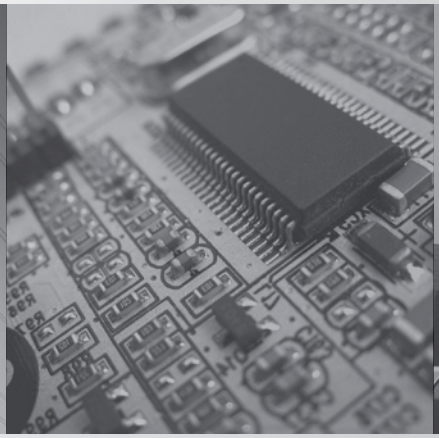
kameleon[MD]

ADAPTABILITY IN LIGHTING CONTROL

# System Design Guide



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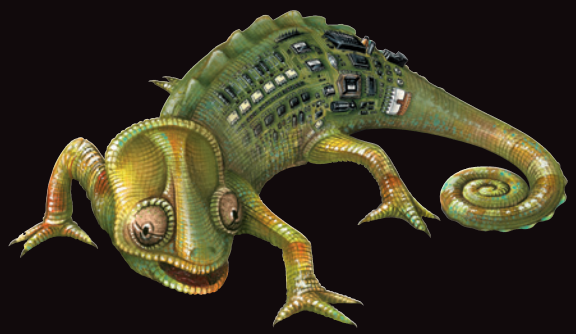
# Adaptability in Lighting Control







Gentec's Kameleon Serie offers a wide range of solutions to suit any lighting control requirement. From the field **programmable K4 Series** for small to medium size applications to the **K6 (BACnet)** and **K8 (LON)** Series with their configuration and visualisation software and their dimming capability.

This System Design Guide provides general guidance regarding lighting control sequences and applications in commercial and institutional buildings. Furthermore, engineers, electrical contractors and property managers will find all the necessary information on how to design a Kameleon system according to their control needs and specifications.

For any additional information on the Kameleon systems, we invite you to visit our web site at **www.gentec.ca** or to contact your local representative.

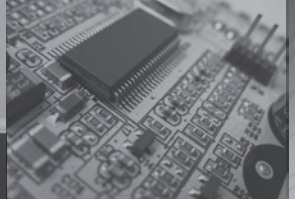
## CONTENTS



K4 SERIES

K6 SERIES

K8 SERIES


# Common Control Sequences





The following section – control sequences, describes the most commonly used lighting control sequences in a commercial building.

## TIMED SCHEDULES

The sweep ON/OFF Operation is used to turn preset lights ON and OFF automatically according to pre-programmed schedules*. To permit off-hours activities, such as overtime and janitorial work, scheduling can be overridden through different actions such as manual ON/OFF and motion detection.

* The schedule programming is performed directly on the KC-411 8 Channel Time Clock for the K4 Series and through the Kameleon Software for the K6 and K8 Series.

## OVERRIDE SWITCHING

The manual ON/OFF Operation gives occupants total control of the lighting in each of the zones equipped with a switch-based device. Manual ON/OFF is the most common override operation. Switches and/or ON action and/or OFF action can be disabled separately according to time schedules*.

*Available only with the K6 and K8 Series.

## HOLD ON TIME / TIME ON EXTENSION

The Time ON Extension Mode (TOE) causes the Time Clock* to start a timer when the relay is switched ON. Upon time expiry (generally a building-wide standard period**), the relay is switched OFF. The TOE mode can be enabled and disabled according to a time schedule. Thus, switches work normally during business hours and in TOE mode during off-work hours.

* Available on K4, K6 and K8 Series.
** The period is set at two hours with the K4 Series and adjustable with the K8 Series.

## FLICK WARN

The Flick Warn Function is used to remind occupants that lights will be switched OFF after a pre-programmed countdown*. After a pre-set hold time period, the Occupancy sensor will switch lighting OFF again if no presence is being detected*. Occupancy sensors and/or On action and/or Off action can be enabled and disabled separately according to time schedules**.

* Variable hold-time periods can be programmed on a schedule base for each occupancy sensor with the K6 and K8 Series.
** Available only with the K6 and K8 Series.

# Common Control Sequences





## OCCUPANCY SENSING

The Motion Sensing Operation will switch lighting ON upon the detection of a person entering the zone covered by the sensor beam. After a pre-set period, the motion sensor will switch lighting OFF again if no presence is being detected. Motion sensors can be enabled and disabled according to time schedules. Also, the occupancy sensor can be used to turn ON lights in the morning. The OFF sequence triggered by the sensor will then be only permitted after the end of normal business hours.

## CLEANING/SECURITY*

Enabled during off-work hours, the Cleaning/Security Function will allow authorized employees (janitor, guard, landlord, etc.) to switch the lights ON/OFF in preset areas without disturbing the occupants. The Cleaning/Security Function is generally performed through the use of key switches. When the key switch is activated, the system memorizes the current status of all the relays in the area. An ON activation of the key switch will turn ON all the OFF relays in the area. The OFF activation of the key switch will only turn OFF the relays that were already OFF before the ON activation.

*Available only with the K6 and K8 Series.

## DIMMING

Dimming control is used to adjust light level according to specific needs. In most cases, dimming sequences will be programmed and will follow pre-set scenes that will include targeted light level, fade time and hold time. The activation of these scenes is done through the use of schedules, switches or occupancy sensors. Dimming controllers* gives you the possibility to do phase angle dimming, 0-10v ballast control and also to control DALI “Digital addressable lighting interface” ballast.

*Available only with the K6 and K8 Series.

## DAYLIGHTING AND DAYLIGHT HARVESTING

a. Daylighting control is used to generate energy savings. Through the use of daylight sensor and dimmable ballasts, the light level in peripheral areas is automatically adjusted according to the amount of natural light available.

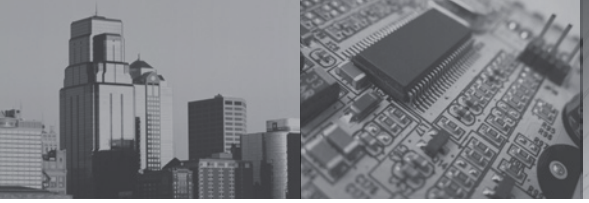
*Additionnal information available on demand.

## PHOTOMETRIC CONTROL

The Photometric Function will turn the exterior or interior lights ON and OFF according to the ambient light level. Time Control can be used to override the photocell effect and to switch lights OFF.

## ASTRONOMICAL CONTROL

Through the use of the time zone, the latitude, the longitude and the date, the astronomical clock can calculate the sunset and sunrise times. Light can be programmed to switch at these calculated times. An offset can be programmed to cause the switching to occur sooner or later than the actual sunset and sunrise.



# Typical Applications



The following section – typical applications, presents the most commonly used control sequences inside commercial buildings. For each application, the required lighting control components are listed.

## OFFICE BUILDINGS

OFFICE BUILDINGS

| | Timed Schedules | Override Switching | Hold On Time | Occupancy Sensing | Cleaning/Security | Daylighting | Flick Warn | Dimming | Photometric Control | Astronomical Control |
|---|---|---|---|---|---|---|---|---|---|---|
| Open Office Areas | X | X | X | | X | X | X | | | |
| Private Offices | X | X | X | | X | | X | X | | |
| Hallway/Lobbies | X | | | X | X | X | X | | | |
| Conference Rooms | X | | X | | X | | | X | | |
| Restrooms | | | | X | | | | | | |
| Stairwells | | | | X | | | | | | |
| Exterior | X | | | | | | | | X | X |
| Cafeteria | X | | X | X | X | X | X | | X | |

### COMPONENT REQUIREMENTS

- K6 or K8 Series Panels
- Low Voltage Switches with Pilot LEDs
- Key Switches
- Motion Detectors
- Constant Light Controllers
- Exterior Photocell
- Kameleon Software (K8)
- Link to the Building Management System**
- Dimming Controllers*

*If centralized dimming control is required

** Optional

## SCHOOLS

SCHOOLS

| | Timed Schedules | Override Switching | Hold On Time | Occupancy Sensing | Cleaning/Security | Daylighting | Flick Warn | Dimming | Photometric Control | Astronomical Control |
|---|---|---|---|---|---|---|---|---|---|---|
| Classrooms | X | X | X | X | X | X | | | | |
| Gymnasium | X | X | X | | X | | | | | |
| Hallway/Lobby | X | | | X | X | | | | | |
| Auditorium | X | X | | | X | | | X | | |
| Cafeteria | X | | X | | X | X | | | | |
| Utility Rooms | X | | | X | | | | | | |
| Offices | X | X | X | | | | X | | | |
| Restrooms | | | | X | | | | | | |
| Exterior | X | | | | | | | | X | X |

### COMPONENT REQUIREMENTS

- K4, K6 or K8 Series Panels
- Toggle Switches
- Key Switches
- Motion Detectors
- Constant Light Controllers
- Exterior Photocell
- Link to Building Management System*

*Optional (available only with K8 Series)

# Typical Applications





## RETAIL STORES

RETAIL STORES

| | TIMED SCHEDULES | OVERRIDE SWITCHING | HOLD ON TIME | OCCUPANCY SENSING | CLEANING/SECURITY | DAYLIGHTING | FLICK WARN | DIMMING | PHOTOMETRIC CONTROL | ASTRONOMICAL CONTROL |
|---|---|---|---|---|---|---|---|---|---|---|
| OPEN FLOOR | X | X | | | X | X | | | | |
| OFFICES | X | | X | | X | | X | | | |
| BACKSTORE | X | | | | X | | | | | |
| RECEPTION DOCKS | X | | | | X | | | | | |
| RESTROOM | | | | X | | | | | | |
| EXTERIOR | X | | | | | | | X | X | |
| SIGNS | X | | | | | | | X | X | |

### COMPONENTS REQUIREMENTS

- K4, K6 OR K8 SERIES PANELS
- LOW VOLTAGE SWITCHES WITH PILOT LEDS
- MOTION DETECTORS
- CONSTANT LIGHT CONTROLLERS
- EXTERIOR PHOTOCELL
- LINK TO BUILDING MANAGEMENT SYSTEM*

*OPTIONAL (AVAILABLE ONLY WITH K8 SERIES)

## RESTAURANTS

RESTAURANTS

| | TIMED SCHEDULES | OVERRIDE SWITCHING | HOLD ON TIME | OCCUPANCY SENSING | CLEANING/SECURITY | DAYLIGHTING | FLICK WARN | DIMMING | PHOTOMETRIC CONTROL | ASTRONOMICAL CONTROL |
|---|---|---|---|---|---|---|---|---|---|---|
| DINING ROOM | X | | | | | X | | X | | |
| PATIO & EXTERIOR | X | | | | | | | | X | X |
| KITCHEN | | X | | | | | | | | |
| COLD STORAGE | | | | X | | | | | | |
| OFFICES | X | | X | | | | X | | | |
| RESTROOMS | | | | X | | | | | | |

### COMPONENTS REQUIREMENTS

- K4 SERIES PANELS OR K8 SERIES PANELS
- LOW VOLTAGE SWITCHES WITH PILOT LEDS
- OCCUPANCY SENSORS
- EXTERIOR PHOTOCELL
- DIMMING CONTROLLERS*

*IF CENTRALIZED DIMMING CONTROL IS REQUIRED (AVAILABLE ONLY WITH K8 SERIES)

## CAR DEALERS

CAR DEALERS

| | TIMED SCHEDULES | OVERRIDE SWITCHING | HOLD ON TIME | OCCUPANCY SENSING | CLEANING/SECURITY | DAYLIGHTING | FLICK WARN | DIMMING | PHOTOMETRIC CONTROL | ASTRONOMICAL CONTROL |
|---|---|---|---|---|---|---|---|---|---|---|
| SHOW ROOM | X | | | | X | X | | | | |
| SERVICE AREA | X | | | | X | | | | | |
| OFFICES | X | X | X | | X | | X | | | |
| RESTROOM | | | | X | | | | | | |
| EXTERIOR | X | | | | | | | | X | X |

### COMPONENTS REQUIREMENTS

- K4 SERIES PANELS
- LOW VOLTAGE SWITCHES WITH PILOT LEDS
- CONSTANT LIGHT CONTROLLERS
- EXTERIOR PHOTOCELL

# Typical Applications



## FACILITIES**

| | TIMED SCHEDULES | OVERRIDE SWITCHING | HOLD ON TIME | OCCUPANCY SENSING | CLEANING/SECURITY | DAYLIGHTING | FLICK WARN | DIMMING | PHOTOMETRIC CONTROL | ASTRONOMICAL CONTROL |
|---|---|---|---|---|---|---|---|---|---|---|
| OPEN FLOOR | X | | | | X | X | | | | |
| DOCKS | | | | | | | | X | X | |
| OFFICES | X | X | X | | X | | X | | | |
| RESTROOM | | | | X | | | | | | |
| EXTERIOR | X | | | | | | | X | X | |

### COMPONENT REQUIREMENTS

- K4, K6 OR K8 SERIES* PANELS
- LOW VOLTAGE SWITCHES WITH PILOT LEDS
- MOTION DETECTORS
- EXTERIOR PHOTOCELL
- DIMMING CONTROLLERS*

*IF CENTRALIZED DIMMING CONTROL IS REQUIRED

**THE CITED CONTROL SEQUENCES CAN BE APPLIED TO ANY BUILDING WITH AN OPEN FLOOR TYPE WORK AREA.

## COLLEGES

| | TIMED SCHEDULES | OVERRIDE SWITCHING | HOLD ON TIME | OCCUPANCY SENSING | CLEANING/SECURITY | DAYLIGHTING | FLICK WARN | DIMMING | PHOTOMETRIC CONTROL | ASTRONOMICAL CONTROL |
|---|---|---|---|---|---|---|---|---|---|---|
| CLASSROOMS | X | | X | | X | X | | | | |
| AUDITORIUMS | X | | | | X | | X | | | |
| LABORATORIES | X | | X | | X | X | | | | |
| CAFETERIA | X | | X | | X | X | X | | | |
| OFFICES | X | X | X | | X | | | | | |
| RESTROOMS | | | | X | | | | | | |
| EXTERIOR | X | | | | | | | X | X | |

### COMPONENT REQUIREMENTS

- K6 OR K8 SERIES PANELS
- LOW VOLTAGE SWITCHES WITH PILOT LEDS
- KEY SWITCHES
- MOTION DETECTORS
- CONSTANT LIGHT CONTROLLERS
- EXTERIOR PHOTOCELL
- KAMELEON SOFTWARE (K8)
- LINK TO THE BUILDING MANAGEMENT SYSTEM
- DIMMING CONTROLLERS*

*IF CENTRALIZED DIMMING CONTROL IS REQUIRED

## PARKING LOTS

| | TIMED SCHEDULES | OVERRIDE SWITCHING | HOLD ON TIME | OCCUPANCY SENSING | CLEANING/SECURITY | DAYLIGHTING | FLICK WARN | DIMMING | PHOTOMETRIC CONTROL | ASTRONOMICAL CONTROL |
|---|---|---|---|---|---|---|---|---|---|---|
| ABOVEGROUND STRUCTURES | X | | | | | | | X | X | |
| UNDERGROUND STRUCTURES | X | | | | | | | | | |
| STAIRWELLS | X | | | | | | | | | |

### COMPONENT REQUIREMENTS

- K4 OR K8 SERIES PANELS
- EXTERIOR PHOTOCELL

# System Configuration



Kameleon Lighting Control Systems offer highly customizable configurations that are designed to fully adapt to the occupants, as well as providing cost-savings opportunities to the owners. In its efforts to provide a solution for all types of needs, Gentec R&D Team has been developing three complementary systems: the **K4**, **K6** and the **K8**-Series.

| SYSTEM'S FEATURES | K4 SERIES | K6 SERIES | K8 SERIES |
|---|---|---|---|
| Relay Panels Capacity | 8,16, 32 & 64 | 8,16, 32 & 64 | 8,16, 32 & 64 |
| Two-Wire, 20A, H.I.D., 1 Pole, Latching Relay | √ | √ | √ |
| Two-Wire, 20A Plug-In Relays, 1 Pole, Latching Relay | √ | √ | √ |
| Two-Wire, 20A, H.I.D., Breaker-Relay, Latching Relay | – | √ | √ |
| On-Site Programmable Time Clock | √ | √ | √ |
| On-Site Group Configuration | √ | √ | √ |
| Network Capability | Limited | √ | √ |
| Interoperability – LonMark / LonWork | – | – | √ |
| Interoperability -- BACnet | – | √ | – |
| Software Interface | – | √+BAS | √+BAS |
| Telephone/Modem Interface and Internet Connection | – | √ | √ |
| Switches/Sensors/Photocells Connection | √ | √ | √ |
| Dataline devices (Detector-Switch...) | – | – | √ |
| Warning Flick | √ | √ | √ |
| Time-On Extension | √*** | √ | √ |
| Delay On/Off | √ | √ | √ |
| Advanced Scheduling Programming | – | √+BAS | √+BAS |
| Logger | – | √+BAS | √+BAS |
| Dimming Control | – | ++++ | ++++ |
| Scene Controller | – | – | – |
| DMX-512 Compatible | – | – | – |
| Load Shedding Capabilities | – | – | – |
| Daylight Harvesting | – | ++++ | ++++ |

* 2-hour Fixed Time
++++ Additionnal nformation available on demand.

***BAS***: Building Automation System


K4
SERIES

# K4
# Relay Panels

K4 SERIES

kameleon™
Adaptability in Lighting Control



## GENERAL DESCRIPTION

- Practical design offering easy installation and high efficient running
- Standard sizes for 8, 16 & 32 relays
- Removable hinged door with key lock
- Box knockouts are located on both side of the enclosure to facilitate wire and conduit entries
- Panel and back panel accept 20 A HID heavy relays as well as electronic cards c/w wiring duck
- Line voltage compartment c/w cover plate
- Panel comes with transformer & supply terminal block


## APPLICATION

Small to medium size buildings controlled via a field programmable controller KC-401 and KC-411 astronomical clock; schools; retail & office units; restaurants; garages.

## OVERVIEW

The K4 Series panel offers a robust, reliable low voltage lighting control solution. The panel comes pre-assembled and with field programmable controllers that can be commissioned quickly and easily.

## FEATURES & BENEFITS

Practical design offering ease of installation and efficient running.

## SPECIFICATIONS

| | |
|---|---|
| **Color** | Enclosures & steel doors are coated with ANSI/ASA 61 gray baked enamel |
| **8 & 16-Relay Panels** | 8 & 16-relay panel made of cold-rolled 16 gauge steel |
| **32-Relay Panels** | 32-relay panel made of cold-rolled 14 gauge steel |
| **Mounting Plates** | Galvanised plated removable mounting plates |
| **Protection Plates** | Galvanised zinc plated protection plates |
| **Electrical** | 120/277/347 VAC multi-tap transformer 120, 277, 347 and 480 volts |
| **Operating Environment** | Temperature 0 to 50° C (32 to 112° F) Humidity (non-condensing) 10 to 90% |
| **Certifications** | UL, CSA |

## ROBUST AND RELIABLE HID RELAY

- 20-amp mechanical latching relay
- 1 or 2 poles 277/347 volts
- 2 poles @ 480 VAC
- 2-wire control systems
- SCCR 22 Ka @ 277 VAC, rated 150,000 cycles

## ACCESSORIES/OPTIONS

- Multi-voltage separator (120/277/347 volts)
- Doors for flush mount, invisible screws
- Drip hoods (surface mount only)
- Custom panel designs on request
- NEMA 2, 3, 3A etc.

