Discover existing needs and solutions for lighting control

- One-way switch circuit
- Two-way switch circuit
- Light ON/OFF from 3 locations
- Light ON/OFF from more than 3 locations
- Contactors
- Timer
- Time switch
- Twilight switch
- Constant Light
One-way circuit

● 1 switch for one light
  ● Can be produced with
    ● a "one-way – 2 poles" switch
    ● a two-way switch

Schneider product line: Wiring devices
Ranges: Unica, Alvais, System-M, Antic, Artec, Aquadesign, Sedna, Anya, Anti-vandalism
Other alternatives: IHC or KNX depending on the overall installation
One-way circuit

- Switch with Indicator light
  - Indicator light is **ON** when the switch is **ON**
  - **BASIC REMINDER** not to forget light **ON**
  - Presence indication

- Application
  - Placed indoors:
    - Indicates that outdoor light is **ON**
  - Placed in a room:
    - Indicates that light in another room is **ON**
    - (cellar, attic, annex, scullery, garage, etc.)

Also available in the following combinations:
- Double rocker switch + 1 Indicator light on rocker 1 only
- Double rocker switch + 1 Indicator light/rocker
Basics of Lighting Control Applications

> Essential Applications

One-way circuit

● Switch with Locator light
  ● Locator light is **ON** in the dark
    ● Avoids people having to search for it
    ● Avoids accidents (stairs, garages, etc.)

● Application
  ● Staircase, corridors, etc.

Also available in the following combinations:
- Push-Button + Locator light
- Double rocker switch + 1 Locator light
Double “One way circuit”

- 1 switch for two parallel lighting circuits
- Lighting circuits work in exactly the same way

For applications where:
- Power exceeds the capacity of one contact
- All the lights cannot be physically interconnected
- It may be necessary to open phase and neutral lines
- Can be produced with
  - A one-way switch – Single rocker and two linked contacts

Schneider product line: Wiring devices
Ranges: Unica
Double “One way circuit”

- 1 switch for two separate lighting circuits
- Each circuit works independently  
  (i.e. control 1 light indoors + 1 light outdoors)
- For applications where the compactness of the switch is a plus
  - Can be produced with
    - A one-way switch - double independent rockers and contacts

Schneider product line: Wiring devices- Ranges: Unica, system M, Artec, Antik, Transcent, Aquadesign, Sedna, Altira, Anya,...
Two-way circuit

- Control a light from 2 different places
  - Can be produced with
    - 2 two-way switches

Schneider product line: Wiring devices
Ranges: Unica, Alvais, System-M, Artec, Antik, Transcent, Aquadesign, Sedna, Anya, antivandalism
Double “Two-way circuit”

- 1 switch for two separate lighting circuits
- Each circuit works independently

- For applications where the compactness of the switch is a plus.
  - Can be produced with
    - A two-way switch - double independent rockers and contacts

**Schneider product line: Wiring devices**
- **Ranges:** Unica, system M, Artec, Antik, Aquadesign, Sedna, Altira, Anya,…
Three control point circuit

- Control a light from 3 different locations
  - Can be produced with
    - 2 two-way switches + 1 intermediate switch

Schneider product line: Wiring devices
Ranges: Unica, Alvais, System-M, Artec, Antik, Aquadesign, Sedna, Anya, antivandalism
Multiple control point circuit or powerful circuits

- Control a light from more than 3 different locations
- Can be produced with:
  - Push-button(s) + impulse relay
  - 1 impulse from PB makes TL switch ON. Another impulse on a PB makes the TL switch OFF
  - Up to 32 A
  - Another solution: Use of contactors but according to classification: IEC1095 - AC7C

Other alternatives: Infra-red, Radio frequency, IHC or KNX depending on the overall installation
Multiple control point circuit alternative

- Control a light from more than 3 different locations
  - Can be produced with:
    - Push-buttons + 1 dimmer unit
  - Application: Residential & small offices
  - Main advantage:
    - Create soft atmosphere by the use of the dimmer

