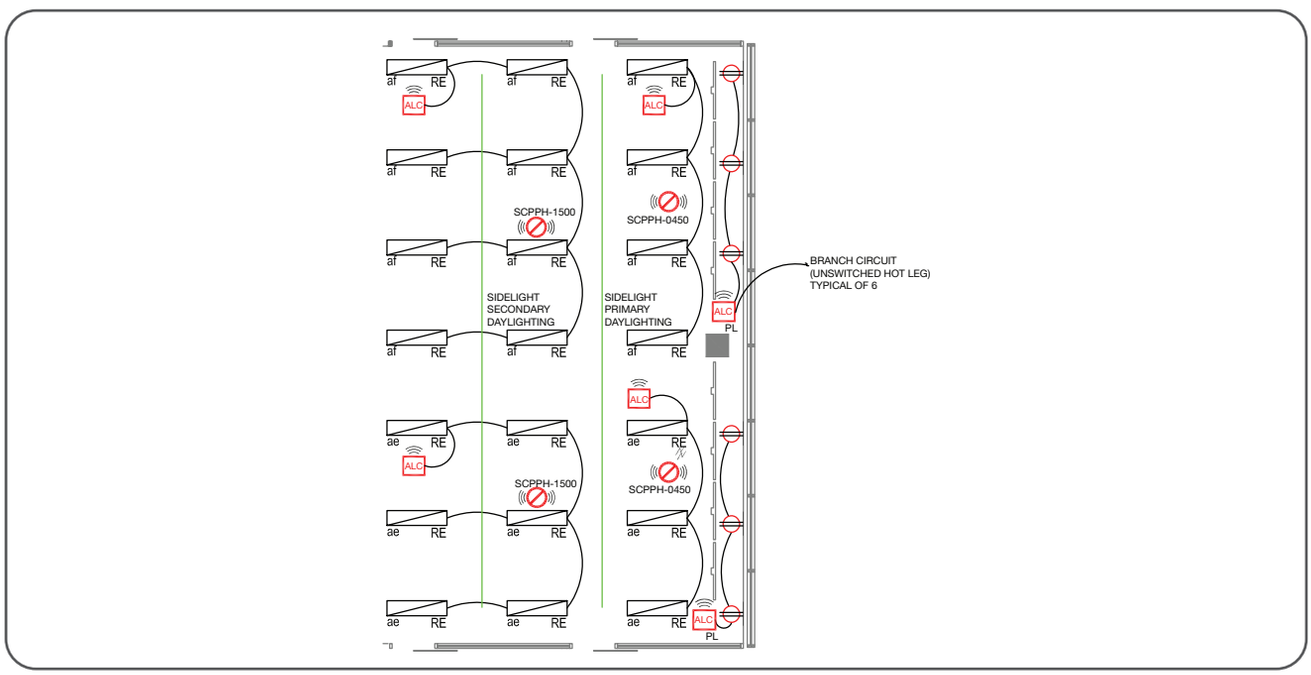
1. AUTO ON TO 50% OR CONTROLLED MANUALLY AUTO ON WHEN OCCUPANCY DETECTED. TURN OFF AFTER VACANCY OF 30MINS.
2. MANUAL ON/OFF AND FULL RANGE DIMMING CONTROL OF GENERAL LIGHTING WITH WALL SWITCH. OPTIONAL 3 SCENE CONTROL.
3. DAYLIGHT HARVESTING IS NOT REQUIRED IF SPACE WITHOUT SIDELIT AREAS <250FT^2.
4. AUTO OFF ALL LIGHTING WITHIN 30 MINUTES OF OCCUPANTS LEAVING.