## SYSTEM CHARACTERISTICS

- 16-channel, 365-day astronomical time clock (KC-411) performs building specific scheduled operation positions
- Automatic calculation of sunrise and sunset times based on date and geographical data
- Automatic updates of all schedules for Daylight Saving Time changes
- Grouping controller KC-401 controlling up to a group of 16 relays, add additional unit for unlimited number of relay controls
- Field-programmable by the user
- Manually overrides individual relays, zones or entire panel

# K4 Relay Panels

kameleon™ Adaptability in Lighting Control

K4 SERIES

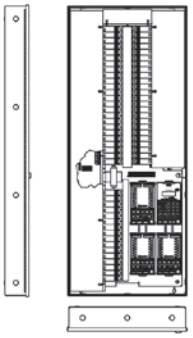
## SURFACE MOUNT ENCLOSED

8 relay panel


16 relay panel


32 relay panel

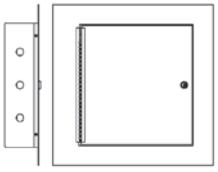

64 relay panel



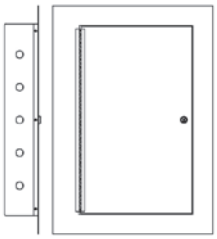
open door

## FLUSH MOUNT ENCLOSED

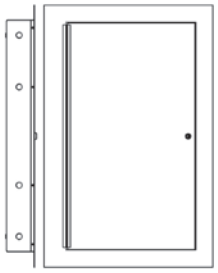
8 relay panel



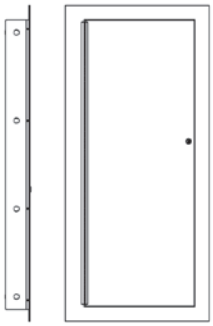
16 relay panel



32 relay panel



64 relay panel



## WEIGHTS AND DIMENSIONS

| K4-xx RP | SCALE | SURFACE MOUNT ENCLOSED | | | FLUSH MOUNT ENCLOSED | | | WEIGHTS | |
|---|---|---|---|---|---|---|---|---|---|
| | | Height | Wide | Deep | Height | Wide | Deep | | |
| 8 | inches | 15 | 15 | 4.1 | 19.4 | 19.4 | 4.1 | 26 | lbs |
| | mm | 381 | 381 | 101 | 493 | 493 | 101 | 12 | kg |
| 16 | inches | 23.3 | 15 | 4.1 | 27.7 | 19.4 | 4.1 | 42 | lbs |
| | mm | 592 | 381 | 101 | 704 | 493 | 101 | 19 | kg |
| 24 | inches | 33.5 | 20 | 4.1 | 37.9 | 24.4 | 4.1 | 83 | lbs |
| | inches | 850 | 508 | 101 | 962 | 620 | 101 | 38 | kg |
| 32 | inches | 33.5 | 20 | 4.1 | 37.9 | 24.4 | 4.1 | 83 | lbs |
| | mm | 850 | 508 | 101 | 96.2 | 620 | 101 | 38 | kg |
| 48 | inches | 49.2 | 20 | 4.1 | 53.6 | 24.4 | 4.1 | 140 | lbs |
| | mm | 1250 | 508 | 101 | 1362 | 620 | 101 | 64 | kg |
| 64 | inches | 49.2 | 20 | 4.1 | 53.6 | 24.4 | 4.1 | 140 | lbs |
| | mm | 1250 | 508 | 101 | 1362 | 620 | 101 | 64 | kg |

## ORDERING INFORMATION

| MODEL | |
|---|---|
| K4 | 1 = Series |
| XX | 2 = Capacity |
| RP | 3 = Relay Panel |
| S | 4 = Mounting Type Surface (S) / Flush (F) |
| 1 | 5 = Type 1, 2, 3R, 4X |

| MODEL | RELAYS CAPACITY | TYPE |
|---|---|---|
| K4-8RP-S1 | 8 | ❑ S |
| K4-16RP-S1 | 16 | ❑ F |
| K4-24RP-S1 | 24 | ❑ S |
| K4-32RP-S1 | 32 | ❑ F |
| K4-48RP-S1 | 48 | ❑ S |
| K4-64RP-S1 | 64 | ❑ F |

# KC-401
# Relay Controller

K4 SERIES

kameleon™
Adaptability in Lighting Control



## GENERAL DESCRIPTION

- Field Programmable Relay Controller
- 16-Output (20 A HID Relay Controller)
- Up to 4 groups (zones) Configuration
- 2 controllers can be networked and therefore controls up to 32 relays and 8 groups
- Multi-Group Relay Assignment Capability
- Real Time System Status Feedback
- Provided Through Different LED Patterns
- Membrane Keypad
- Push-Button Switch Tone
- Multiple Input Combination (4 devices):
  - low Voltage 2-Wire Switch
  - dry Contact
  - occupancy Sensor
  - time Clock
  - photocell
  - light Level Controller
- Energy Codes Certified Features:
  - timed Schedules (when tied to a time clock)
  - flick Warn
  - time-ON Extension
  - override Switching
  - ON only and OFF only
  - photometric Controlled (when tied to a photocell)
  - astronomical Controlled (when tied to a time clock)


## SPECIFICATIONS

- RS-485 Serial Communications between K4 Controllers
- Plastic Enclosure to Protect the Electronics
- Dimensions: 4.2 in x 7.0 in (107 mm x 180 mm)

## FUNCTIONAL CHARACTERISTICS

- 16 Outputs to Control 2-Wires Relay
- Keypad for Field Programmability
- Local Override Possibility
- 4-Digital Inputs

## ELECTRICAL SPECIFICATIONS

- Power Supply 24 Vac, 125 mA
- IEC Standards Compliance
  - IEC 60255-22-4: Fast Transient Disturbance Tests
  - IEC 61000-4-2: Electrostatic Discharge Immunity Test
- Environment
  - temp. 0-50° C (32 - 122° F)

## ACCESSORIES/OPTIONS

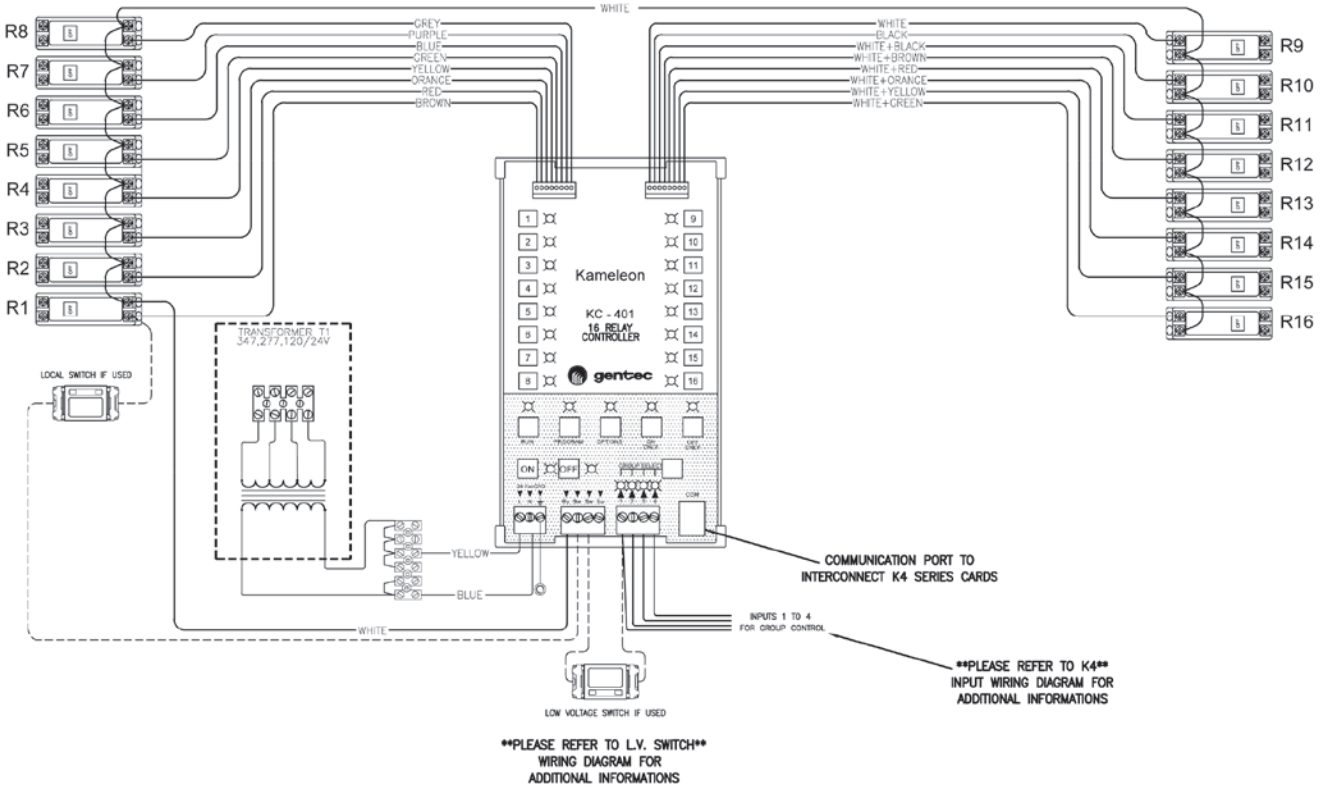
- Complete Kit with Installation Gear 39691-xx

# KC-401
# Relay Controller

kameleon™
Adaptability in Lighting Control

K4 SERIES






## ORDERING INFORMATION

| PART NUMBER | KAMELEON SERIES | RELAY CONTROLLER K4 SERIES |
|---|---|---|
| **35459-01** | KC | -401 |
| **39691-01** | Complete Kit | |

# KC-411
## Time Clock Controller

K4 SERIES

kameleon™
Adaptability in Lighting Control



## GENERAL DESCRIPTION

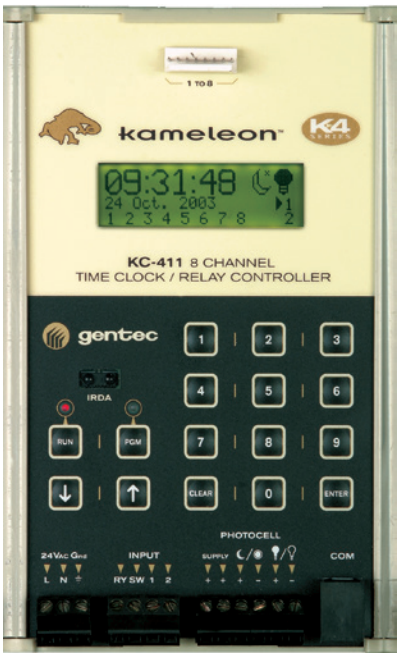
- Field Programmable Time Clock Controller
- 8 Outputs (Channels or Relays)
- Up to 2-group (zone) Configurations
- A KC-411 can be networked with a KC-401
- Relay Controller
- Multi-Group Relay Assignment Capability
- LCD Display (4 Lines – 20 Characters)
- Membrane Keypad
- Push-Button Switch Tone
- Palm Pilot Programming/Operation Capabilities (IRDA)
- Multiple Input Combination (2 devices):
  - low voltage 2-Wire Switch
  - dry contact
  - occupancy sensor
  - switch
  - photocell
  - light level controller
- Photocell Dedicated Input (2) (Resistive AnalogInput)
- Daylight Savings
- Astronomical Clock
- 365-Day, 7-Day and 24-Hour Programming
- Up to 256 Schedules (Once, Daily, Weekly, Monthly, Yearly)
- Events Priority Management
- Energy Codes Certified Features:
  - timed schedules
  - flick warn
  - time-ON extension
  - override switching
  - ON only and OFF only
  - astronomical control
  - photometric control

## SPECIFICATIONS

- RS-485 Serial Communications between K4 Controller
- Plastic Enclosure to Protect the Electronics
- LCD Display for Programming
- Dimensions: 4.2 in x 7.0 in (107 mm x 180 mm)

## FUNCTIONAL CHARACTERISTICS

- 8 Outputs to Control 2-Wires Relay
- Keypad for Field Programmability
- LCD Display for Ease of Programming
- Local Override Possibility
- 2-Digital Inputs
- 2 Analog Resistive Inputs




## ELECTRICAL SPECIFICATIONS

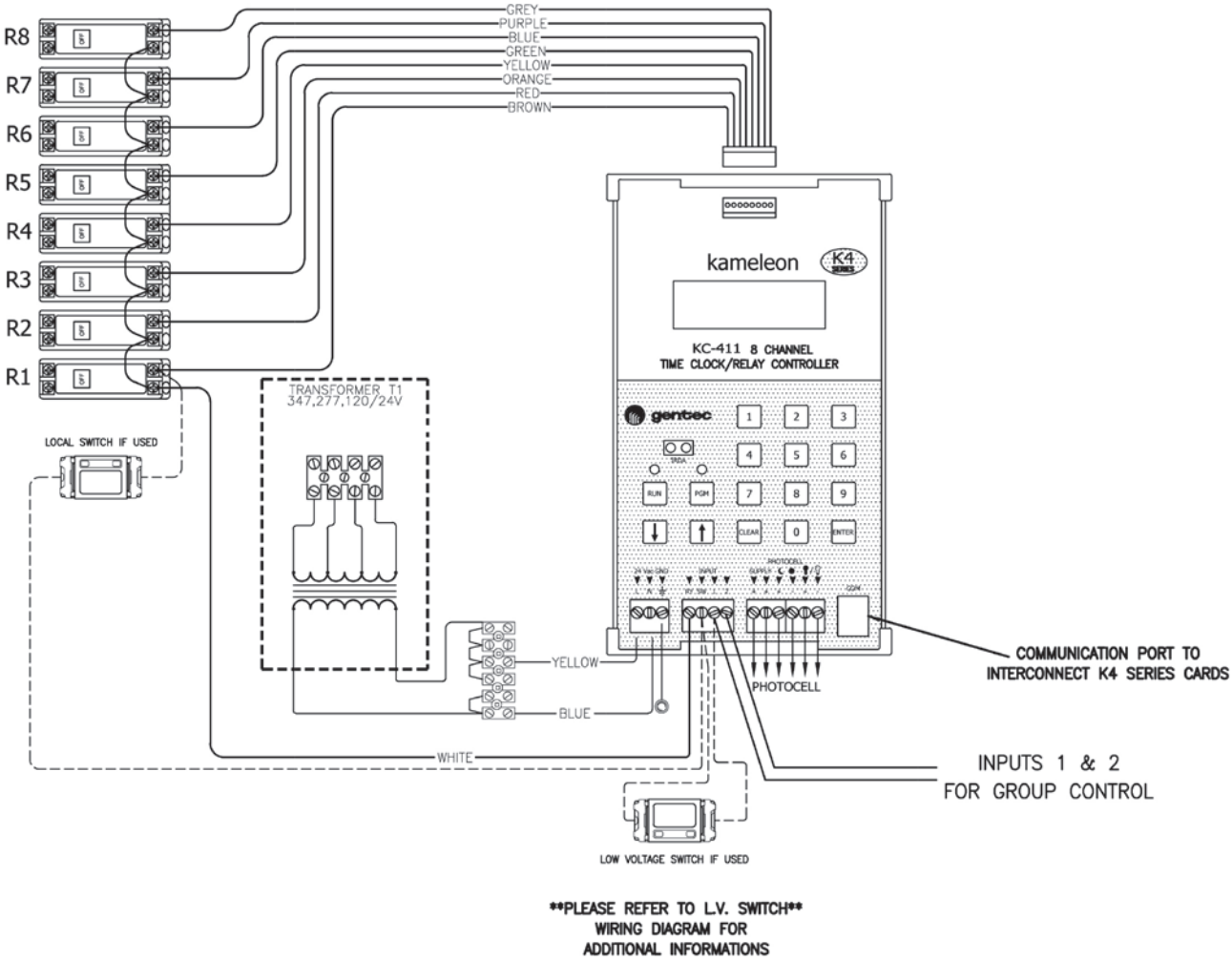
- Power Supply 24 Vac, 125 mA
- IEC Standards Compliance
  - IEC 60255-22-4: Fast Transient Disturbance Tests
  - IEC 61000-4-2: Electrostatic Discharge Immunity Test
- Environment
  - temp. 0-50° C (32 - 122° F)

## ACCESSORIES/OPTIONS

- Complete Kit with Installation Gear 39690-xx

# KC-411
## Time Clock Controller






## ORDERING INFORMATION

| PART NUMBER | KAMELEON SERIES | TIME CLOCK CONTROLLER K4 SERIES |
|---|---|---|
| **35563-02** | KC | -401 |
| **39690-01** | Complete Kit | |


K6
SERIES

# K6
# Relay Panels

K6 SERIES

kameleon™
Adaptability in Lighting Control

## GENERAL DESCRIPTION

- Practical design offering easy installation and high efficient running
- Standard sizes for 8, 16, 32 & 64 relays panel
- Removable hinged door with key lock
- Box knockouts are located on both side of the enclosure to facilitate wire and conduit entries
- Panel and back panel accept 20 A HID heavy relays as well as electronic cards c/w wiring duck
- Line voltage compartment c/w cover plate
- Panel comes with transformer & supply terminal block

## APPLICATION

Lighting Control automation in medium to large buildings in BACnet technology using the K6 series devices:

- BACnet Controller KC-600 IP
- BACnet Controller KC-601
- Input card KC-621
- Output card KC-631, KC-632
- Time Clock Controller KC-600

Interoperability in commercial, institutional and industrial automation building application.

## OVERVIEW

The K6 Series panel offers a robust, reliable low voltage lighting control solution. The panel comes pre-assembled and with BACnet programmable controllers that can be commissioned quickly and easily from BAS. Quality standards as per ISO 9001:2008.

## FEATURES & BENEFITS

Practical design offering ease of installation and efficient running and interoperability in Automation building System.

## SPECIFICATIONS

| | |
|---|---|
| **Color** | Enclosures & steel doors are coated with ANSI/ASA 61 gray baked enamel |
| **8 & 16-Relay Panels** | 8 & 16-relay panel made of cold-rolled 16 gauge steel |
| **32, 64-Relay Panels** | 32, and 64-relay panel made of cold-rolled 14 gauge steel (built for 24, 32, 48 & 64-relay configurations) |
| **Mounting Plates** | Galvanised plated removable mounting plates |
| **Protection Plates** | Galvanised zinc plated protection plates |
| **Electrical** | 120/277/347 Vac multi-tap transformer 120, 277, 347 and 480 volts |
| **Operating Environment** | Temperature 0 to 50° C (32 to 122° F) Humidity (non-condensing) 10 to 90% |
| **Certifications** | UL listed, CSA, Assembly ISO 9001:2008 |


## SYSTEM CHARACTERISTICS

- Individual 365-day astronomical time clock (KC-600 performs building specific scheduled operation positions
- Automatic calculation of sunrise and sunset times based on date and geographical data
- Automatic updates of all schedules for DST changes
- Functions application control:
  - sweep ON/OFF
  - manual OFF
  - time–ON extension
  - flick warning
  - motion sensing
  - cleaning/security
  - dimming
  - daylighting and daylight harvesting
  - photocell
  - astronomical time clock
  - photoreactive lighting control and dimming

## ROBUST AND RELIABLE HID RELAY

- 20-amp mechanical latching relay
- 1 or 2 poles 120/277/347 volts
- 2 poles @ 480 VAC
- 2-wire control systems
- SCCR 22 Ka @ 277 VAC, rated 150,000 cycles

## ACCESSORIES/OPTIONS

- Multi-voltage separator (120/277/347 volts)
- Doors for flush mount, invisible screws
- Drip hoods (surface mount only)
- Custom panel designs on request
- NEMA 2, 3R, 12, 4X etc.
- K600 configuration and application software c/w graphic control and display

# K6 Relay Panels

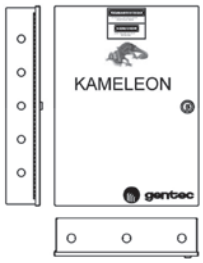
K6 SERIES

kameleon™
Adaptability in Lighting Control

## SURFACE MOUNT ENCLOSED

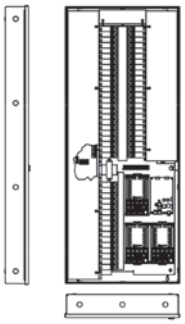
8 relay panel


16 relay panel




32 relay panel

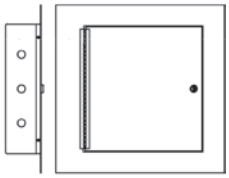

64 relay panel



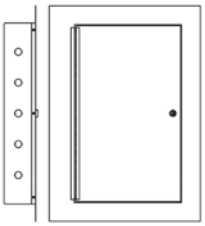
open door

## FLUSH MOUNT ENCLOSED

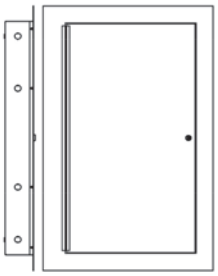
8 relay panel



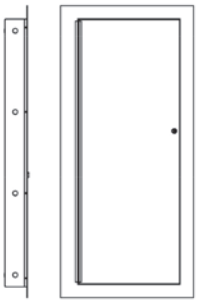
16 relay panel



32 relay panel



64 relay panel



## WEIGHTS AND DIMENSIONS

| K6-xx RP | SCALE | SURFACE MOUNT ENCLOSED | | | FLUSH MOUNT ENCLOSED | | | WEIGHTS | |
|---|---|---|---|---|---|---|---|---|---|
| | | Height | Wide | Deep | Height | Wide | Deep | | |
| 8 | inches | 15 | 15 | 4.1 | 19.4 | 19.4 | 4.1 | 26 | lbs |
| | mm | 381 | 381 | 101 | 493 | 493 | 101 | 12 | kg |
| 16 | inches | 23.3 | 15 | 4.1 | 27.7 | 19.4 | 4.1 | 42 | lbs |
| | mm | 592 | 381 | 101 | 704 | 493 | 101 | 19 | kg |
| 24 | inches | 33.5 | 20 | 4.1 | 37.9 | 24.4 | 4.1 | 83 | lbs |
| | inches | 850 | 508 | 101 | 962 | 620 | 101 | 38 | kg |
| 32 | inches | 33.5 | 20 | 4.1 | 37.9 | 24.4 | 4.1 | 83 | lbs |
| | mm | 850 | 508 | 101 | 96.2 | 620 | 101 | 38 | kg |
| 48 | inches | 49.2 | 20 | 4.1 | 53.6 | 24.4 | 4.1 | 140 | lbs |
| | mm | 1250 | 508 | 101 | 1362 | 620 | 101 | 64 | kg |
| 64 | inches | 49.2 | 20 | 4.1 | 53.6 | 24.4 | 4.1 | 140 | lbs |
| | mm | 1250 | 508 | 101 | 1362 | 620 | 101 | 64 | kg |