Schneider product line: Wiring devices
Ranges: Unica, Alvais, System-M, Artec, Antik, Transcent, Aquadesign, Sedna, Anya, antivandalism
Other alternatives: IHC or KNX depending of the global installation
Centralize Lighting / Benefits

- Control the lighting circuits of the House
  - Can be produced with:
    - Push-buttons + TLc units
  - Application: Residential & small offices
  - Main advantages:
    - Be sure to not forget a light on when you leave the building
    - Avoid to go in all rooms to check if the lights are properly switched off
    - Keep the local control of each lighting circuit

Wiring diagram:

- L - 230Vac
- N - 230Vac

- D’click 20725–10A
- Central
- Local Ex: Room1
- Local Ex: Room2
- TLc
- Light 1
- Light 2
- A1
- A2
- Pb1
- Pb2
- Q1
- Q2
Alternatives for light control: Infra-red solution

- Good for controlling a light from at least 2 different locations in the same room.
  - Can be produced with
    - An emitter (remote) + a receiver (wall-mounted), including a switch mechanism.
    - With Infra-red technology, the receiver must see the emitter in order to capture the I-R beam correctly

- Application: Residential & small office
- Main advantage:
  - control the light(s) without moving (from the sofa, seniors, disabled people....)

More info?
- Wiring device System-M or Artec and Antik
Alternatives for light control: RF system

- **Principle:**
  - One RF emitter and one (or more) RF receivers are associated
  - Each receiver can be controlled by several emitters
  - Each emitter can control several receivers
  - ON/OFF, Dim Up/Down, Shutter control

- **Application:**
  - Residential & small offices
  - Renovation (limited number of wires)

- **Main advantage:**
  - Control of light through walls
  - Control of several light circuits
  - Control of scenes or scenarios.
  - Wide range of receivers (mobile socket outlet, receiver for ceiling, in walls)
  - Some Can be mixed with IHC devices

More info? ISC Training
- Discover Unica RF on TSG
- Discover Connect RF on TSG
- Understand Unica RF (in-class)
- Understand Connect (in-class)
Alternatives for light control: Scenes or scenarios

- **What are they?**
  - In lighting, a scene adapts the lights to fit our daily life, to make it easier, and more comfortable.
  - Examples of scenes at home:
    - “I'm leaving home” which switches off all the lights (even closes shutters)
    - No need to go to all the rooms in the house to switch off the lights one by one
    - “I'm coming home” which could switch on the hall, living room and kitchen lights.
    - "I'm watching TV" which switches off or dims the lights in that area
    - “I'm having dinner” which can create an atmosphere by dimming some lights.
  - Used more and more in home control
  - Can be created by RF, IHC and KNX devices

More info? ISC Training
- Discover Unica RF on TSG
- Discover Connect RF on TSG
- Understand Unica RF (in-class)
- Understand Connect (in-class)
Timer
What is it? What for?

- Keep the light ON for a predefined time after switch-on

- Applications: staircases, halls, corridors

- Main advantage: 
  - Save energy
  - This function can also be done in some Wiring device range, IHC, KNX or LON solutions

More info? ISC Training
- Understand Stand Alone Electronics (in-class)

Also available as Wall mounted unit
Time switch
What is it? What for?

- Switch ON every day at the same time
- Switch OFF every day at the same time
- Weekly/yearly program
- Several time slots/day
- Applications: Car park lighting, shop front windows lighting,
- Main advantages:
  - Save energy by setting the required time to switch on.
  - Improve comfort and security of people (no searching for push-buttons in the dark, avoid aggression)
  - This function can also be done in some Wiring device range, IHC, KNX or LON solutions

Also available as Wall mounted unit

More info? ISC Training
- Understand Stand Alone Electronics (in-class)
Twilight switch
What is it? What for?