DESIGN CONSIDERATIONS

1. ENCELIUM BACKBONE IS NEEDED VIA SYSTEM SUPPORT UNIT (SSU) ALONG WITH A NETWORK SWITCH. (REF DATA SHEET. LMS054R3)
2. ENCELIUM WIRELESS MANAGER (EWM) IS NEEDED WHICH CAN ACCOMMODATE UP TO 100 WIRELESS DEVICES. (REF DATA SHEET. LMS102R2)
3. IF BATTERY OPERATED WALL STATION IS NOT PREFERRED, YOU CAN USE A CONNECTED GB2 WALL STATION BY TETHERING OFF A GREENBUS™ CABLE FROM WALC OR WCM GB2 PORT. (REF DATASHEET. LMS056R6)
4. IF EMERGENCY UL924 RATED DEVICE IS REQUIRED, ENCELIUM WIRELESS MANAGER (EWM) IS RATED FOR CENTRAL SENSE, IF LOCAL SENSE IS REQUIRED A THIRD-PARTY DEVICE WILL BE NEEDED. (REF WIRING DIAGRAM. LCM OR ALC FOR UL924)

Open Office

ASHRAE 90.1-2010
Zonal Control
Wireless System



LEGEND - ENCELIUM SYSTEM WIRELESS COMPONENTS

QTY	SYMBOL	DESCRIPTION
2	SCPPH-0450	ENCELIUM WIRELESS OCCUPANCY SENSOR, PIR, 360DEG, 450 SQ. FT. COVERAGE SELF-ADJUSTING, LOW VOLTAGE, CEILING MOUNT. WITH INTEGRATED DAYLIGHT SENSOR (⁄⁄) FEATURE CAN BE ENABLED/ DISABLED VIA POLARIS.
2	SCPPH-1500	ENCELIUM WIRELESS OCCUPANCY SENSOR, PIR, 360DEG, 1500 SQ. FT. COVERAGE, SELF-ADJUSTING, LOW VOLTAGE, CEILING MOUNT. WITH INTEGRATED DAYLIGHT SENSOR (⁄⁄) FEATURE CAN BE ENABLED/ DISABLED VIA POLARIS.
4	ALC	WIRELESS AREA LIGHTING CONTROLLER (WALC).
2	ALC PL	WIRELESS AREA LIGHTING CONTROLLER (WALC), FOR PLUG LOAD. FOR ASHRAE 2013 & 2016.

SEQUENCE OF OPERATION

1. AUTO ON TO 50% OR CONTROLLED MANUALLY AUTO ON WHEN OCCUPANCY DETECTED. TURN OFF AFTER VACANCY OF 30MINS.
2. MANUAL ON/OFF AND FULL RANGE DIMMING CONTROL OF GENERAL LIGHTING WITH WALL SWITCH. OPTIONAL THREE/SIX ZONE WALL STATION CONTROL (ZC3 OR ZC6).
3. AUTOMATIC DAYLIGHT RESPONSIVE CONTROL FOR SIDE LIGHTING.
4. AUTO OFF ALL LIGHTING WITHIN 30 MINUTES OF OCCUPANTS LEAVING.

DESIGN CONSIDERATIONS

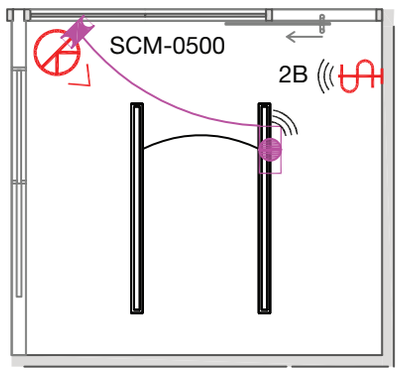
1. ENCELIUM BACKBONE IS NEEDED SYSTEM SUPPORT UNIT (SSU) ALONG WITH A NETWORK SWITCH. (REF DATA SHEET. LMS054R3)
2. ENCELIUM WIRELESS MANAGER (EWM) IS NEEDED WHICH CAN ACCOMMODATE UP TO 100 WIRELESS DEVICES. (REF DATA SHEET. LMS102R2)
3. IF BATTERY OPERATED WALL STATION IS NOT PREFERRED, YOU CAN USE A CONNECTED GB2 WALL STATION BY TETHERING OFF A GREENBUS™ CABLE FROM WALC OR WCM GB2 PORT. (REF DATASHEET. LMS056R6)
4. IF EMERGENCY UL924 RATED DEVICE IS REQUIRED, ENCELIUM WIRELESS MANAGER (EWM) IS RATED FOR CENTRAL SENSE, IF LOCAL SENSE IS REQUIRED A THIRD-PARTY DEVICE WILL BE NEEDED. (REF WIRING DIAGRAM. LCM OR ALC FOR UL924)
5. PER CODE PLUG-LOAD CONTROLS ARE REQUIRED FOR NEW CONSTRUCTION.