## ORDERING INFORMATION

| MODEL | |
|---|---|
| K6 | 1 = Series |
| XX | 2 = Capacity |
| RP | 3 = Relay Panel |
| S | 4 = Mounting Type Surface (S) / Flush (F) |
| 1 | 5 = Type 1, 2, 3R, 4X |

| MODEL | RELAYS CAPACITY | TYPE |
|---|---|---|
| K6-8RP-S1 | 8 | ❑ S |
| K6-16RP-S1 | 16 | ❑ F |
| K6-24RP-S1 | 24 | ❑ S |
| K6-32RP-S1 | 32 | ❑ F |
| K6-48RP-S1 | 48 | ❑ S |
| K6-64RP-S1 | 64 | ❑ F |

# KC-601
# Interface BACnet

K6 SERIES

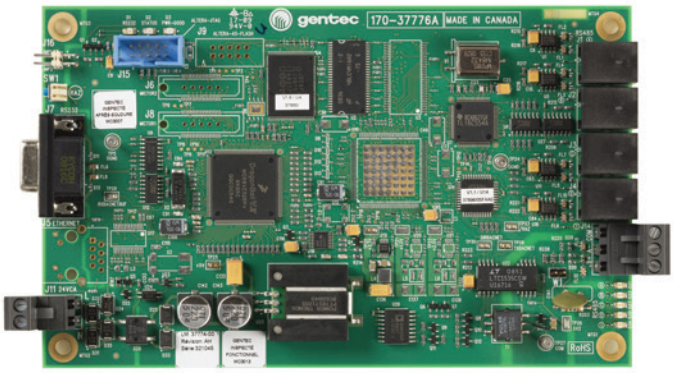
kameleon™
Adaptability in Lighting Control

## GENERAL DESCRIPTION

The KC-601 interface is a Native BACnet application controller that communicates on a BACnet MS/TP RS-485 LAN. The controller is designed for lighting control applications in accordance with the KC-401 series controller. The KC-601 provide a complete relay panel control from 8 to 64 lighting control relays with parallel control devices as switches, motion detectors, BAS, etc.

- Field Programmable KC-601 Controller
- 4-Output RS-485 LAN @ 9600, 19200, 38400, 11520 bds
- Support up to 4 Groups (KC-401) Configuration
- A KC-601 can be networked with a KC-401 Relay Controller to control up to 64 relays and 4 groups
- Multi-Group Relay Assignments Capability
- Multiple Output Combinations (4 Devices):
  - KC-401 Sequencer Control Complying:
    - photocell (indoor and outdoor)
      - dedicated inputs (2)
  - Inputs
    - (1) RS-485 BACnet LAN Port
    - (1) RS-232 Port for PC
    - (1) Push-Button Reset
    - (1) BACnet Communication Status LED
    - (3) Programming Status LED Indicators
    - 24 Vac Supply
  - Outputs
    - (4) RS-485 Communications Ports
    - (3) RS-485 Communication LED Indicators

BACnet®




## ELECTRICAL SPECIFICATIONS

- Power Supply 24 Vac, 125 mA, Class 2
- IEC Standards Compliances
  - IEC 60255-22-4: Fast Transient Disturbance Tests
  - IEC 61000-4-2: Electrostatic Discharge Immunity Test
- Environment
  - temp. 0-50° C (32 - 122° F)
  - humidity (non-condensing) 10 to 90%

## SPECIFICATIONS

- Protocol
  - BACnet MS/TP
  - Serial Communication Between KC-601 & KC-401

## ACCESSORIES/OPTIONS

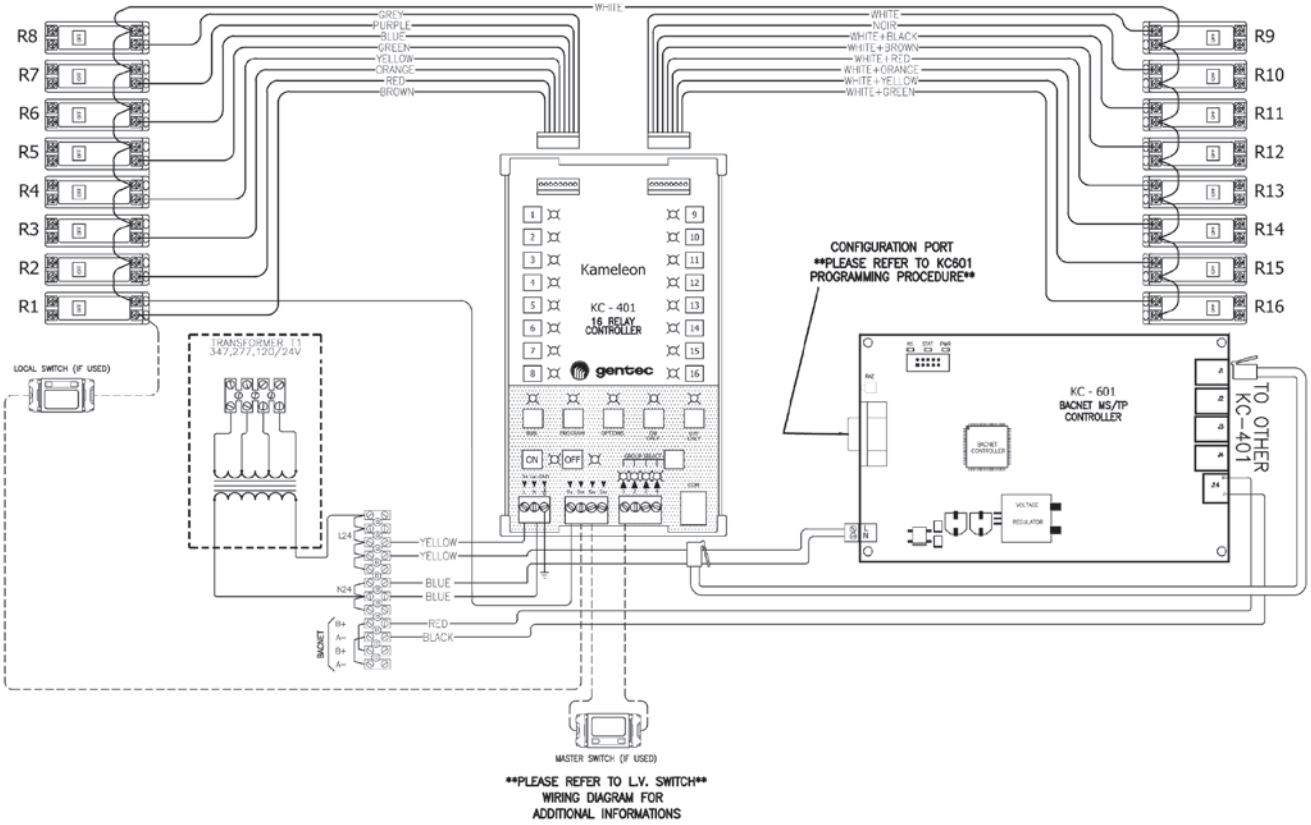
- Installation Kit

## FUNCTIONAL CHARACTERISTICS

- The KC-601 is a BACnet MS/TP device that allows KC-401 sequencer to send and receive BACnet commands to or from BAS.
- The KC-601 interface uses RS-485 networking technology that uses Native BACnet MS3TP protocol.
- Building Management System (BAS) can configure and program from their database all of the functions inherent in the KC-601 BACnet node and KC-401 sequencer.
- The KC-601 conforms to the open Native BACnet variable for lighting control.
- The KC-601 allows programming, control and monitoring up to (4) KC-401 sequencer of 16-relay group each.
- The KC-601 allows control and monitoring of 60 relays individually.
- The KC-601 allows control and monitoring of 16 multiple contacts devices as switches, time clock, occupancy and light sensors.

# KC-601
# Interface BACnet






- Dimensions: 107 mm x 180 mm (4,2" x 7,0")

## ORDERING INFORMATION

| PART NUMBER | KAMELEON SERIES | BACNET INTERFACE K6 SERIES |
|---|---|---|
| **37774-00** | KC | -601 |
| **39689-01** | Complete Kit | |

# KC-600
# BACnet Controller

K6 SERIES

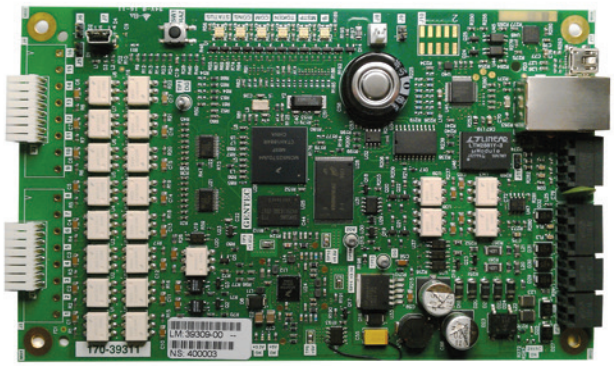
kameleon™
Adaptability in Lighting Control



## GENERAL DESCRIPTION

BACnet®

- Lighting Controller BACnet Ethernet IP conforming to the standards of BACnet
- Card confirms to design standards required by BTL operating in a native BACnet environment
- On board connections:
  - Bacnet/IP
  - Modbus between input and output control cards
  - Local USB port for local PC connection
- KC-600 incorporates also:
  - IP Ethernet Port c/w RJ45 connector
  - Modbus Port (4)
  - USB Port for local PC connection
  - Dry contact inputs, switches (2)



## APPLICATION

Low voltage lighting control interoperability with a Building automation system in a BACnet Ethernet IP network.


Max (4) Cards
Inputs (66)

Max (3) Cards
Inputs (64)

## TECHNICAL CHARACTERISTICS

KC-600 supports BACnet objects of type “device”; Max. 66 objects of BACnet type “binary input” to represent control inputs, Max. 64 objects of BACnet type “binary output” to represent control outputs.

Supplementary inputs/outputs supported “device BACnet” with the KC-621/KC-631 expansion cards via the Modbus port.

## SPECIFICATIONS

| | |
|---|---|
| **BACnet Requests Supported** | Ethernet IP “Native BACnet protocol”<br>• 64 BACnet objects of type “binary output” to represent individual output (relays) controlled<br>• 32 Output groups by KC-600 card, represented by other objects BACnet of type “binary output”<br>• Each created group, is able to show “analog value” in order to indicate the options applied to a group<br>• 32 Object of type “schedule”<br>• 32 Objects of type “calendar” (linked to previous)<br>• Objects of type “analog value” and “binary value” to allow certain parameters adjustments (mainly communication) of the control card KC-600 |
| **Connectors** | RJ45 Ethernet IP |

## ELECTRICAL SPECIFICATIONS

- Power Supply 24 VAC, 150 mA class 2
- Environment:
  - temp. 0-50° C (32 - 122° F)
  - humidity (non-condensing) 10 to 90%
- Noise suppression/IEC 60255-22-4 and 61000-4-2
- 16 Polarised Outputs 24 VAC & 2 binary inputs

## ACCESSORIES/OPTIONS

- Output Card (3) KC-631 “2-wire command” KR-6161
- Input Card (4) KC-621
- K600 Configuration & Lighting Control Software

## FUNCTIONAL CHARACTERISTICS

- Communication Port BACnet - Ethernet IP
- Astronomic time clock, Sunrise – Sunset Management
- Automatic Daylight Saving Time Adjustment
- Multiple Group Management (up to 32 groups)
- Networkable and Interoperable
- Interoperable Functions: Time-On Extension, Warning, On Only, Off Only
- Override Commands ON/OFF including (ON/OFF/Relinquish)
- Dedicated K600 - PICS Statement
- Auto-addressable Modbus network linked to internal network (within panel)



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# KC-600
# BACnet Controller

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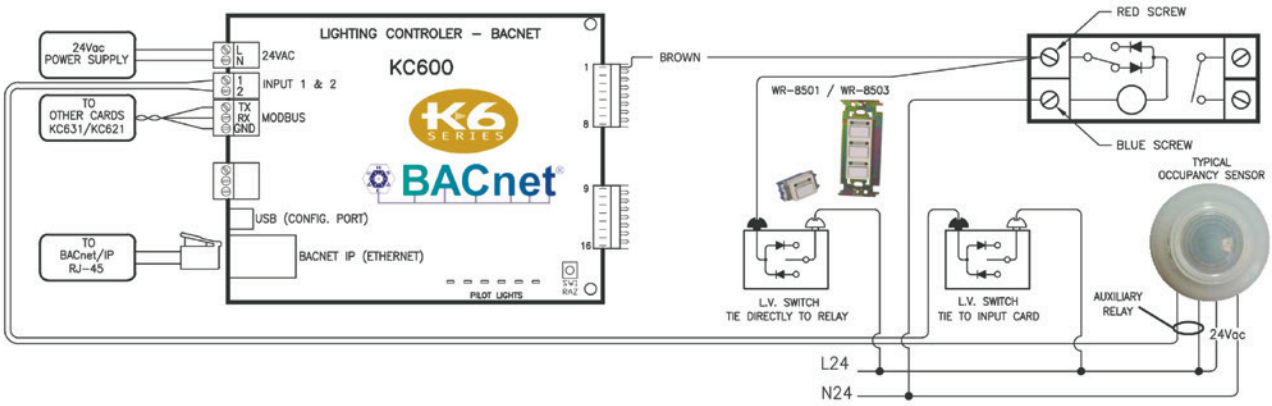
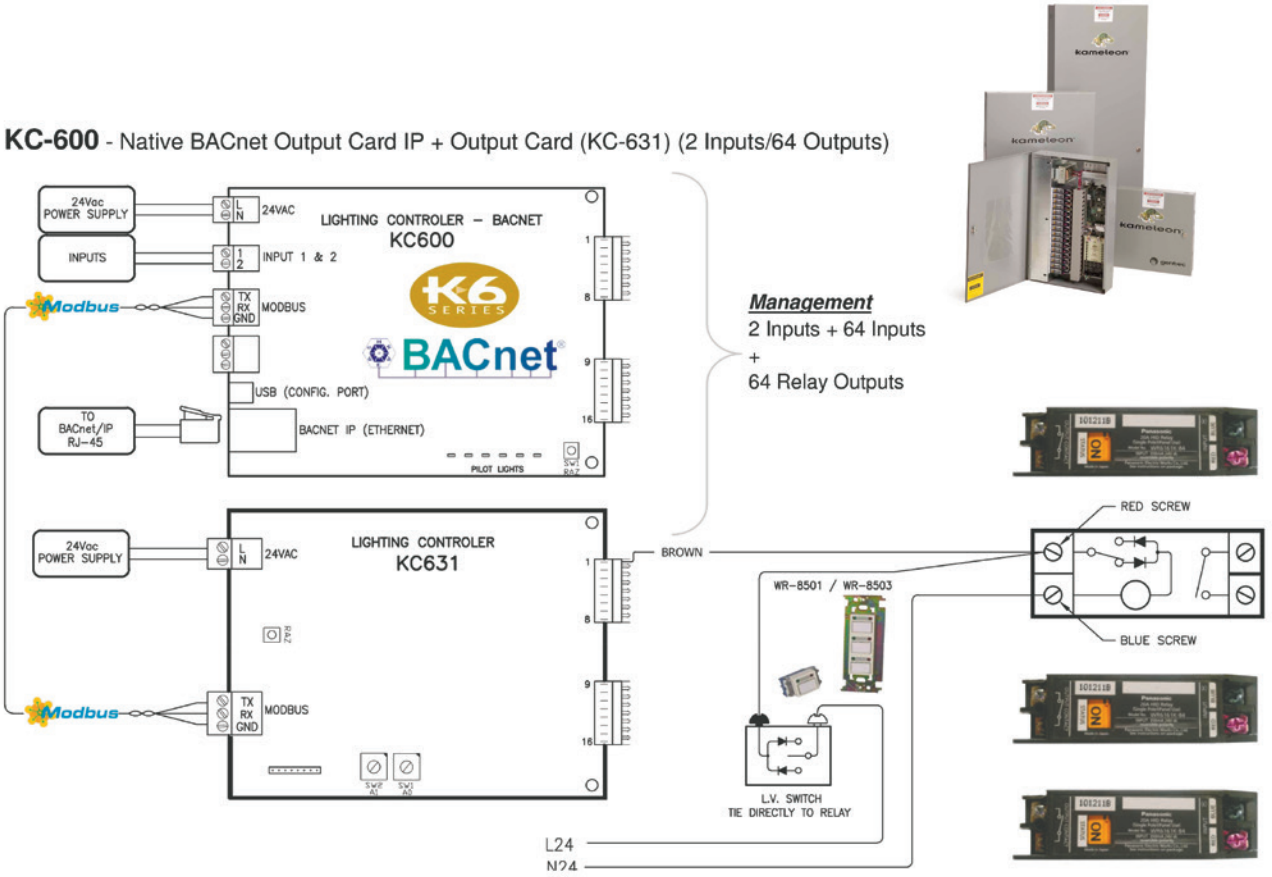
Adaptability in Lighting Control

K6 SERIES

**KC-600** - Native BACnet Controller IP version (2 Inputs/16 Outputs)




**KC-600** - Native BACnet Output Card IP + Output Card (KC-631) (2 Inputs/64 Outputs)




## ORDERING INFORMATION

| PART NUMBER | KAMELEON SERIES | BACNET CONTROLLER K6 SERIES |
|---|---|---|
| **39309-00** | KC | -600 |
| **39951-01** | Complete Kit | |

# KC-631
# 16-Output Card

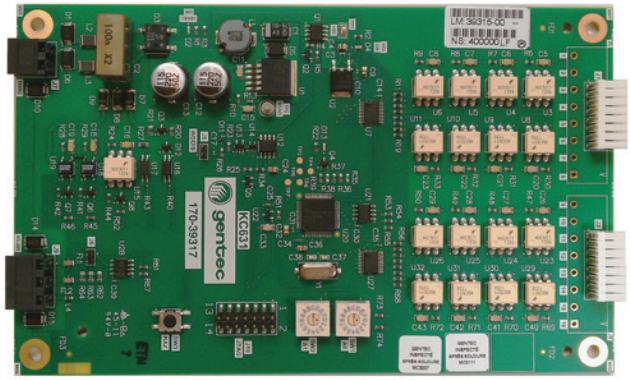
K6 SERIES

kameleon™
Adaptability in Lighting Control

BACnet®

## GENERAL DESCRIPTION

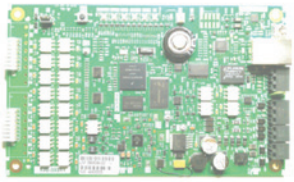
- The KC-631 output lighting control card is designed to control either 16 low voltage relays 2-wire type (WR-6161)
- The design and construction conforms to the following demands:
  - Low Voltage Lighting Control
  - Modbus Communication to allow the interoperability of all output cards (3) and the master KC-600 BACnet controller card packaged in the same cabinet
- RS-485 (1) connector allowing connections to an internal Modbus network
- Modbus manual address via rotary switch: each card comes with two selectors
- Each output point of the KC-631 is individually:
  - addressable
  - ON/OFF Command
  - relay output status sent via the Modbus




## APPLICATION

Interoperable management of a complete group of 16 low voltage lighting control relays:

- Management, Grouping
- Relay Status Management
- Etc.