- Switch ON when the outdoor light is not sufficient
- Switch OFF when the outdoor light increases
- Applications: External lightings / Professional buildings, parkings
- Main advantage:
  - Save energy by adjusting the necessary time to switch on.
  - Improve comfort and security of people (not to search push button in the darkness)
  - This function can be done in IHC or KNX solution

Wiring diagram

More info? ISC Training
- Understand Stand Alone Electronics (in-class)
Twilight switch Principle
Alternatives for light control - IHC System

● Principle:
  ● Central programmable unit located in the control cabinet
  ● Used to control all functions in modern homes or small buildings
  ● Push-buttons and lights are connected to the central unit
  ● Toggle Function blocks are pre-programmed to control lights

● IHC is compatible with all type of lights for ON/OFF control (relay outputs)

● Application: Residential market or small offices

● Main advantage:
  ● Flexibility of programming
  ● Manage:
    ● scenes
    ● functions: timers, time switch, twilight sensor, water detection, …
    ● many lights, shutters, heating, outlets …

More info? ISC Training
- Discover IHC on TSG
- Understand IHC (In-class)
Alternatives for light control
IHC System Overview

**Control devices**
- Humidity sensor
- Push-button
- Outdoor detector
- Indoor detector
- Temp. sensor
- Dusk/Dawn relay
- IR receiver
- RF sensor

**Control panel**
- PIR control
- Thermostat

**Input module**
- Power supply

**Controller**
- Antenna

**Output module**
- Dimmer

**Receivers**
- 1-10vdc
- Dimmable Fluos
- Lighting
- Shutters
- Controlled socket-outlets
- Ventilation
- Lighting
- RF receiver

**Linking**
- Link to laptop for programming
- Link to home PC and internet for control and adjustment

Schneider Electric - Division - Name – Date
Alternatives for light control
KNX System or LON field-bus

● System principle:
  ● Intelligent components are connected together (push-buttons, touch panels, output modules, …)
  ● A software allows the creation of the dimming function
● For all loads (except FLC)
● Applications: Medium to large size buildings (and high end residential)

● Main advantage:
  ● Flexibility of programming
  ● Can manage a large quantity of devices such as lighting, shutters, heating, …
Alternatives for light control
KNX Basic Architecture

Actuators
(order receivers, at the bus and power supply levels)

230V BUS

Sensors & Push Buttons
(order senders, at the bus level only)
Constant light
What is it? What for?

- Keep the same level of light in an area whatever the fluctuations in outdoor light

- Applications: Offices (→ Dimmable fluorescent tubes)

- Main advantage:
  - Save energy by continual adjustment to the right level of light
  - Improve comfort of people by eliminating variations of light

Result: The indoor level of lighting remains the same at the predefined value
Constant light – How to do it?

- KNX solution with DALI Gateway

More info?
- Discover KNX on TSG
- Need to program?
  - KNX certification
  - Understand KNX 1 & 2 (in-class)
  - KNX 3 Expert function (in-class)
Constant light - How to do it?

- KNX solution with 0-10Vdc actuator
Constant light - How to do it?

- IHC solution

- In this solution, the IHC range offers a 1-10 vdc output module for fluorescent tubes that can work in association with the brightness sensor for the constant light function.
- Push-Button 1 is used to activate (or deactivate) automatic control through the data line.

More info?
- Discover KNX on TSG
- Need to program?
- Understand IHC (in-class)
Other modules

- Are explained in separate modules

"Dimming"

"Light control based on Movement & Presence detection"
Wiring Devices for essential lighting applications

For Classification, Segmentation, colour, functions, please refer to each range on pl@net: Anya, Sedna, Unica, System M, Artec, Antik, Transcent, Alvais, Altira, Cedar+, Mureva, Aquadesign, Anti-vandalism
Control for advanced lighting applications

- DIN rail Stand-Alone electronics
  - Timers, dimmers, twilight switches, thermostat, time switches…

- Wall-mounted Stand-Alone electronics
  - Timers, dimmers, presence & movement detectors,…

- Advanced systems: KNX, IHC

- Wireless Solutions
Basics of Lighting Control Applications

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