TYPICAL DESIGN WITH CONTROL INTENT

ILLUSTRATION ONLY, ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR APPLICATION SPECIFIC WIRING.

Private Office

ASHRAE 90.1-2010
Zonal Control
Wireless System



LEGEND - ENCELIUM SYSTEM WIRELESS COMPONENTS

QTY	SYMBOL	DESCRIPTION
1	SCM-0500	OCCUPANCY/VACANCY SENSOR PIR/ ULTRASONIC MULTI-TECH, 180 DEG, 500 SQ. FT. COVERAGE, LOW VOLTAGE, CEILING MOUNT OCCUPANCY, W/ENCELIUM SENSOR INTERFACE MODULE (SIM).
1	2B	ENCELIUM WIRELESS 2-BUTTON SWITCH/DIMMER (WALL CONTROLLER), CONFIGURABLE.
1		WIRELESS CONTROL MODULE (WCM).
		GREENBUS™ CABLE. PRE-TERMINATED (18AWG X 2) MAXIMUM LENGTH OF TETHERED CABLE IS 100FT.

SEQUENCE OF OPERATION

1. AUTO ON TO 50% OR CONTROLLED MANUALLY AUTO ON WHEN OCCUPANCY DETECTED. TURN OFF AFTER VACANCY OF 30MINS.
2. MANUAL ON/OFF AND FULL RANGE DIMMING CONTROL OF GENERAL LIGHTING WITH WALL SWITCH. OPTIONAL 3 SCENE CONTROL.
3. AUTOMATIC DAYLIGHT RESPONSIVE CONTROL FOR SIDE LIGHTING.
   - NOT REQUIRED IF ROOM HAS <240SQFT OF GLAZING OR LIGHTING LOADS <120W, IN THE SIDELITE ZONE.
4. AUTO OFF ALL LIGHTING WITHIN 30 MINUTES OF OCCUPANTS LEAVING.

DESIGN CONSIDERATIONS

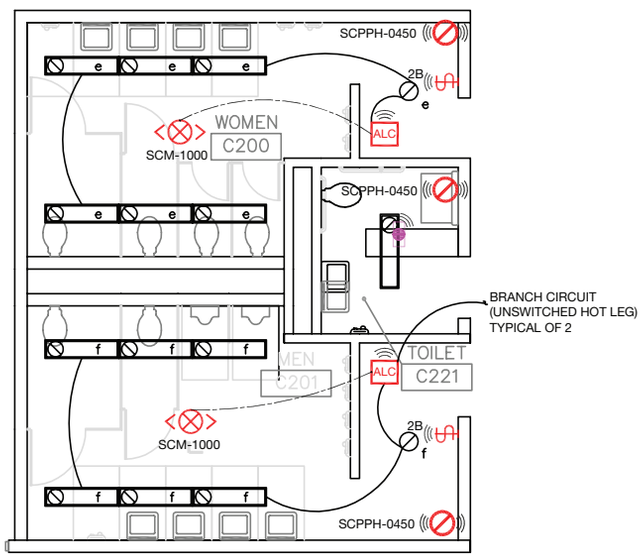
1. ENCELIUM BACKBONE IS NEEDED SYSTEM SUPPORT UNIT (SSU) ALONG WITH A NETWORK SWITCH. (REF DATA SHEET. LMS054R3)
2. ENCELIUM WIRELESS MANAGER (EWM) IS NEEDED WHICH CAN ACCOMMODATE UP TO 100 WIRELESS DEVICES. (REF DATA SHEET. LMS102R2)
3. IF BATTERY OPERATED WALL STATION IS NOT PREFERRED, YOU CAN USE A CONNECTED GB2 WALL STATION BY TETHERING OFF A GREENBUS™ CABLE FROM WALC OR WCM GB2 PORT. (REF DATASHEET. LMS056R6)
4. IF EMERGENCY UL924 RATED DEVICE IS REQUIRED, ENCELIUM WIRELESS MANAGER (EWM) IS RATED FOR CENTRAL SENSE, IF LOCAL SENSE IS REQUIRED A THIRD-PARTY DEVICE WILL BE NEEDED. (REF WIRING DIAGRAM. LCM OR ALC FOR UL924)
5. PER CODE PLUG-LOAD CONTROLS ARE REQUIRED FOR NEW CONSTRUCTION.