BACnet Controller KC-600 IP

Control Relay 2 Wires

## TECHNICAL CHARACTERISTICS

The KC-631 card offers a flexible management control of zones and according to each zone requirement.

## SPECIFICATIONS

| | |
|---|---|
| **Communication** | Modbus TCP RS-485 |
| **Network** | Modbus TCP to address each output (0-255) |
| **Connections** | Terminal Block |

## FUNCTIONAL CHARACTERISTICS

- Modbus Communication Port RS-485
- Compatibility with different relay types 24 VAC:
  - 2-wire - WR-6161
- Each of the addressable outputs are configurable according to design conditions such as:
  - room Switch
  - occupancy Sensors
  - schedules
  - external inputs according to requirements

## ELECTRICAL SPECIFICATIONS

- Power Supply 24 VAC, 150 mA class 2
- Environment
  - temp. 0-50° C (32 - 112° F)
  - humidity (non-condensing) 10 to 90%
- Noise suppression/IEC 60255-22-4 and 61000-4-2
- 16 Polarised Outputs 24 VAC and 2 binary inputs

## ACCESSORIES/OPTIONS

- Controller Card KC-600
- Input Card (4) KC-621
- K600 Configuration and Lighting Control Software

# KC-631
# 16-Output Card

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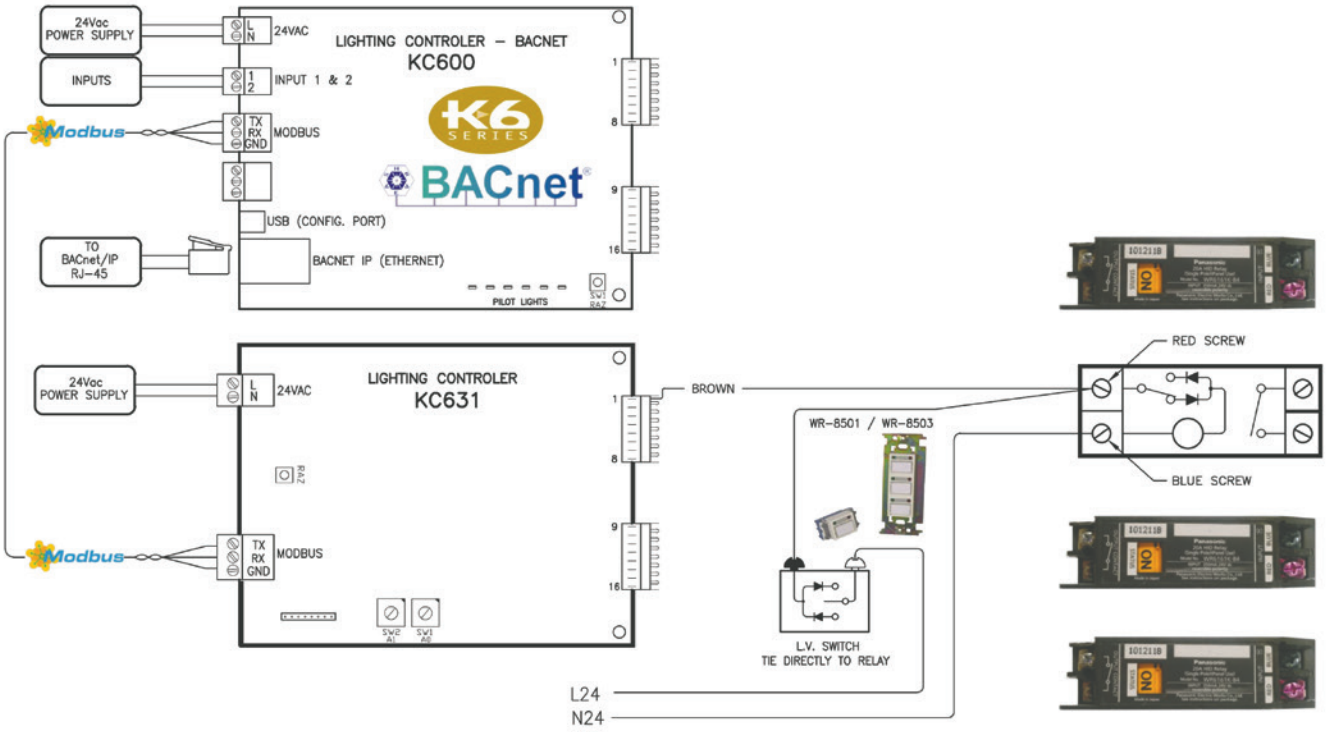
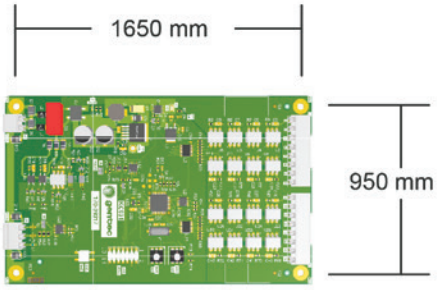
Adaptability in Lighting Control

K6 SERIES

## KC-631 - Low Voltage Lighting Control – BACnet Network




## KC-631 - 16-Output Control 2-Wire Relay




| Dimensions: 180 mm x 110 mm (7.0" x 4.3") | | | | |
|---|---|---|---|---|
| | | POWER SUPPLY | INPUT | OUTPUT |
| KC-631 | 2 wires | 18 to 24 VAC | -- | (16) 24 VAC Polarised |

## ORDERING INFORMATION

| PART NO. | KAMELEON SERIES | BACNET K6 SERIES CONTROLLER |
|---|---|---|
| 39315-00 | KC | -631 |
| 39953-xx | Complete Kit | |

# KC-621
# 16-Input Card

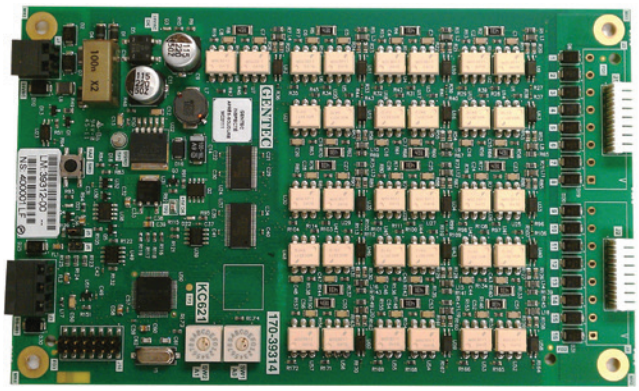
K6 SERIES

kameleon™
Adaptability in Lighting Control

## GENERAL DESCRIPTION

- The input lighting control card KC-621 is designed to control a range of 16 low voltage switches and occupancy sensors or dry contact management.
- The design and construction uses Modbus to enable intercommunication between the (4) input cards, (4) output cards & (1) Native BACnet KC-600 control card assembled in the same low voltage lighting control panel.
- RS-485 (1) connector allowing connections to an internal Modbus network.
- Manual address via rotary switch: Each card comes with two selectors.
- The KC-621 supports the management of 16 inputs such as:
  - dry Contact, low voltage switches ON/OFF
  - occupancy sensor or photocell
  - BAS

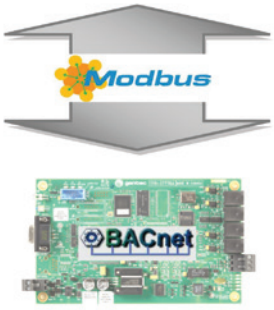
BACnet®



## APPLICATION

Linked to the Native BACnet KC-600 the KC-621 input cards assure programmable inputs for all ON/OFF commands generated by the switches or occupancy sensors connected. Each control point linked to the inputs allows the management of the overall low voltage lighting control system. Each of the K600 BACnet control cards reads and transmits the status of each input in real time:

- management of groups and inputs
- input status management




BACnet KC-600 "Native" Controller

## SPECIFICATIONS

| | |
|---|---|
| **Protocol** | Modbus - RTU – RS-485 |
| **Network** | RS-485/Modbus to addresses (0-255) |
| **Communication Status** | Individual indicator lamps |

## FUNCTIONAL CHARACTERISTICS

- Programmable input management (16)
- 16-digital inputs for management control:
  - room Switches (16)
  - occupancy Sensors
  - photocells
- Internal Modbus Network
- Multiple Group Assignment
- Control ON/OFF including "Relinquish"

## ELECTRICAL SPECIFICATIONS

- Power Supply 24 VAC, 150 mA class 2
- Environment
  - temp. 0-50° C (32 - 112° F)
  - humidity (non-condensing) 10 to 90%
- Noise suppression/IEC 60255-22-4 et 61000-4-2
- 16-Digital Inputs (Dry Contacts)

## ACCESSORIES/OPTIONS

- 2-Wire Switch
- Occupancy Sensors and Photocells
- K600 Configuration & Lighting Control Software

# KC-621
## 16-Input Card

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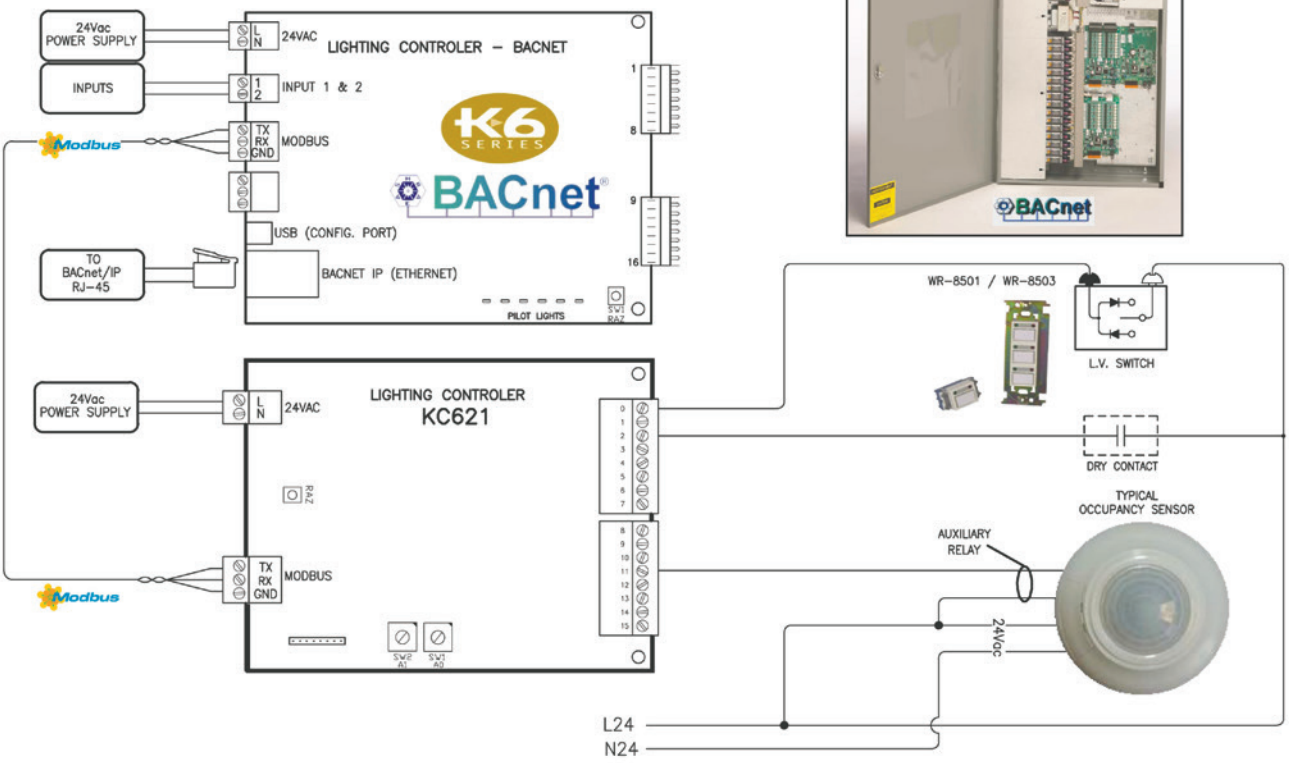
Adaptability in Lighting Control

K6 SERIES

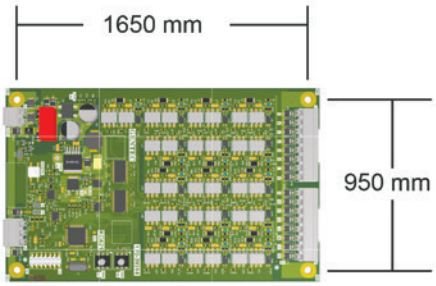
**KC-621** - Low Voltage Lighting Control – Modbus RTU Network in Lighting Control Cabinet







**KC-621** - 16 Inputs Lighting Control Card




| Dimensions: 180 mm x 110 mm (7.0” x 4.3”) | | | |
|---|---|---|---|
| | POWER SUPPLY | INPUT | OUTPUT |
| **KC-621** | 18 to 24 VAC | Dry Contact | -- |

## ORDERING INFORMATION

| PART NO. | KAMELEON CARD | BACNET K6 SERIES CONTROLLER |
|---|---|---|
| **39312-00** | KC | -621 |
| **39952-01** | Complete Kit | |

# KCF600
# Kameleon Software

K6 SERIES

kameleon™
Adaptability in Lighting Control



## GENERAL DESCRIPTION

- Kameleon software executed underWindows XP, 7 or 8 environment.
- Simplify the integration of the K6 system with any building automation system.
- Simple & intuitive interface, easy to configure, to program and to operate.

## SPECIFICATIONS

### System Programming

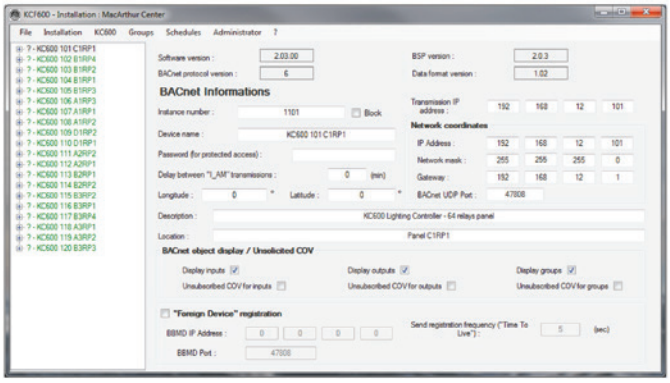
- Configuration and definition of groups
- Inputs/Outputs Bindings Configuration
- Schedule creation for groups
- User management (level, password, user name)

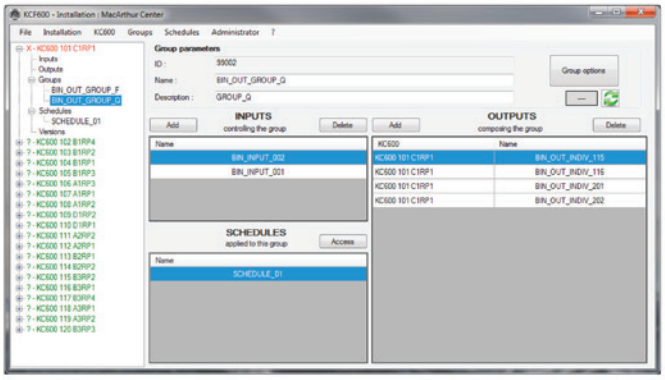
### System Configurations

- KC600 configuration (IP config.)
- Installation management (KC600 management, time sync., firmware update for KC600, KC621 and KC631)

### System Operations

- Options Configuration (TOE, Warning, ON only, OFF only)
- BACnet Priority Management
- Possibility to modify schedules
- Real time feedback from inputs and outputs
- Capacity to directly write to an output



# KCF600
# Kameleon Software

kameleon™
Adaptability in Lighting Control

K6 SERIES

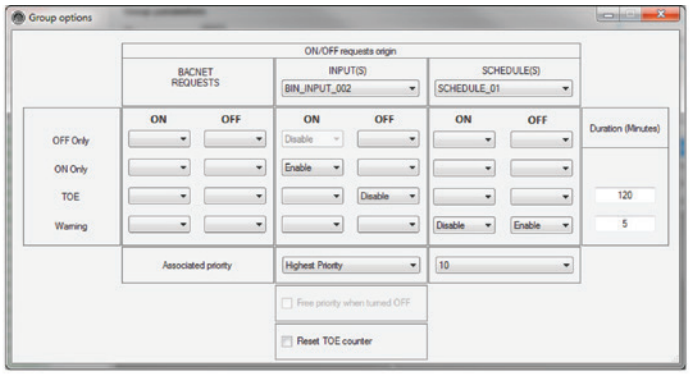
## SPECIFICATIONS

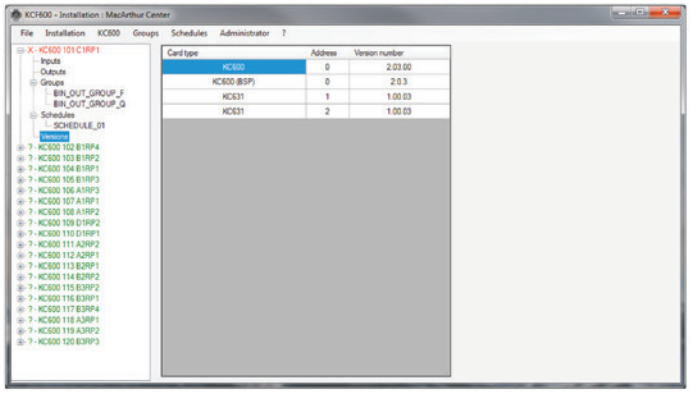
### Scheduler

- Many types of event scheduling available: daily, weekly, monthly, annually, once.
- Capacity to program even base on sunset and sunrise.
- Programming flexibility, possibility to choose between: day of a week, a certain week of the month, ex: first day of September, etc.

### Additional Features

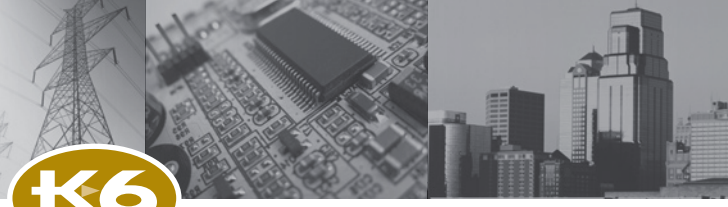
- Kameleon K6 software also offers:
  - scheduling with warning
  - hold time
  - etc.




## ORDERING INFORMATION

| PART NO. | KAMELEON SOFTWARE | KAMELEON SOFTWARE K6 SERIES |
|---|---|---|
| **45228-00** | KCF | K6 Series |





# Protocol Implementation Conformance Statement

BACnet®

**Date :** 2012/01/03

**Vendor Name:** Gentec inc.

**Product Name:** BACnet Lighting Controller

**Product Model Number:** KC-600

**Applications Software Version:** 1.10

**Firmware Revision:** 1.00

**BACnet Protocol Revision:** 4

## PRODUCT DESCRIPTION

- The KC-600 by itself is a controller card that allows:
  - the monitoring of 2 inputs (for switches, movement detectors, etc.)
  - the monitoring and the control of 16 outputs for 2 wires lighting relays
- The capacity of the KC-600 can be increased up to 66 inputs and 64 outputs by connecting extra cards to its RS-485 Modbus port:
  - each KC-621 card allows 16 additional inputs
  - each KC-631 card allows 16 additional outputs
- The KC-600 can be monitored and controlled by a BACnet console through a:
  - BACnet/IP communication (UDP port)
  - or “Master-Slave/Token-Passing” network (MS/TP – RS-485)
- The KC-600 can be configured through an IP communication (IP port) from a specific “Configuration Console” provided with the KC-600. Through this console:
  - groups of outputs on different KC-600 cards can be created, appearing as “Binary Outputs” from a BACnet console
  - schedulers and calendars may be created and applied to group(s)

## BACNET STANDARDIZED DEVICE PROFILE (ANNEX L)

BACnet Application Specific Controller (B-ASC)

## LIST ALL BACNET INTEROPERABILITY BUILDING BLOCKS SUPPORTED (ANNEX K)

### Data Sharing BIBBs

- DS-RP-B (Read Property)
- DS-RPM-B (Read Property Multiple)
- DS-WP-B (Write Property)
- DS-WPM-B (Write Property Multiple)

### Alarm and Event Management BIBBs

- DS-COV-B (Provider of COV data)
- DS-COVU-B (Generates Unsolicited COV data)

### Scheduling BIBBs

- SCHED-I-B (Scheduling Internal)

### Trending BIBBs

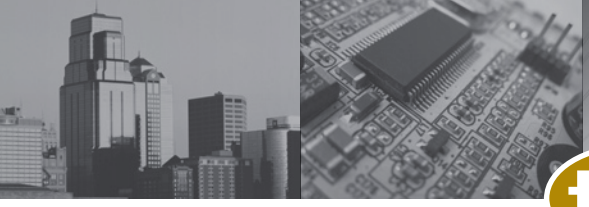
- None

### Device & Network Management BIBBs

- DM-DDB-B (Receive Who-Is, send I-Am)
- DM-DOB-B (Receive Who-Has, send I-Have)
- DM-DCC-B (Respond to Device Communication Control)
- DM-TS-B (Time Synchronization)
- DM-RD-B (Reinitialize Device)

### Segmentation Capability

- None



# PICS
# K600 Series

kameleon™
Adaptability in Lighting Control



## TYPES D'OBJETS STANDARDS PRIS EN CHARGE

| Object Type | Dynamically Creatable | Dynamically Deletable | Optional Properties Supported | Writable Properties Not Required In Standard | Properties Conditionally Writable | Proprietary Properties | Property Range Description |
|---|---|---|---|---|---|---|---|
| **Analog Value** | No | No | Description, Reliability | Description, Reliability (in "Out Of Service" mode) | None | None | Maximum number of characters for strings: 64<br>4 Bits Field Data for Group Options |
| **Binary Input** | No | No | Description, Reliability | Description, Reliability (in "Out Of Service" mode) | None | None | Maximum number of characters for strings: 64 |
| **Binary Output** | No | No | Description, Reliability | Description, Reliability (in "Out Of Service" mode) | None | None | Maximum number of characters for strings: 64 |
| **Binary Value** | No | No | Description | Description | None | None | Maximum number of characters for strings: 64 |
| **Calendar** | No | No | Description | Description | None | None | Maximum number of characters for strings: 64 |
| **Device** | No | No | Description, Location, Profile Name | Description, emplacement | None | None | Nombre maximal de caractères par chaine : 64 |
| **Schedule** | No | No | Description, Exception Schedule, Weekly Schedule | Description | None | None | Nombre maximal de caractères par chaine : 64 |

### Data Link Layer Options

- BACnet IP, (Annex J)
- MS/TP master (Clause 9), baud rates: 9600, 19200, 38400, 76800, 115200

### Device Address Binding

- None

### Networking Options

- None

### Network Security Options

- None

### Character Sets Supported

- ANSI X3.4
- ISO 10646 (UCS-2)

### If this product is a communication gateway, describe the types of non-BACnet equipment/networks(s) that the gateway supports

- Does not apply

## NOTES

### Include any additional information about the product's BACnet capabilities relevant to interoperability

- "Calendar" and "Schedule" objects can be created or deleted only through the configuration console by Gentec to make sure that any user of a BACnet monitoring console may not alter them.
- "Binary Outputs" represent individual relays or groups of individual relays from one or many KC-600 cards.
- There is one "Analog Value" object associated with each "Binary Output" representing a group of outputs.
  - Each "Analog Value" represents a "bit field", each of the less significant bits representing one of the 4 options that can be configured for a group.
  - The "Analog Value" object's description indicates which option is represented for each bit.
- A "Binary Value" object allows showing or hiding all "Analog Value" objects associated with groups.


K8
SERIES

# K8
# Relay Panels

K8 SERIES

kameleon™
Adaptability in Lighting Control



## GENERAL DESCRIPTION

- Practical design offering easy installation and high efficient running
- Standard sizes for 8, 16, 32 & 64-relay panel
- Removable hinged door with key lock
- Box knockouts are located on both sides of the enclosure to facilitate wire and conduit entries
- Panel and back panel accept 20 A HID heavy relays as well as electronic cards c/w wiring duck
- Line voltage compartment c/w cover plate
- Panel comes with transformer & supply terminal block

## APPLICATION

Lighting Control interoperability in medium to large buildings controlled via LonWork technology using the K8 series devices:

- LonWork Controller K8 series
- Input card KC-821
- Output card KC-831, KC-832
- Time Clock ControllerKC-811
- Dimming Controller KC-841
- Blind controller KC-842

## OVERVIEW

The K8 Series panel offers a robust, reliable low voltage lighting control solution. The panel comes pre-assembled and with field programmable controllers that can be commissioned quickly and easily. Quality standards as per ISO 9001:2008.

## FEATURES & BENEFITS

Practical design offering ease of installation, efficient running and interoperability with the BAS (Building Automation System)

## SPECIFICATIONS

| | |
|---|---|
| **Color** | Enclosures & steel doors are coated with ANSI/ASA 61 gray baked enamel |
| **8 & 16-Relay Panels** | 8 & 16-relay panel made of cold-rolled 16 gauge steel |
| **32 & 64-Relay Panels** | 32 and 64-relay panel made of cold-rolled 14 gauge steel (built for 24, 32, 48 & 64 relays configuration) |
| **Mounting Plates** | Galvanised plated removable mounting plates |
| **Protection Plates** | Galvanised zinc plated protection plates |
| **Electrical** | 120/277/347 VAC multi-tap transformer 120, 277, 347 and 480 volts |
| **Operating Environment** | Temperature 0 to 50° C (32 to 112° F) Humidity (non-condensing) 10 to 90% |
| **Certifications** | UL listed, CSA, Assembly ISO 9001:2008 |


LONMARK® PARTNERS

## SYSTEM CHARACTERISTICS

- Individual 365-day astronomical time clock (KC-811) performs building specific scheduled operation positions
- Automatic calculation of sunrise and sunset times based on date and geographical data
- Automatic updates of all schedules for DST changes
- Functions application control:
  - sweep ON/OFF
  - manual OFF
  - time-ON extension
  - flick Warning
  - motion Sensing
  - cleaning/security
  - dimming
  - daylighting and daylight harvesting
  - photocell
  - astronomical time clock
  - photoreactive lighting control and dimming

## ROBUST AND RELIABLE HID RELAY

- 20-amp mechanical latching relay
- 1 or 2 poles 277/347 volts
- 2 poles @ 480 VAC
- 2-wire control systems
- SCCR 22 Ka @ 277 VAC, rated 150,000 cycles

## ACCESSORIES/OPTIONS

- Multi-voltage separator (120/277/347 volts)
- Doors for flush mount, invisible screws
- Drip hoods (surface mount only)
- Custom panel designs on request
- NEMA 2, 3R, 12, 4X etc.
- K800 configuration and application software c/w graphic control and display

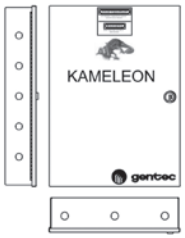
# K8 Relay Panels

kameleon™
Adaptability in Lighting Control

## SURFACE MOUNT ENCLOSED

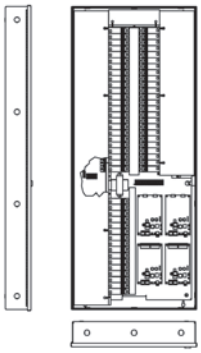
8 relay panel


16 relay panel




32 relay panel

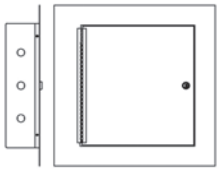

64 relay panel



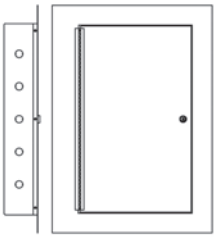
open door

## FLUSH MOUNT ENCLOSED

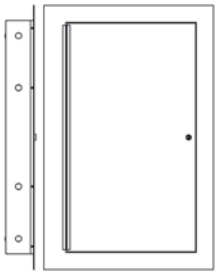
8 relay panel



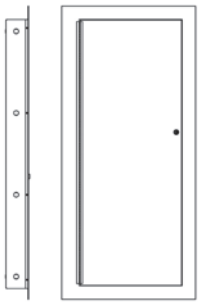
16 relay panel



32 relay panel



64 relay panel



## WEIGHTS AND DIMENSIONS

| K8-xx RP | SCALE | SURFACE MOUNT ENCLOSED | | | FLUSH MOUNT ENCLOSED | | | WEIGHTS | |
|---|---|---|---|---|---|---|---|---|---|
| | | Height | Wide | Deep | Height | Wide | Deep | | |
| 8 | inches | 15 | 15 | 4.1 | 19.4 | 19.4 | 4.1 | 26 | lbs |
| | mm | 381 | 381 | 101 | 493 | 493 | 101 | 12 | kg |
| 16 | inches | 23.3 | 15 | 4.1 | 27.7 | 19.4 | 4.1 | 42 | lbs |
| | mm | 592 | 381 | 101 | 704 | 493 | 101 | 19 | kg |
| 24 | inches | 33.5 | 20 | 4.1 | 37.9 | 24.4 | 4.1 | 83 | lbs |
| | inches | 850 | 508 | 101 | 962 | 620 | 101 | 38 | kg |
| 32 | inches | 33.5 | 20 | 4.1 | 37.9 | 24.4 | 4.1 | 83 | lbs |
| | mm | 850 | 508 | 101 | 96.2 | 620 | 101 | 38 | kg |
| 48 | inches | 49.2 | 20 | 4.1 | 53.6 | 24.4 | 4.1 | 140 | lbs |
| | mm | 1250 | 508 | 101 | 1362 | 620 | 101 | 64 | kg |
| 64 | inches | 49.2 | 20 | 4.1 | 53.6 | 24.4 | 4.1 | 140 | lbs |
| | mm | 1250 | 508 | 101 | 1362 | 620 | 101 | 64 | kg |

## ORDERING INFORMATION

| MODEL | |
|---|---|
| K8 | 1 = Series |
| XX | 2 = Capacity |
| RP | 3 = Relay Panel |
| S | 4 = Mounting Type Surface (S) / Flush (F) |
| 1 | 5 = Type 1, 2, 3R, 4X |

| MODEL | RELAYS CAPACITY | TYPE |
|---|---|---|
| K8-8RP-S1 | 8 | ❑ S |
| K8-16RP-S1 | 16 | ❑ F |
| K8-32RP-S1 | 24 | ❑ S |
| K8-32RP-S1 | 32 | ❑ F |
| K8-64RP-S1 | 48 | ❑ S |
| K8-64RP-S1 | 64 | ❑ F |

# USB Network Interface

K8 SERIES

kameleon™
Adaptability in Lighting Control



## GENERAL DESCRIPTION

The U10 and U20 USB Network Interfaces are low-cost, highperformance LonWorks interfaces for USB-enabled PCs. The U10 USB Network Interface connects to a TP/FT-10 Free Topology Twisted Pair (ANSI/CEA-709.3) LonWorks channel through a removable connector, and is fully compatible with link powered channels. The U20 USB Network Interface connects to a PL-20 Power Line (ANSI/CEA-709.2) LonWorks channel through a wall plug coupling circuit/power supply (included). The U20 interface may also be connected directly to 10.8-18 Vdc power lines without a coupling circuit, or to virtually any powered line with a customer-supplied coupling circuit/ power supply.

The U10 and U20 interfaces are ideal for industrial control, building automation, process control, home automation, and transportation applications. The interfaces feature easy-to-install, auto-configuring drivers for Microsoft Windows XP, 2000, and Server 2003, and are compatible with LNS 3 and Turbo Edition applications, including the LonMaker® Integration Tool. When used with LNS 3 or LNS Turbo Edition, the U10 and U20 interfaces function as LNS High Performance Network Interfaces – you get the highest possible performance at the lowest cost in the market. Apart from the superior performance when used with LNS, the U10 and U20 interfaces are compatible with OpenLDV based applications, as well as the LonScanner Protocol Analyzer.

Models 75010R, 75110R, and 75021R are compliant with the European Directive 2002/95/EC on the restriction of the se of certain hazardous substances (RoHS) in electrical and electronic equipment.

The U10 and U20 interfaces are certified USB 2.0 compatible by the USB Implementers Forum. In addition, the U10 and U20 interfaces carry the Designed for Windows XP logo compatibility certification.

A 60-cm USB extension cable is included with both the U10 and U20 interfaces, to allow for easy connection in various laptop and desktop environments. An optional 3-meter cable accessory is available for the U10; this cable accessory allows easy network connection between the U10 and LonPoint® Routers, the MPR-50 Multi-Port Router, and the numerous thirdparty devices that implement the 3.5-mm mono phone plug standard.

Installation software and a user's guide are included on the CD-ROM, and may also be downloaded from Echelon's Web site.


USB U10 Network Interface – TP/FT-10 Channel

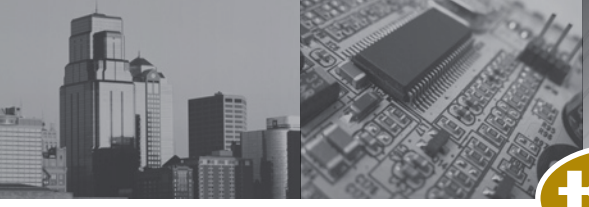

USB U20 Network Interface– PL-20 Channel

## SPECIFICATIONS

| | |
|---|---|
| **Transceiver** | • U10 Interface: TP/FT-10 (ANSI/CEA-709.3 and LonMark standard channel type); link power compatible<br>• U20 Interface: PL-20 (ANSI/CEA-709.2 and LonMark standard channel type); EN50065.1 Band protocol software configurable |
| **Network Connector** | • U10 Interface: Removable spring clamp and screw terminal connectors included<br>• U20 Interface: 2.1-mm barrel connector with positive tip. Wall plug coupling circuit/power supply included. May be connected directly to 10.8-18 Vdc power line, or to customersupplied coupling circuit/power supply. |

## FEATURES

- Low-cost USB to LonWorks® (ANSI/CEA-709.1) network interface
- Free topology twisted pair (TP/FT-10) and power line (PL-20 C-Band) LonWorks channel support
- Highest possible network throughput and performance
- Rugged design, removable connectors
- Plug-and-play drivers for Windows XP, 2000, and Server 2003
- Functions as an LNS® High Performance Network Interface when used with LNS 3 and LNS Turbo Edition
- Compatible with OpenLDV™ applications and the LonScanner™ Protocol Analyzer
- CE, UL, cUL, and TÜV



# USB Network Interface

kameleon™
Adaptability in Lighting Control

K8 SERIES



## SPECIFICATIONS CONTINUED

| | |
|---|---|
| **Optional Cable Assembly (U10 Interface)** | 3-meter cable with 3.5-mm mono phone plug and spring clamp connector |
| **Operating Input Voltage (U20 Interface)** | 10.8-18 Vdc at 2.1-mm barrel connector; powered line voltage varies with application |
| **Operating Input Current (U20 Interface)** | 250 mA maximum @ 18 Vdc |
| **Operating Input Current (USB)** | 50 mA maximum @ 5 Vdc |
| **LED Indicators** | Service (amber), Transmit (green), Receive (green) |
| **Temperature** | Operating: 0 °C to +70 °C |
| | Non-Operating: -20 °C to +85 °C |
| **Humidity** | Operating (Non-Condensing): 25 to 90% RH @ +50 °C |
| | Non-Operating (Non-Condensing): 95% RH @ +70 °C |
| **Shock and Vibration** | ETSI300 019-2-3 T3.2 |
| **Dimensions** | 18.2 mm High x 113.2 mm Long x 22.4 mm Wide |
| **EMC** | FCC Part 15 Level B, EN55022 Class B, EN55024, CISPR 22 Class B, VCCI Class B |
| **Agency Listings** | UL 60950, cUL C22.2 No. 60950-00, TÜV EN60950, CE, C-Tick |

## ORDERING INFORMATION

| PART NUMBER | USB INTERFACE | USB INTERFACE |
|---|---|---|
| **25123** | U | -10 |

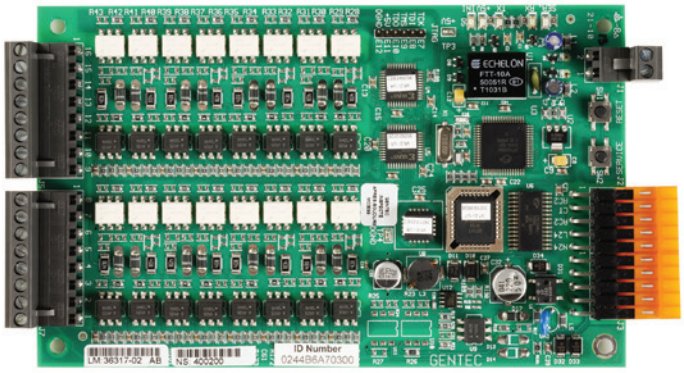
# KC-821
# 16-Input Controller

K8 SERIES

kameleon™
Adaptability in Lighting Control

## GENERAL DESCRIPTION

- Interfaces 8 Low Voltage Switches or 16 Dry Contacts.
- Simple Wiring. Uses a twisted pair for the network.
- Easy Programmable and Commissioning
- Uses LonWorks Network Communication



## SPECIFICATIONS

| | |
|---|---|
| **Microprocessor** | Echelon® 3150® |
| **Output** | 8 Low Voltage Switches, with or without LED or 16 Dry Contacts |
| **Transceiver** | FTT-10A |
| **Communication Network** | LonWorks®, Echelon®, Pair of Twisted # 22 Wire |
| **Distance** | Up to 2700 meters (1000 ft) in bus mode and up to 500 meters (175 ft) in free topology, without repeater |
| **Power Supply** | 24 Vac and 18 Vac, with mid-point tap |
| **Terminal Blocks** | Plug-in |
| **Temperature** | 0 °C to 50 °C (32 °F to 122 °C) |
| **Dimensions** | 110 mm x 180 mm (4.3 in x 7.0 in) |
| **IEC Standards Compliance** | IEC 60255-22-4: Fast Transient Disturbance Tests |

## ELECTRICAL SPECIFICATIONS

- Power Supply 24 Vac, 125 mA
- Environment
  - temp. 0-50° C (32 - 112° F)
  - humidity (non-condensing) 10 to 90%
- Noise Suppression
- IEC 60255-22-4 and 61000-4-2 16
- Polarised Outputs 24 Vac

## ACCESSORIES/OPTIONS

- K800 Configuration and Visualization Software

## FUNCTIONAL CHARACTERISTICS

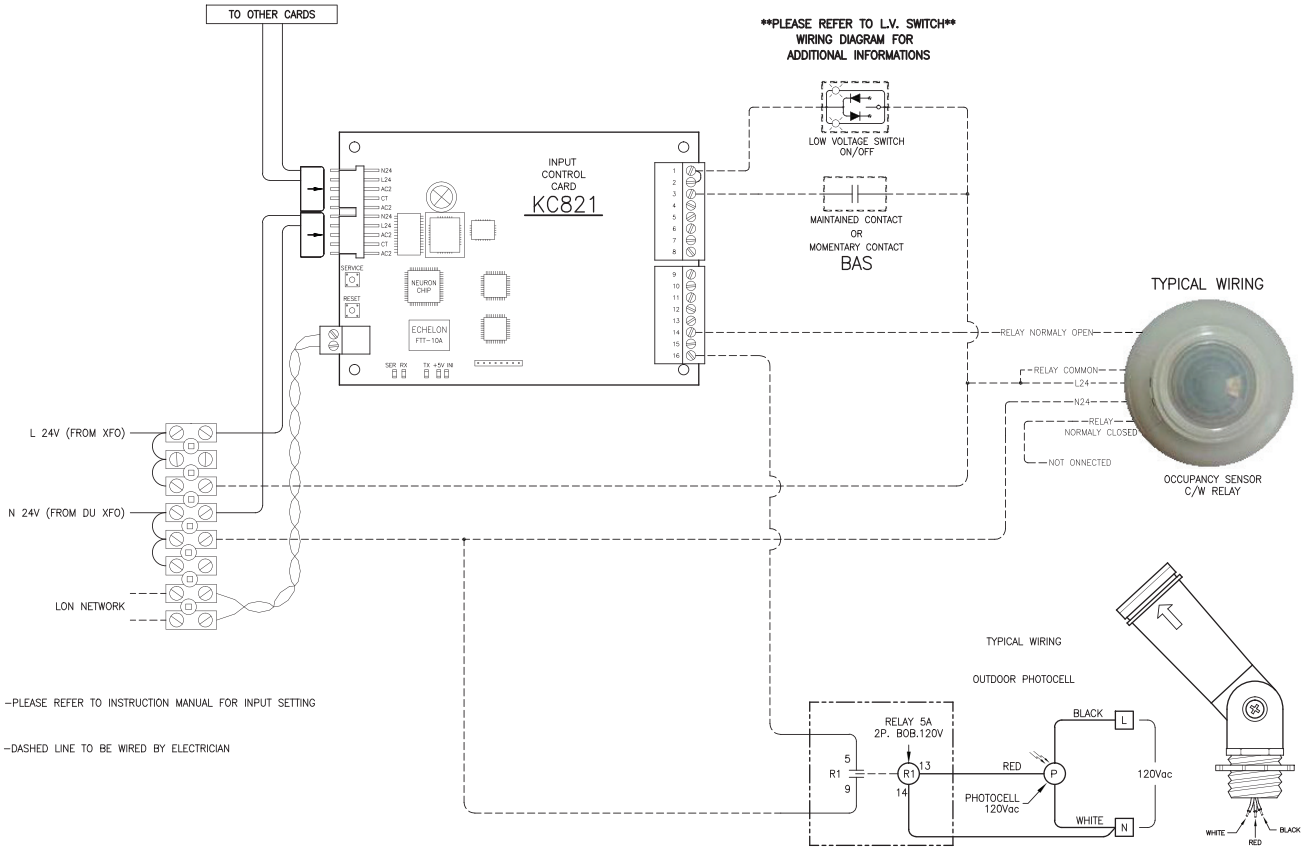
- Multiple Group Management
- Interoperable Function: Time-On Extension, Warming, On-Only, Off-Only
- Can be configured with LNS based tool (plugin available) or with Kameleon K8 software
- Can be configured for:
  - WR-8501 switches
  - dry contact input
  - occupancy sensor
- Compatible in all Kameleon Series Enclosures