TYPICAL DESIGN WITH CONTROL INTENT

ILLUSTRATION ONLY, ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR APPLICATION SPECIFIC WIRING.

Restroom & Private Washroom

ASHRAE 90.1-2010
Zonal Control
Wireless System



LEGEND - ENCELIUM SYSTEM WIRELESS COMPONENTS

QTY	SYMBOL	DESCRIPTION
2	SCM-1000	OCCUPANCY SENSOR, PIR/ ULTRASONIC MULTI-TECH 360DEG WIDE VIEW, 1000SQFT COVERAGE, LOW VOLTAGE, CEILING/WALL MOUNT, DIRECT CONNECTION TO WIRELESS AREA LIGHTING CONTROLLER (WALC).
1	SCPPH-0450	ENCELIUM WIRELESS OCCUPANCY SENSOR, PIR, 360DEG, 450 SQ. FT. COVERAGE, SELF-ADJUSTING, LOW VOLTAGE, CEILING MOUNT. WITH INTEGRATED DAYLIGHT SENSOR (⁄⁄) FEATURE CAN BE ENABLED/ DISABLED VIA POLARIS.
2	2B	ENCELIUM WIRELESS 2-BUTTON SWITCH/DIMMER (WALL CONTROLLER), CONFIGURABLE.
1		WIRELESS CONTROL MODULE (WCM).
2	ALC	WIRELESS AREA LIGHTING CONTROLLER (WALC).
		THREE WIRE CONNECTION BETWEEN A WIRED DEVICE AND A WIRELESS DEVICE. (18AWG X 3) MAXIMUM 100FT.

SEQUENCE OF OPERATION

1. AUTO ON TO 50% OR CONTROLLED MANUALLY AUTO ON WHEN OCCUPANCY DETECTED. TURN OFF AFTER VACANCY OF 30MINS.
2. MANUAL ON/OFF AND FULL RANGE DIMMING CONTROL OF GENERAL LIGHTING WITH WALL SWITCH. OPTIONAL 3 SCENE CONTROL.
3. AUTO OFF ALL LIGHTING WITHIN 30 MINUTES OF OCCUPANTS LEAVING.

DESIGN CONSIDERATIONS

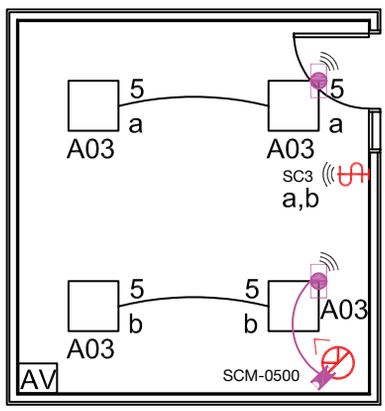
1. ENCELIUM BACKBONE IS NEEDED SYSTEM SUPPORT UNIT (SSU) ALONG WITH A NETWORK SWITCH. (REF DATA SHEET. LMS054R3)
2. ENCELIUM WIRELESS MANAGER (EWM) IS NEEDED WHICH CAN ACCOMMODATE UP TO 100 WIRELESS DEVICES. (REF DATA SHEET. LMS102R2)
3. IF BATTERY OPERATED WALL STATION IS NOT PREFERRED, YOU CAN USE A CONNECTED GB2 WALL STATION BY TETHERING OFF A GREENBUS™ CABLE FROM WALC OR WCM GB2 PORT. (REF DATASHEET. LMS056R6)
4. IF EMERGENCY UL924 RATED DEVICE IS REQUIRED, ENCELIUM WIRELESS MANAGER (EWM) IS RATED FOR CENTRAL SENSE, IF LOCAL SENSE IS REQUIRED A THIRD-PARTY DEVICE WILL BE NEEDED. (REF WIRING DIAGRAM. LCM OR ALC FOR UL924)

TYPICAL DESIGN WITH CONTROL INTENT

ILLUSTRATION ONLY, ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR APPLICATION SPECIFIC WIRING.