# KC-821
# 16-Input Controller

kameleon™
Adaptability in Lighting Control

K8 SERIES

## WIRING DIAGRAM




## ORDERING INFORMATION

| PART NO. | KAMELEON CARD | K8 SERIES INPUT CONTROLLER |
|---|---|---|
| **36317-02** | KC | -821 |
| **39681-01** | Complete Kit | -821 |

# KC-83x
# Output Controller

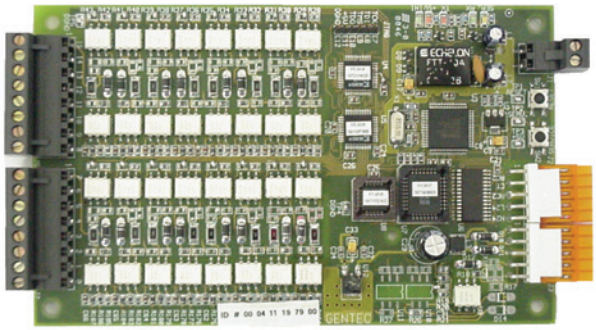
K8 SERIES

kameleon™
Adaptability in Lighting Control



## GENERAL DESCRIPTION

- Part Numbers:
  - KC-831 (Two-Wire Relay Controller)
  - KC-832 (Three-Wire Relay Controller)
  - KC-833 (Breaker-Relay Controller)
- Simple Wiring. Uses a twisted pair for the network.
- Easy Programmable and Commissioning
- Uses LonWorks Network Communication



## APPLICATION

- Larger scale low voltage lighting control based on LonWorks network with possibility of interoperability with automation network. With Kameleon K800 software, those cards can be used as a standalone system.

## TECHNICAL CHARACTERISTICS

- KC-831 uses FTT-10A transceiver to communicate on a LON twisted pair network (CEA-709) with other K8 devices or with any other LON devices.

## SPECIFICATIONS

| | |
|---|---|
| **Microprocessor** | Echelon® 3150® |
| **Output** | 16 Two-Wire or Solid State Relays, 8 Three-Wire Relays or Breaker Relays |
| **Transceiver** | FTT-10A |
| **Communication Network** | LonWorks®, Echelon®, Pair of Twisted # 22 Wire |
| **Distance** | Up to 2700 meters (1000 ft) in bus mode and up to 500 meters (175 ft) in free topology, without repeater |
| **Power Supply** | 24 Vac and 18 Vac, with mid-point tap |
| **Terminal Blocks** | Plug-in/Screws |
| **Temperature** | 0 °C to 50 °C (32 °F to 122 °C) |
| **Dimensions** | 110 mm x 180 mm (4.3 in x 7.0 in) |
| **IEC Standards Compliance** | IEC 60255-22-4: Fast Transient Disturbance Tests |

## FUNCTIONAL CHARACTERISTICS

- Multiple Group Management
- Interoperable Function: Time-On Extension, Warning, On-Only, Off-Only
- Must be commissioned with a LNS based tool
- 16-Group Controller Avalaible
- Can be configured with LNS based tool (plugin available) or with Kameleon K8 software
- Each output can read the state of the relay
- Compatible in all Kameleon Series Enclosures

## ACCESSORIES/OPTIONS

- K800 Configuration and Visualization Software

## FUNCTIONAL CHARACTERISTICS

- Multiple Group Management
- Interoperable Function: Time-On Extension, Warning, On-Only, Off-Only
- Must be commissioned with a LNS based tool 16-Group Controller Avalaible
- Can be configured with LNS based tool (plugin available) or with Kameleon K8 software
- Each output can read the state of the relay
- Compatible in all Kameleon Series Enclosures



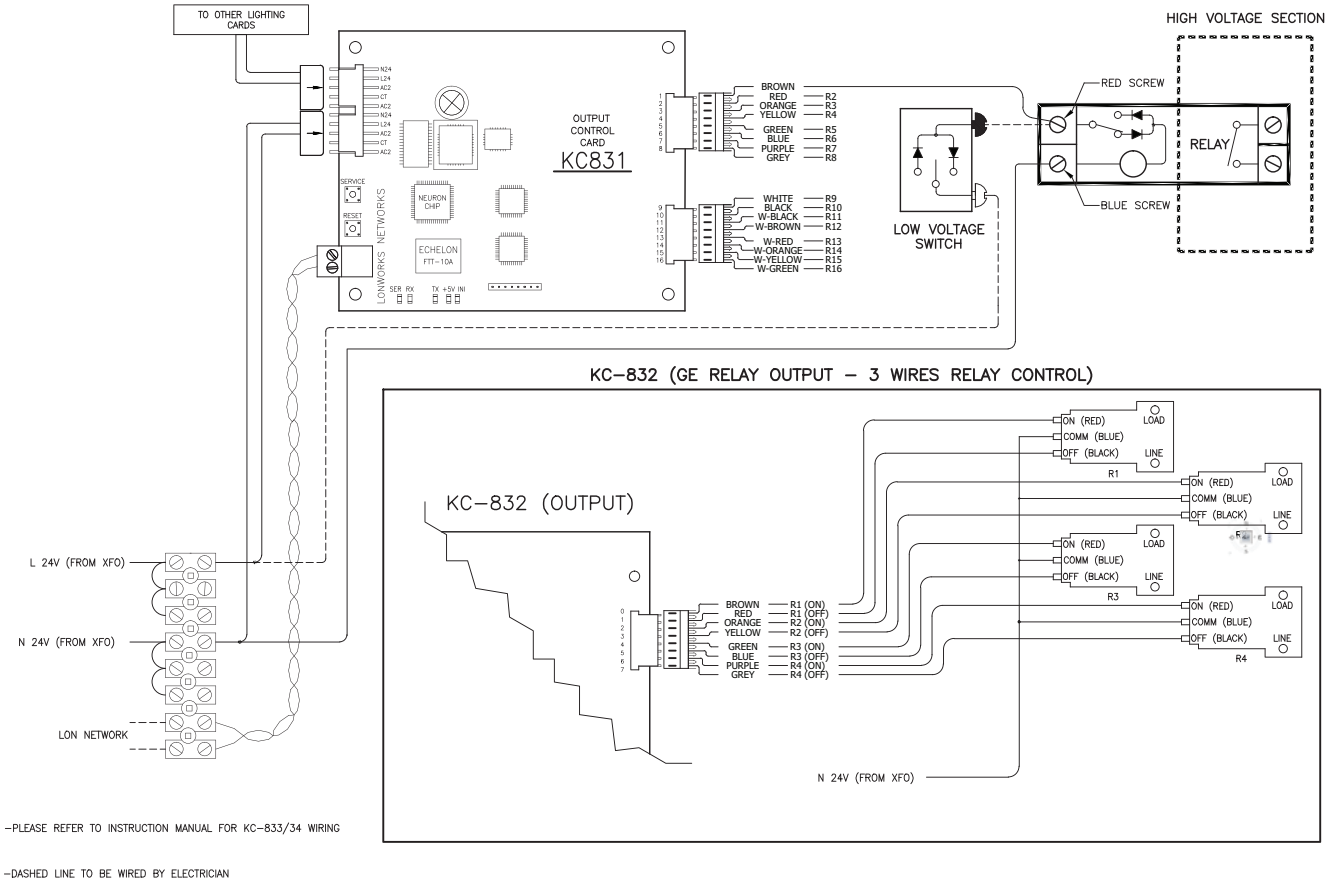
c UL us LISTED

# KC-83x Output Controller

kameleon™ Adaptability in Lighting Control

K8 SERIES

## WIRING DIAGRAM




## ORDERING INFORMATION

| PART NO. | KAMELEON CARD | K8 SERIES OUTPUT CONTROLLER |
|---|---|---|
| **36317-01** | KC | -831 |
| **39688-01** | Complete Kit | -831 |
| **36317-03** | KC | -832 |
| **39688-02** | Complete Kit | -832 |
| **36317-05** | KC | -833 |

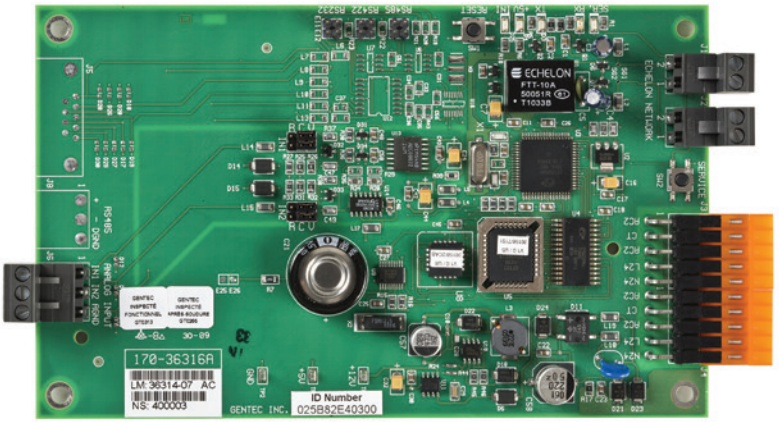
# KC-811 Time Clock Controller

K8 SERIES

kameleon™
Adaptability in Lighting Control

## GENERAL DESCRIPTION

- Astronomical Clock
- Built-In Scheduler
- Used for Scheduler or Serial Port Simple Wiring. Uses a Twisted Pair for the Network
- Easy Programmable and Commissioning
- Uses LonWorks Network Communication
- Flash Memory




## SPECIFICATIONS

| | |
|---|---|
| **Microprocessor** | Echelon® 3150® |
| **Communication Ports** | RS-232, RS-422, or RS-485 (Optional), Speed: TX 115 kbps; RX 4.8 kbps |
| **Transceiver** | FTT-10A |
| **Communication Network** | LonWorks®, Echelon®, Pair of Twisted # 22 Wire |
| **Distance** | Up to 2700 meters (1000 ft) in bus mode and up to 500 meters (175 ft) in free topology, without repeater |
| **Analog Input** | Two 0-10 V input or resistive (photoelectric cell) |
| **Power Supply** | 24 Vac, with Mid-Point Tap |
| **Terminal Blocks** | Plug-In |
| **Temperature** | 0 °C to 50 °C (32 °F to 122 °F) |
| **Dimensions** | 110 mm x 180 mm (4,3 in x 7,0 in) |
| **IEC Standards Compliances** | IEC 60255-22-4: Fast Transient Disturbance Tests |

## FUNCTIONAL CHARACTERISTICS

- Include two analog inputs
- Can be configured with LNS based tool (plugin available) or with K8 software
- Compatible in all Kameleon Series Enclosures

## ACCESSORIES/OPTIONS

- K800 Configuration and Visualization Software

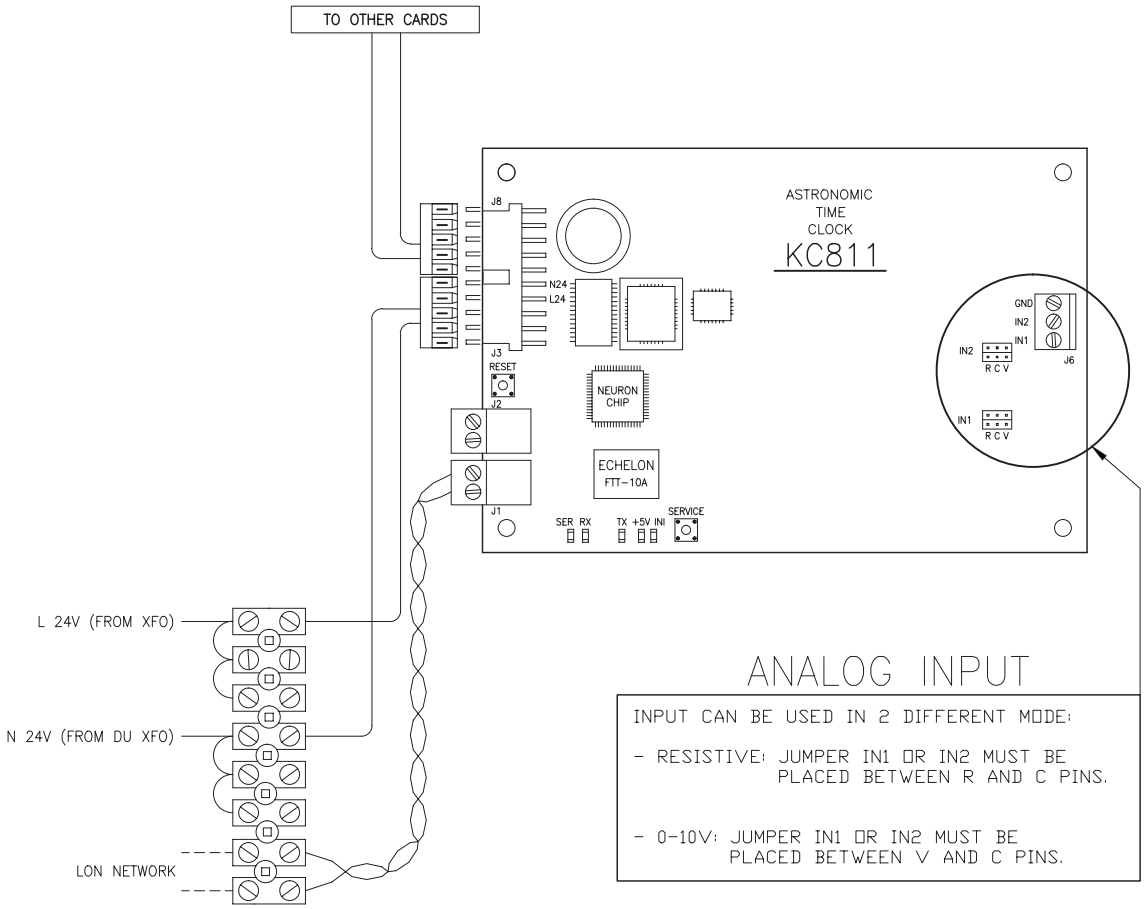
## FUNCTIONAL CHARACTERISTICS

- Include two analog inputs
- Can be configured with LNS based tool (plugin available) or with K8 software
- Compatible in all Kameleon Series Enclosures

# KC-811 Time Clock Controller



## WIRING DIAGRAM




-PLEASE REFER TO INSTRUCTION MANUAL FOR SCHEDULER SETTING

## ORDERING INFORMATION

| PART NO. | KAMELEON CARD | K8 SERIES INPUT CONTROLLER |
|---|---|---|
| **36317-02** | KC | -811 |
| **39680-01** | Complete Kit | -811 |

# K8
# Kameleon Software

K8 SERIES

kameleon™
Adaptability in Lighting Control



## GENERAL DESCRIPTION

- Kameleon software's operating system runs under Windows XP/ 7 / 8 environments.
- It can easily run simultaneously on multiple platforms in a client/server fashion.
- Its graphic interface is simple and intuitive making it easy to configure, program and operate.

## SPECIFICATIONS

### System Programming

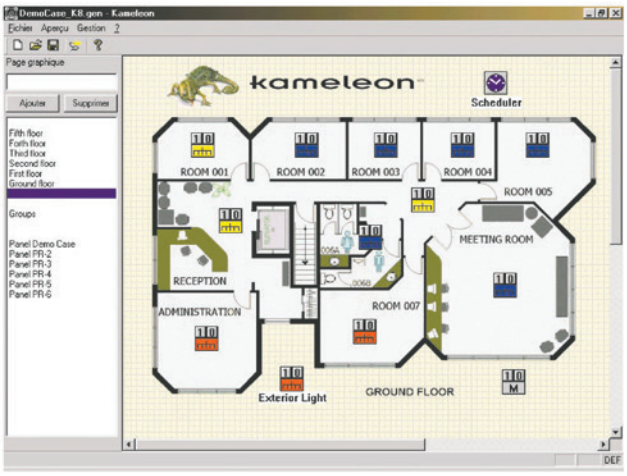
- Group Configuration
- Zone Definition
- Switch-Relay Links Configuration
- Schedules Definition for each Group or Zone
- User gestion (level, password, user)

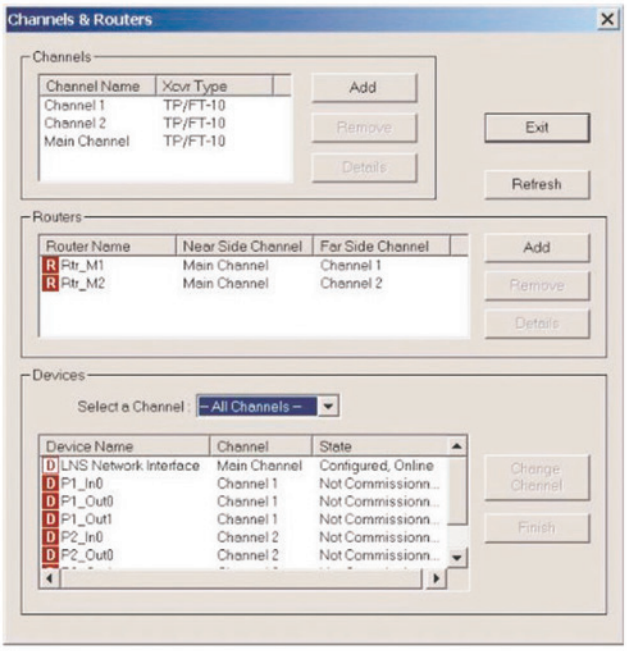
### System Configuration

- Controller Management: addition of the controller, operation diagnostics of each controller, easy replacement
- Network Management: multiple channels to extend the network; usage of different communication media (twisted pair, power line, TCP/IP)

### System Operations

- General System Architecture Monitoring
- Override Capability by Single Mouse-Click
- Rescheduling Capability
- Individual Lighting Circuits, Groups or Zones Real-Time Status View



# K8
# Kameleon Software

kameleon™
Adaptability in Lighting Control

## SPECIFICATIONS CONTINUED

### Scheduler

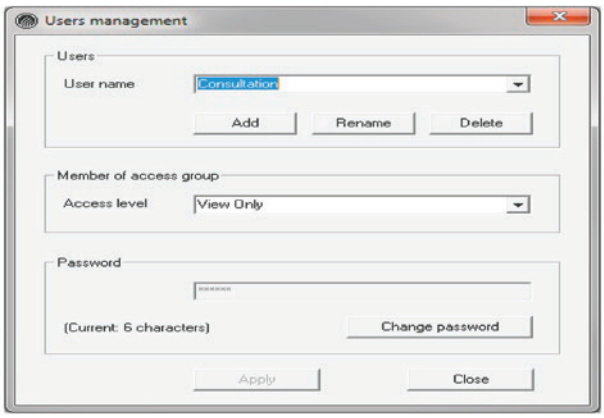
- Many Schedule Types Available; Daily, Weekly, Monthly, One-Time Event
- Programming of a Delayed Operating Scheduled; (i.e.) a special schedule for the summer period can be programmed in advance
- Ability to program events according to sunrise and sunset times
- Complete flexibility in schedule programming; day of the week, week within a month, first Monday of September, etc.

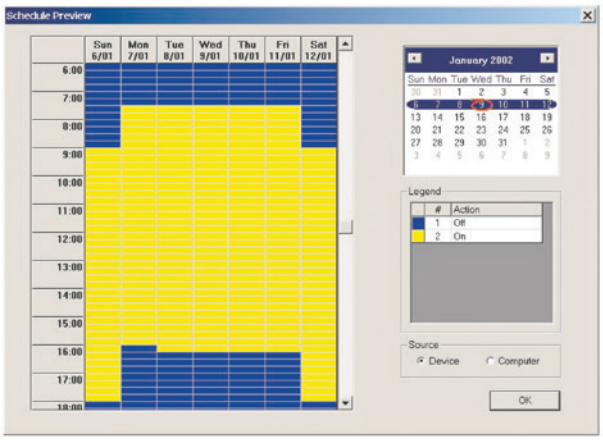
### Data Logger

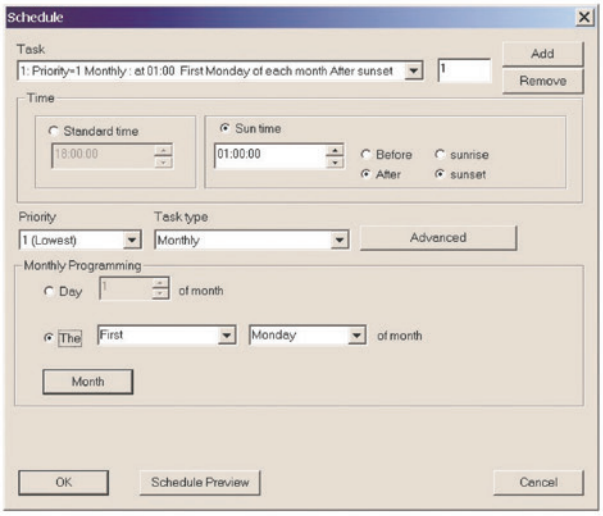
- Record of Chronological Sequence of Events
- Compilation of Operating Hours
- Pre-Defined Reports Generator
- Gathered information could be used to evaluate life expectancy of bulbs or generate electricity bills for lighting use outside regular business hours by tenants

### Advanced Functions

- Kameleon software also offers these important programming options:
  - dimming (scene control, fade and delay options)
  - schedule with flick warning
  - schedule extension delay
  - start-up or shut-down delay
  - enabling events
  - exclusion of devices (switch, sensor, etc.)
  - maintenance/cleaning function
  - etc.




## ORDERING INFORMATION

| PART NO. | KAMELEON SOFTWARE | K8 SERIES KAMELEON SOFTWARE |
|---|---|---|
| **19124** | KS | -800 |

# ACCESSORIES

# KS Network Switch

ACCESSORIES

kameleon™
Adaptability in Lighting Control



## GENERAL DESCRIPTION

The KS Network Switch by Gentec has been designed to allow you to easily connect to the building automated network (BAS). The KS-Network Switch is compatible with our K6 (BacNet IP) and K8 (LON) lighting control cards series, thus offering greater versatility when it comes to connection and switch configuration.


## FEATURES

- Compatible with the K6 & K8 control cards series
- Available in option of 1, 2, 4 and 6 buttons
- LED status for each button (green and red)
- Designed to fit standard decor-style light switch plate covers
- Can be configured in groups of several switches per gang
- Topology free wiring (daisy-chaining or star configurations)
- Polarity-insensitive, 2-wire communication

## APPLICATION

The KS Network Switch by Gentec has been designed and tested to meet the requirements of small and large scale projects. Its conception 1-6 buttons allows to decrease the number of single-gang boxes in places that require large numbers of switches (i.e.: Master Stations). Furthermore, because of its simple and elegant design, the KS Network Switch will blend easily in your decor.

BACnet® LonWorks

## SPECIFICATIONS

| | |
|---|---|
| **Color** | White |
| **Communication** | Twisted-pair cable |
| **Electrical Characteristics** | 60 mA @ 24 Vac |
| **Environment** | 0 to 40 degrees Celsius |
| **Certification & Construction Norms** | UL916, Class II |
| **Conformity to CEI Norms** | • IEC 61000-4-3 Radiated, radio-frequency, electromagnetic field immunity<br>• IEC 61000-4-4 Electrical fast transient/burst immunity<br>• IEC 61000-4-6 Immunity to conducted disturbances, induced by radio-frequency |
| **Network Limitations** | LON: Network limitation LON (64 devices)<br>BACnet: 100 buttons par KC-600 |
| **MODEL** | **TYPE** |
| **KS-861** | Network Switch 1 button |
| **KS-862** | Network Switch 2 buttons |
| **KS-864** | Network Switch 4 buttons |
| **KS-866** | Network Switch 6 buttons |

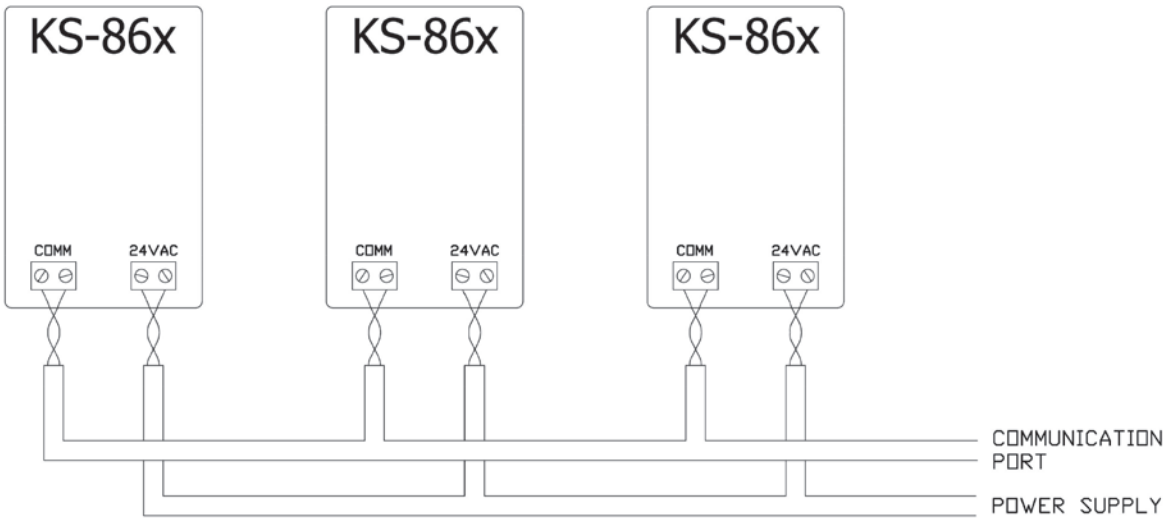
K6 SERIES K8 SERIES

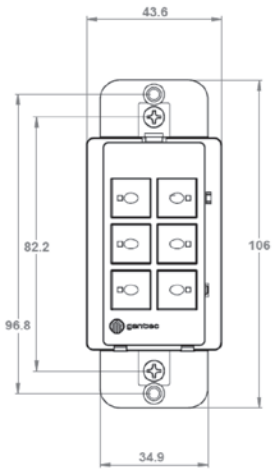
# KS Network Switch

kameleon™
Adaptability in Lighting Control

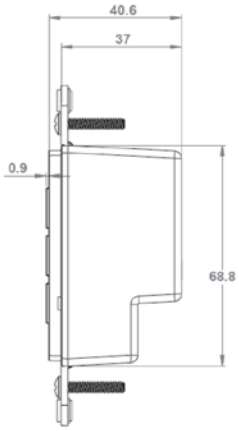


## ELECTRICAL CONNECTIONS

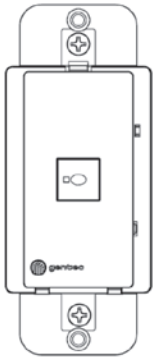


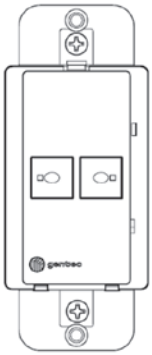

front view
(Units in mm)



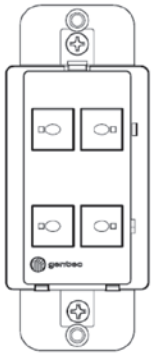

side view



1 button



2 buttons



4 buttons

## ORDERING INFORMATION

| PART NO. | SERIES | TYPE | BUTTON QUANTITY |
|---|---|---|---|
| **45732-01** | KS-861 | Network Switch | 1 button |
| **45732-02** | KS-862 | Network Switch | 2 buttons |
| **45732-04** | KS-864 | Network Switch | 4 buttons |
| **45732-06** | KS-866 | Network Switch | 6 buttons |

# 20 A 240/277/347 V
# Heavy Duty HID Relay

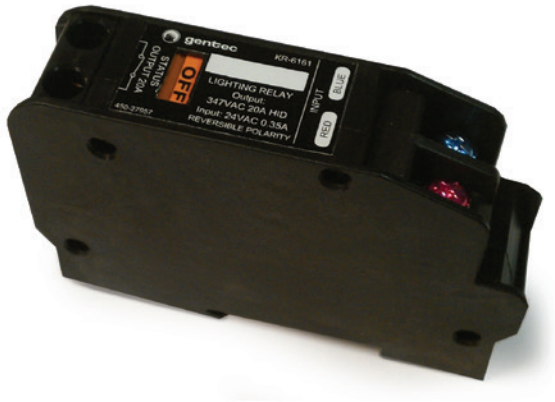
ACCESSORIES

kameleon™
Adaptability in Lighting Control



## GENERAL DESCRIPTION

The KR-6161 20 Amp relay is a mechanically latching output device. It receives a polarized signal from room switches or control devices for On/Off operation of lighting circuit or other electrical loads.




## FEATURES

- Two-wire relay used for monitoring and control
- Manual operation lever with On/Off mechanical indicators built-in for easy maintenance for override operation
- Screw terminals on load and control side
- Rated for 240,000 operation at 20 cpm
- Operate the relay with input of 18-30 V pulsed
- DC or 24 Vac half-wave nominal

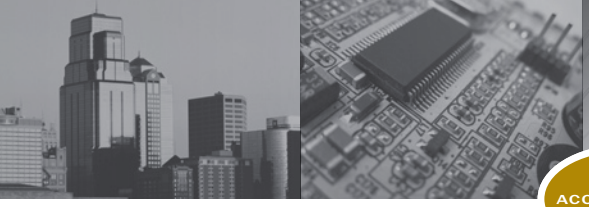
| PART NUMBER | NUMBER OF POLES | UL RATING | CSA RATING | ISOLATED AUXILIARY CONTACT |
|---|---|---|---|---|
| **KR-6161** | 1 | 20 A/300 Vac | 20 A/347 Vac | N/A |

## SPECIFICATIONS

| | |
|---|---|
| **Electrical Life** | 30,000 Operations or more at full load, at 20 cpm |
| **Mechanical Life** | 6000 Operation or more at 20 cpm |
| **Inrush Capability** | 2 000 A |
| **Max. Operating Speed** | 20 cpm at Nominal Load |
| **Operated Time Approx.** | Approx. 20 ms |
| **Released Time Approx.** | Approx. 20 ms |
| **Initial Insulation Resistance** | More than 100 MW at 500 Vdc |
| **Dielectric Strength** | • Between Open Contacts: 1694 V for one minute<br>• Between Contacts and Coil: 2500 V for one minute |
| **Ambient Temperature** | -30 °C to +50 °C (-22 °F to +122 °F) |
| **Temperature Rise (at normal voltage)** | Max. 65 °C (149 °F) |

## CONTACTS

| | | | |
|---|---|---|---|
| **Arrangement** | | • SPLT, Latching for WR-6161-81 and WR-6161-381<br>• DPST, Latching for WR-6172-81 | |
| **Contact Material** | | 7/32" dia, Silver Alloy | |
| **Rating** | | UL Rating | |
| **General Use** | **KR-6161** | 20 A 30 Vac | 20 A 347 Vac |
| **Tungsten** | | 2400 W 120 Vac | 2400 W 120 Vac |
| **Electric Discharge Lamp** | **KR-6161** | 20 A 300 Vac | 20 A 347 Vac |
| **Motor Load** | | 1/2 HP at 110-125 Vac | 1/2 HP at 110-125 Vac |
| | | 1-1/2 HP at 220-227 Vac | 1-1/2 HP at 220-250 Vac |



# 20 A 240/277/347 V Heavy Duty HID Relay

ACCESSORIES

kameleon™
Adaptability in Lighting Control



## COIL

| | |
|---|---|
| **Operating Voltage** | • 18 V to 30 V Pulsed dc, Reversible Polarity<br>• 18 V to 30 V Half-Wave Rectified ac, Reversible Polarity |
| **Minimum Input Duration** | 8 ms |
| **Nominal Operating Current** | 800 mA* |

* Simultaneous operation of multiple units requires 350 mA times the number of the units operated simultaneously.

NOTE: Continuous input power supply to the relay coil prevents the operation lever from being switched manually.

## MECHANICAL REQUIREMENTS

| | | |
|---|---|---|
| **Terminal Capacity** | Main Contact Terminal | AWG # 12 to # 14 Copper Wire |
| | Input Terminal and Auxiliary Contact Terminal | AWG # 16 to # 20 Copper Wire |
| **Terminal Tightening Torque** | Main Contact Terminal | 6.9 to 10.4 in-lbs |
| | Input Terminal and Auxiliary Contact Terminal | 4.3 to 6.9 in-lbs |

## ORDERING INFORMATION

| PART NO. | RELAY | HEAVY DUTY HID RELAY |
|---|---|---|
| **27957** | KR | -6161 |
| **27958** | KR | -9910 |

# Heavy Duty HID Relay

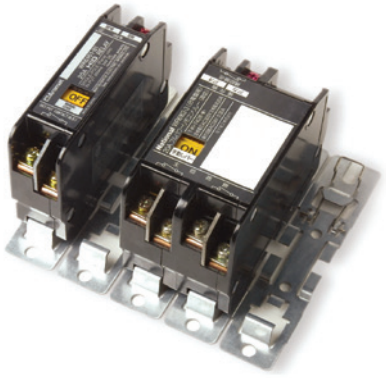
ACCESSORIES

kameleon™
Adaptability in Lighting Control



## GENERAL DESCRIPTION

- Two-wire relay used for monitoring and control
- No derating for inductive lighting loads
- Manual operation lever with ON/OFF indicator built-in for easy maintenance
- Screw terminals on load and control sides
- Powerful Contact Opening Mechanism Withstands 2000 A inrush current and 1500 A short circuit current



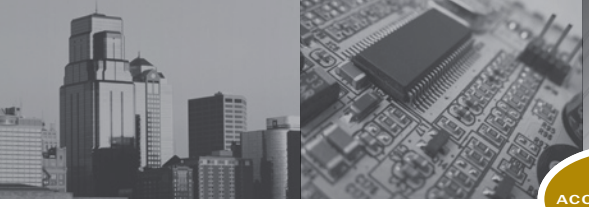
| PART NUMBER | NUMBER OF POLES | UL RATING | CSA RATING | ISOLATED AUXILIARY CONTACT |
|---|---|---|---|---|
| **WR-6161K-84** | 1 | 20 A/300 Vac | 20 A/347 Vac | N/A |
| **WR-6161-381** | 1 | 20 A/300 Vac | 20 A/347 Vac | Yes 1 A 125 Vac SPST |
| **WR-6161-81** | 2 | 20 A/480 Vac | 20 A/347 Vac | N/A |

## SPECIFICATIONS

| | |
|---|---|
| **Electrical Life** | 30,000 Operations or more at full load, at 20 cpm |
| **Mechanical Life** | 6000 Operation or more at 20 cpm |
| **Inrush Capability** | 2 000 A |
| **Max. Operating Speed** | 20 cpm at Nominal Load |
| **Operated Time Approx.** | Approx. 20 ms |
| **Released Time Approx.** | Approx. 20 ms |
| **Initial Insulation Resistance** | More than 100 MΩ at 500 Vdc |
| **Dielectric Strength** | • Between Open Contacts: 1694 V for one minute<br>• Between Contacts and Coil: 2500 V for one minute |
| **Ambient Temperature** | -30 °C to +50 °C (-22 °F to +122 °F) |
| **Temperature Rise (at normal voltage)** | Max. 65 °C (149 °F) |

## CONTACTS

| | | | |
|---|---|---|---|
| **Arrangement** | | • SPLT, Latching for WR-6161-81 and WR-6161-381<br>• DPST, Latching for WR-6172-81 | |
| **Contact Material** | | 7/32" dia, Silver Alloy | |
| **Rating** | | UL Rating | |
| **General Use** | **WR-6161** | 20 A 30 Vac | 20 A 347 Vac |
| | **WR-6172** | 20 A 480 Vac | 20 A 347 Vac |
| **Tungsten** | | 2400 W 120 Vac | 2400 W 120 Vac |
| **Electric Discharge Lamp** | **KR-6161** | 20 A 300 Vac | 20 A 347 Vac |
| | **WR-6172** | 20 A 300 Vac | 20 A 347 Vac |
| **Motor Load** | | 1/2 HP at 110-125 Vac | 1/2 HP at 110-125 Vac |
| | | 1-1/2 HP at 220-227 Vac | 1-1/2 HP at 220-250 Vac |



# Heavy Duty HID Relay

ACCESSORIES

kameleon™
Adaptability in Lighting Control



## COIL

| | |
|---|---|
| **Operating Voltage** | • 18 V to 30 V Pulsed dc, Reversible Polarity<br>• 18 V to 30 V Half-Wave Rectified ac, Reversible Polarity |
| **Minimum Input Duration** | 8 ms |
| **Nominal Operating Current** | 350 mA* |

* Simultaneous operation of multiple units requires 350 mA times the number of the units operated simultaneously.

NOTE : Continuous input power supply to the relay coil prevents the operation lever from being switched manually.

## MECHANICAL REQUIREMENTS

| | | |
|---|---|---|
| **Terminal Capacity** | Main Contact Terminal | AWG # 12 to # 14 Copper Wire |
| | Input Terminal and Auxiliary Contact Terminal | AWG # 16 to # 20 Copper Wire |
| **Terminal Tightening Torque** | Main Contact Terminal | 6.9 to 10.4 in-lbs |
| | Input Terminal and Auxiliary Contact Terminal | 4.3 to 6.9 in-lbs |

## AUXILIARY CONTACT

| | | |
|---|---|---|
| **Arrangement** | • WR-6161-381<br>• WR-6172-381 | SPST, Latching |
| **Contact Material** | Silver Alloy | |
| **Rating** | 1 A 120 Vac | |

# Heavy Duty HID Relay

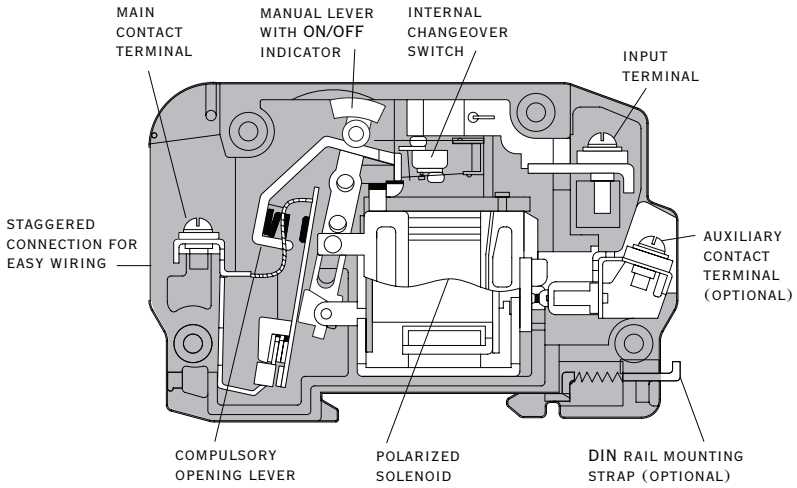


kameleon™
Adaptability in Lighting Control



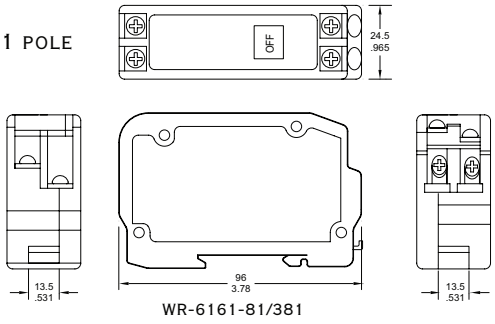
## CONSTRUCTION

RELAY INSIDE VIEW



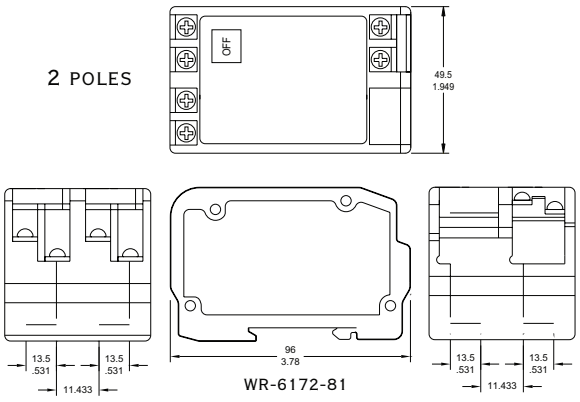

## DIMENSIONS

1 POLE




WR-6161-81/381

2 POLES




WR-6172-81



c UL us LISTED

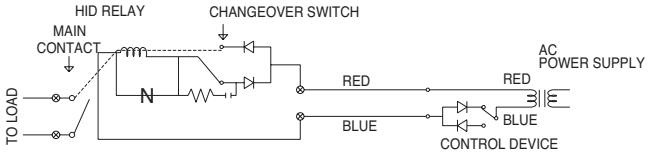
# Heavy Duty HID Relay

kameleon
Adaptability in Lighting Control



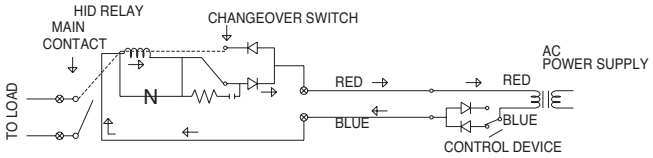
## THEORY OF OPERATION

**OFF CONDITION**



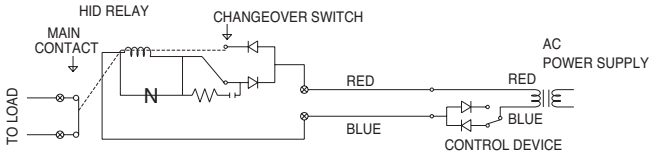

Internal changeover switch is mechanically linked to main contact. No current flows due to the diode direction.