Small Conference Room

ASHRAE 90.1-2010
Zonal Control
Wireless System



LEGEND - ENCELIUM SYSTEM WIRELESS COMPONENTS

QTY	SYMBOL	DESCRIPTION
1	SCM-0500	OCCUPANCY/VACANCY SENSOR PIR/ ULTRASONIC MULTI-TECH. 180 DEG, 500 SQ. FT. COVERAGE, LOW VOLTAGE, CEILING MOUNT OCCUPANCY, W/ENCELIUM SENSOR INTERFACE MODULE (SIM).
1	SC3	ENCELIUM WIRELESS 3-SCENE CONTROLLER (WALL CONTROLLER), 3-SCENES, CONFIGURABLE.
2		WIRELESS CONTROL MODULE (WCM).
		GREENBUS™ CABLE. PRE-TERMINATED (18AWG X 2) MAXIMUM LENGTH OF TETHERED CABLE IS 100FT.

SEQUENCE OF OPERATION

1. AUTO ON TO 50% OR CONTROLLED MANUALLY AUTO ON WHEN OCCUPANCY DETECTED. TURN OFF AFTER VACANCY OF 30MINS.
2. MANUAL ON/OFF AND FULL RANGE DIMMING CONTROL OF GENERAL LIGHTING WITH WALL SWITCH. OPTIONAL 3 SCENE CONTROL.
3. AUTO OFF ALL LIGHTING WITHIN 30 MINUTES OF OCCUPANTS LEAVING.