**WHEN CONTROL DEVICE IS TURN ON**



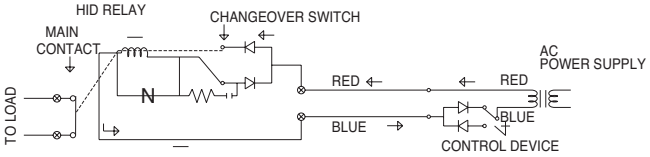

The coil current flows to operate the relay.

**ON CONDITION**




The main contact closes and the mechanically-linked changeover switch operates to shut off the current flow.

**WHEN CONTROL DEVICE IS TURN OFF**




The coil current flows in the opposite direction to operate the relay. The main contact will open and the changeover switch will operate.

## ORDERING INFORMATION

| PART NO. | RELAY | HEAVY DUTY HID RELAY |
|---|---|---|
| 21397 | WR | -6161-81 |
| 30870 | WR | -6161-381 |
| 25322 | WR | -6166-81 |
| 22344 | WR | -9910 |

# Switches

ACCESSORIES

kameleon™
Adaptability in Lighting Control



## GENERAL DESCRIPTION

### WR-8001

- Wall-Mounted Rocker Type Relay Switch
- To operate, press rocker to one side for ON and to the other side for OFF
- Three WR-8001 can fit into one gang size, WN-3700 mounting strap required

WR-8001

### WR-5092

- Wall-Mounted Key Operated Enable/Disable Switch
- Three WN-5092 can fit into one gang size, WN-3700 mounting strap required
- Typical application is for security, maintenance and cleaning tour
- Use switch to interrupt common (white) to switch(es) to disable wall switch

WR-5092

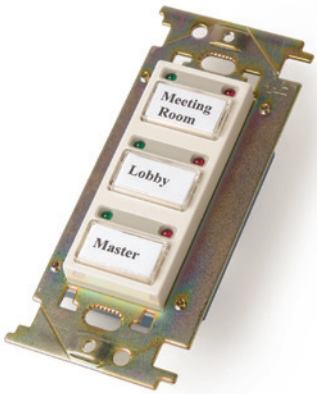
### WR-8501

- Wall-Mounted LED Indicating Push-Button Relay Switch
- To operate, press for ON, press again for OFF
- Clear plastic cap on button holds switch function label
- Three WR-8501 can fit into one gang size, WN-3700 mounting strap required

WR-8501

### WR-8503

- WR-8503 has a built-in mounting strap
- All three switches from WR-8503 obtain the input from a common terminal




WR-8503

### MC-1138-C (Key Switched)

- Integrated Stainless Steel Plate
- Wall-Mounted Key Type Momentary Contact Relay Switch
- Mount to Standard Wall Boxes
- To operate, turn key to the right for ON, to the left for OFF

MC-1138-C

## SPECIFICATIONS

**WR-8001**

- 3 A 24 V Reversible Polarity Pulse
- Maximum of 8 Relays Operable
- No limit to number of switches connected to a relay

**WR-8501/WR-8503**

- 1.5 A 24 V Reversible Polarity Pulse
- Maximum of 4 relays operable with one switch
- Limit of 6 LED switches connected to one relay

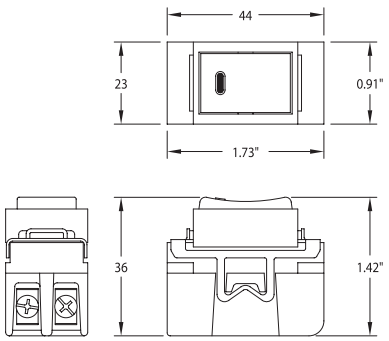
**WN-5092**

- 3 A 24 V
- Single Pole, Double Throw Key
- **Switch Cannot be directly connected to relays**

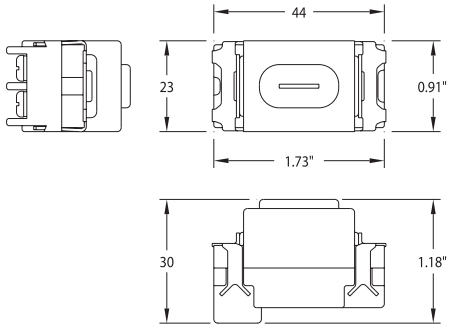
**MC-1138**

- 3 A 24 V Reversible Polarity Pulse
- Maximum of 4 relays operable with one switch
- No limit of switches connected to the relay

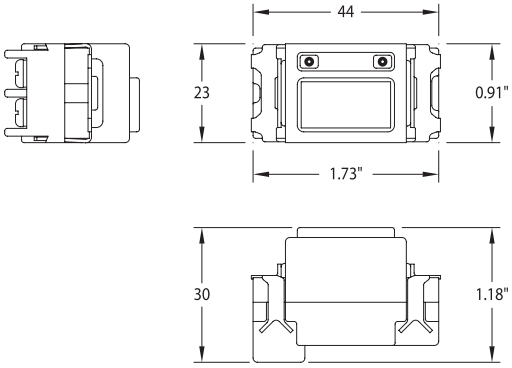
## DIMENSIONS



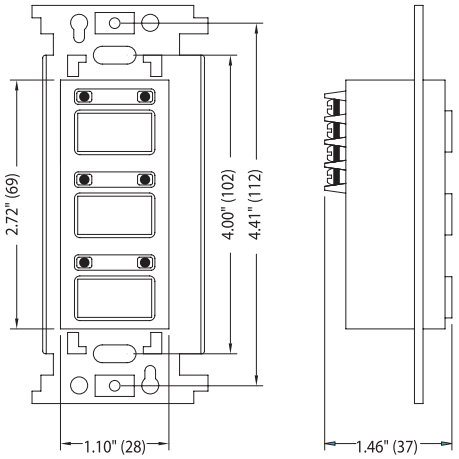

WR-8001



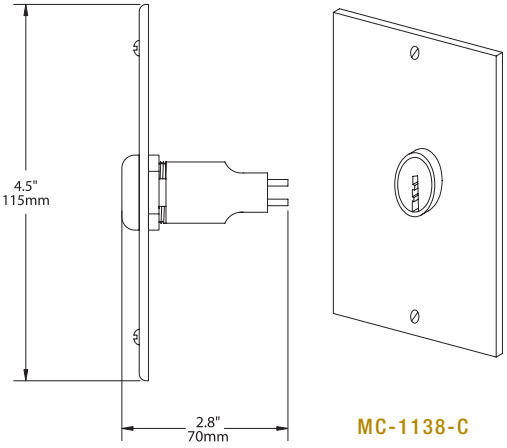

WR-5092




WR-8501




WR-8503




MC-1138-C

## ORDERING INFORMATION

| PART NO. | SWITCH | | TYPE |
|---|---|---|---|
| **30884** | MC | -1138-C | Key Switch |
| **24913** | WN | -5092 | Key Switch |
| **20530** | WR | -8001 | Rocker Switch, No Indicator |
| **30338** | WR | -8501 | Two Indicators, Push-Button Switch |
| **24824** | WR | -8503 | Three Indicators Push-Button Switch |

# Switch Plates

kameleon™
Adaptability in Lighting Control

## GENERAL DESCRIPTION

### WN-7600 Series

- Brushed stainless steel visible crew for WR switch series

### WN-6000 Series

- Plastic cover plates – beige color, gloss finish
- Snap-on cover plate and a screw-on trim plate
- Mounting screws are hidden for WR switch series

### WN-7100x Series

- Plastic cover plates – matte finish
- Snap-on cover plate and a screw-on trim plate
- Invisible screws for WR switch series – W: white – H: Grey – Y: beige

WN-7600 Series

WN-6000 Series

WN-7100x Series

MC-1158 Series

# Switch Plates

kameleon™
Adaptability in Lighting Control



## PART NUMBERS


WN-XX01
1 GANG
1 DEVICE

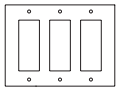

WN-XX02
1 GANG
2 DEVICE

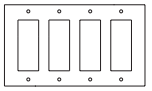

WN-XX03
1 GANG
3 DEVICE

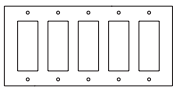

WN-XX04
2 GANG
4 DEVICE

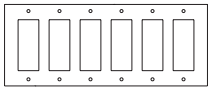

WN-XX05
2 GANG
5 DEVICE


WN-XX06
2 GANG
6 DEVICE


WN-XX09
3 GANG
9 DEVICE

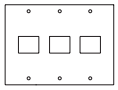

WN-XX12
4 GANG
12 DEVICE


WN-XX15
5 GANG
15 DEVICE


WN-XX18
6 GANG
18 DEVICE

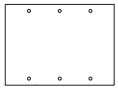

WN-XX72
2 GANG
2 DEVICE


WN-XX74
2 GANG
3+1 DEVICE


WN-XX79
3 GANG
1+1+1 DEVICE

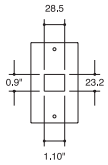

WN-XX91
1 GANG BLANK


WN-XX92
2 GANG BLANK

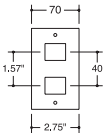

WN-XX93
3 GANG BLANK

## DIMENSIONS

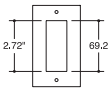
PROFIL



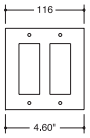
WNXX01



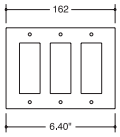
WNXX02



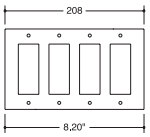
WNXX03



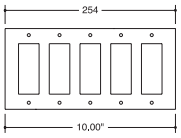
WNXX06



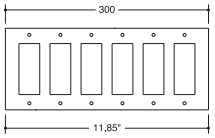
WNXX09



WNXX12



WNXX15



WNXX18

## ORDERING INFORMATION

| PART NO. | PLATES | | TYPE | PART NO. | PLATES | | TYPE |
|---|---|---|---|---|---|---|---|
| **30346** | WN | -3700 | Mounting Bracket 1, 2, or 3 Devices | **30996** | WN | -7606 | 2 Gangs / 6 Devices (Stainless Steel) |
| **25030** | WN | -6201 | 1 Gang / 1 Device (Plastic) | **24308** | WN | -7609 | 3 Gangs / 9 Devices (Stainless Steel) |
| **30347** | WN | -7601 | 1 Gang / 1 Device (Stainless Steel) | **24309** | WN | -7612 | 4 Gangs / 12 Devices (Stainless Steel) |
| **25032** | WN | -6202 | 1 Gang / 2 Devices (Stainless Steel) | **24759** | WN | -7615 | 5 Gangs / 15 Devices (Stainless Steel) |
| **30348** | WN | -7602 | 1 Gang / 2 Devices (Stainless Steel) | **24760** | WN | -7618 | 6 Gangs / 18 Devices (Stainless Steel) |
| **25033** | WN | -6203 | 1 Gang / 3 Devices (Plastic) | **26092** | WN | -3801 | Mullion Mounting Bracket 1 Switch |
| **30349** | WN | -7603 | 1 Gang / 3 Devices (Stainless Steel) | **26090** | WN | -3851 | Mullion Plate 1 Switch |
| **25034** | WN | -6204 | 2 Gangs / 4 Devices (Plastic) | **26093** | WN | -3802 | Mullion Mounting Bracket 2 Switches |
| **30995** | WN | -7604 | 2 Gangs / 4 Devices (Stainless Steel) | **26091** | WN | -3852 | Mullion Plate 2 Switches |
| **25035** | WN | -6206 | 2 Gangs / 6 Devices (Plastic) | | | | |

# Switch Accessories

ACCESSORIES

kameleon™
Adaptability in Lighting Control



## GENERAL DESCRIPTION

### WN-2700 Series

- Switch lid made of clear plastic
- Cover for 1 gang/1, 2 or 3 devices opening
- Auto-adhesive cover

### WN-3700 Series

- Steel, plated finish
- Mounts standard wall boxes
- 1, 2 or 3 devices can be installed into each strap

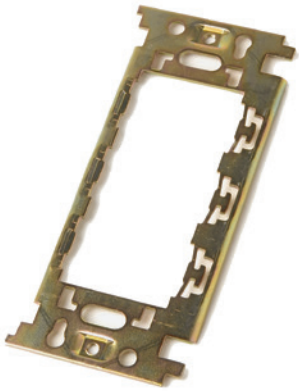
### WN-3020 Series

- Use filler chip to fill device spaces – color of filler chip identical to cream white of Gentec

### WN-7700 Series

- Steel switch enclosure
- Lockable door
- All colors available
- Flush or surface mount

WN-2700



WN-3700

WN-3020

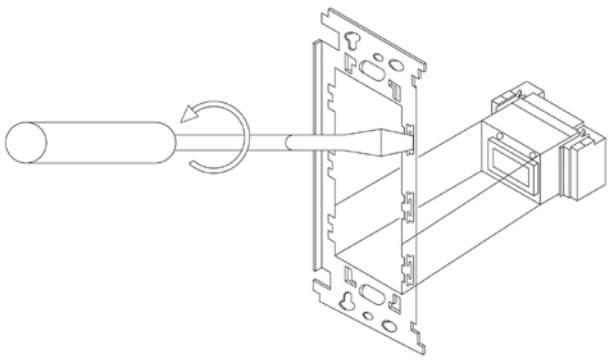
WN-7700

## SPECIFICATIONS WN-7700

| | |
|---|---|
| **WN-7722-*** | 2-Gang Enclosure |
| **WN-7733-*** | 3-Gang Enclosure |
| **WN-7744-*** | 4-Gang Enclosure |
| **WN-7755-*** | 5-Gang Enclosure |
| **WN-7766-*** | 6-Gang Enclosure |
| **WN-7788-*** | 8-Gang Enclosure |
| **WN-772525-*** | 2x5-Gang Enclosure |
| **WN-772626-*** | 2x6-Gang Enclosure |
| **WN-772828-*** | 2x8-Gang Enclosure |

* - S Surface Mounted * - F Flush Mounted

## MOUNTING METHOD





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# Switch Accessories

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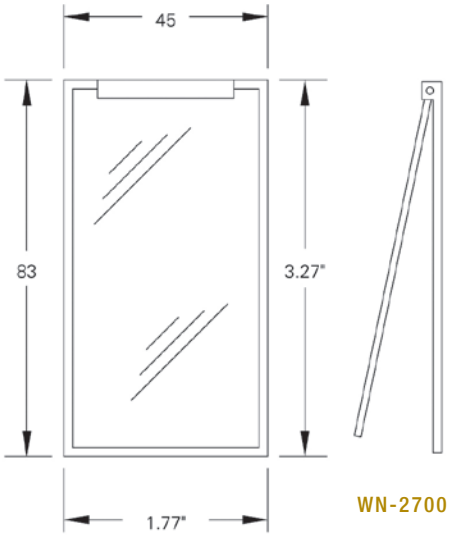
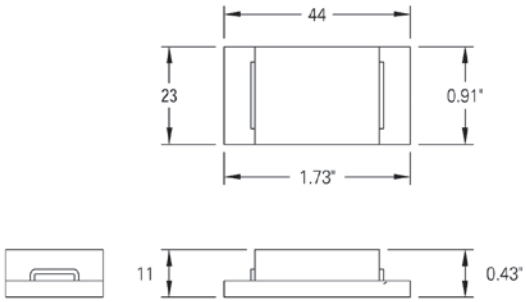
Adaptability in Lighting Control



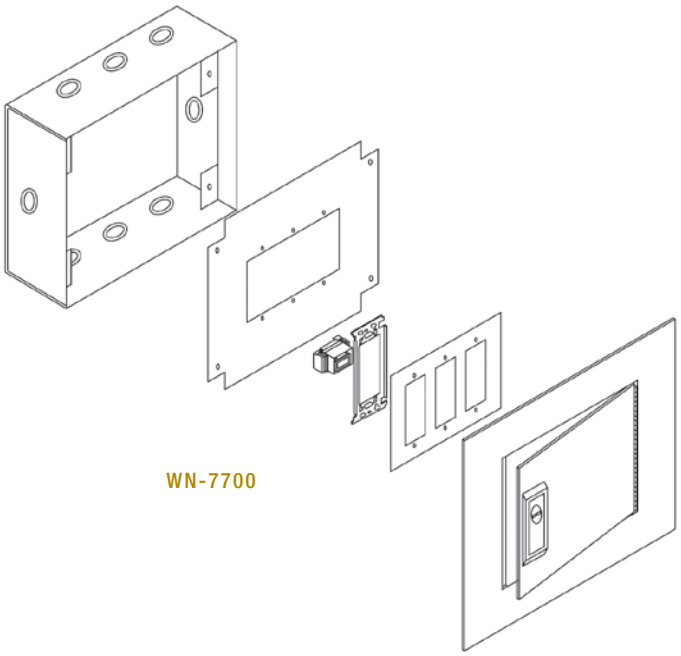
## DIMENSIONS



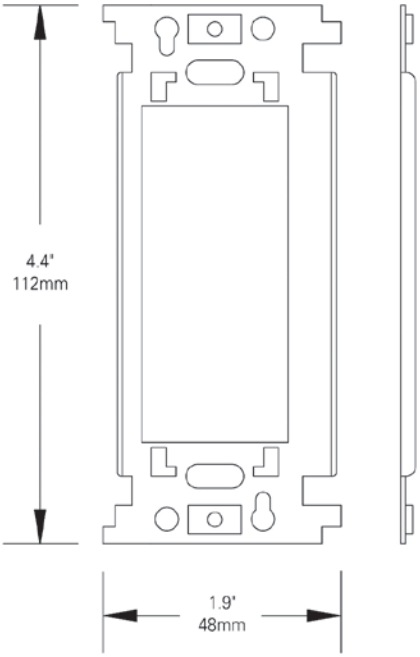

WN-2700




WN-3020



WN-7700




WN-3700

## ORDERING INFORMATION

| PART NO. | ACCESSORIES | | TYPE |
|---|---|---|---|
| **24310** | WN | -3020 | Filler Chip |
| **24912** | WV | -2700 | Plastic Cover |
| **38163-03** | WN | -7700-3 | Master Switches Station (3G/9D) |
| **38163-05** | WN | -7700-5 | Master Switches Station (5 G/15D) |

IMPORTANT: ALL SWITCHES ARE EXTRA IN PRICE ADDER

# Notes

gentec
ENERGY MANAGEMENT

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