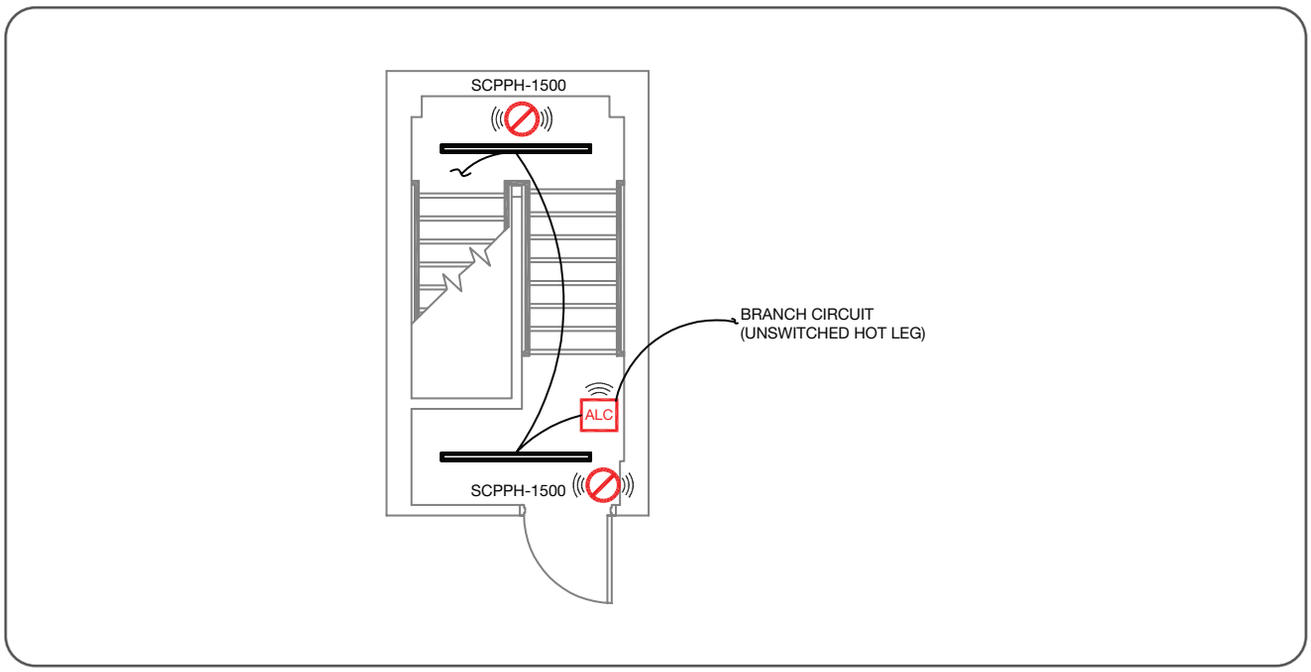
DESIGN CONSIDERATIONS

1. ENCELIUM BACKBONE IS NEEDED SYSTEM SUPPORT UNIT (SSU) ALONG WITH A NETWORK SWITCH. (REF DATA SHEET. LMS054R3)
2. ENCELIUM WIRELESS MANAGER (EWM) IS NEEDED WHICH CAN ACCOMMODATE UP TO 100 WIRELESS DEVICES. (REF DATA SHEET. LMS102R2)
3. IF BATTERY OPERATED WALL STATION IS NOT PREFERRED, YOU CAN USE A CONNECTED GB2 WALL STATION BY TETHERING OFF A GREENBUS™ CABLE FROM WALC OR WCM GB2 PORT. (REF DATASHEET. LMS056R6)
4. IF EMERGENCY UL924 RATED DEVICE IS REQUIRED, ENCELIUM WIRELESS MANAGER (EWM) IS RATED FOR CENTRAL SENSE, IF LOCAL SENSE IS REQUIRED A THIRD-PARTY DEVICE WILL BE NEEDED. (REF WIRING DIAGRAM. LCM OR ALC FOR UL924)
5. DAYLIGHT HARVESTING IS NOT REQUIRED IF SPACE WITHOUT SIDE LIT AREAS <250FT^2.

TYPICAL DESIGN WITH CONTROL INTENT

ILLUSTRATION ONLY, ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR APPLICATION SPECIFIC WIRING.

Stairwell



LEGEND - ENCELIUM SYSTEM WIRELESS COMPONENTS

QTY	SYMBOL	DESCRIPTION
2	SCPPH-1500	ENCELIUM WIRELESS OCCUPANCY SENSOR, PIR, 360DEG, 1500 SQ. FT. COVERAGE, SELF-ADJUSTING, LOW VOLTAGE, CEILING MOUNT. WITH INTEGRATED DAYLIGHT SENSOR (☼) FEATURE CAN BE ENABLED/ DISABLED VIA POLARIS. ONE AT EACH STAIRWELL LANDING.
1	ALC	WIRELESS AREA LIGHTING CONTROLLER (WALC). ONE PER CIRCUIT.

SEQUENCE OF OPERATION

1. LIGHTS AUTOMATICALLY GO TO FULL BRIGHT WHEN OCCUPANCY DETECTED. DIMMED TO 50% WHEN SPACE BECOMES VACANT.
2. ALL LIGHTS WILL AUTOMATICALLY TURN ON TO MAXIMUM LIGHT LEVEL. MAXIMUM LIGHT LEVEL IS SET TO 80%.
3. ALL LIGHTS WILL DIM TO MINIMUM LIGHT LEVEL 15 MINUTES AFTER ALL OCCUPANTS EXIT. MINIMUM LIGHT LEVEL IS SET TO 10%.

DESIGN CONSIDERATIONS

1. ENCELIUM BACKBONE IS NEEDED SYSTEM SUPPORT UNIT (SSU) ALONG WITH A NETWORK SWITCH. (REF DATA SHEET. LMS054R3)
2. ENCELIUM WIRELESS MANAGER (EWM) IS NEEDED WHICH CAN ACCOMMODATE UP TO 100 WIRELESS DEVICES. (REF DATA SHEET. LMS102R2)
3. IF EMERGENCY UL924 RATED DEVICE IS REQUIRED, ENCELIUM WIRELESS MANAGER (EWM) IS RATED FOR CENTRAL SENSE, IF LOCAL SENSE IS REQUIRED A THIRD-PARTY DEVICE WILL BE NEEDED. (REF WIRING DIAGRAM. LCM OR ALC FOR UL924)

TYPICAL DESIGN WITH CONTROL INTENT

ILLUSTRATION ONLY, ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR APPLICATION SPECIFIC WIRING.

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