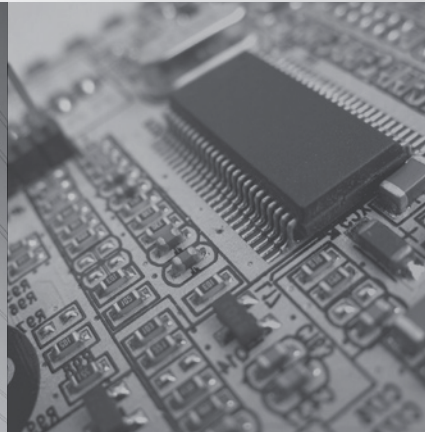


kameleon^{MD}

ADAPTABILITY IN LIGHTING CONTROL

System Design Guide



gentec
ENERGY MANAGEMENT

Adaptability in Lighting Control





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Adaptability in Lighting Control

Gentec's Kameleon Series 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, Gentec products cover all types of projects.

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

Common control sequences

Typical Applications

Kameleon K Series Overview

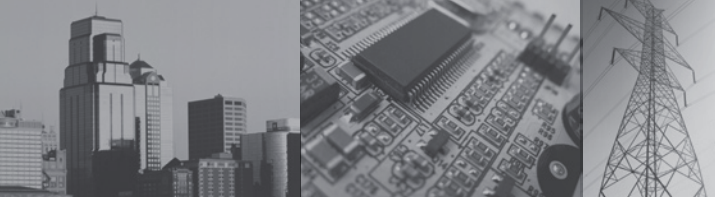
Kameleon K Series Components

K4 Series Configurations

K6 Series Configurations

K8 Series Configurations





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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 initiate a count down 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



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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* give you the possibility to do phase angle dimming and 0-10v ballast control.

*Available only with the K6 and K8 Series.

DAYLIGHTING AND DAYLIGHT HARVESTING

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

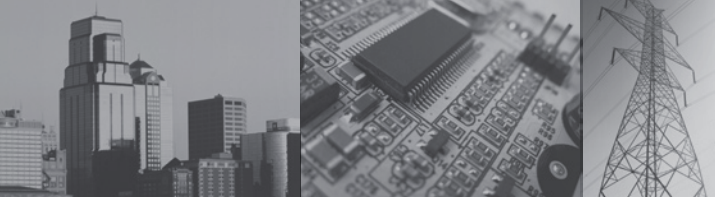
*Additional information available on demand.

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



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Adaptability in Lighting Control

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 PHOTOCCELL
- 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 PHOTOCCELL
- LINK TO BUILDING MANAGEMENT SYSTEM*

*OPTIONAL (AVAILABLE ONLY WITH K8 SERIES)

Typical Applications



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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

	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

	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

COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS



kameleon™
Adaptability in Lighting Control

Typical Applications

COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS

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



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Adaptability in Lighting Control

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...)	—	—	✓
FLICK WARNING	✓	✓	✓
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 INFORMATION AVAILABLE ON DEMAND.

BAS: BUILDING AUTOMATION SYSTEM

COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS

K4
SERIES

K4 Relay Panels



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Adaptability in Lighting Control

GENERAL DESCRIPTION

- Practical design offering easy installation and high efficiency running
- Standard sizes for 8, 16, 32 & 64 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 duty relays as well as electronic cards c/w wiring duct
- Line voltage compartment c/w cover plate
- Panel comes with transformer & terminal block supply

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 & 64 Relay Panels	32 & 64-relay panel made of cold-rolled 14 gauge steel
Mounting Plates	Galvanized steel removable mounting plates
Protection Plates	Galvanized steel 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

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



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.

COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS

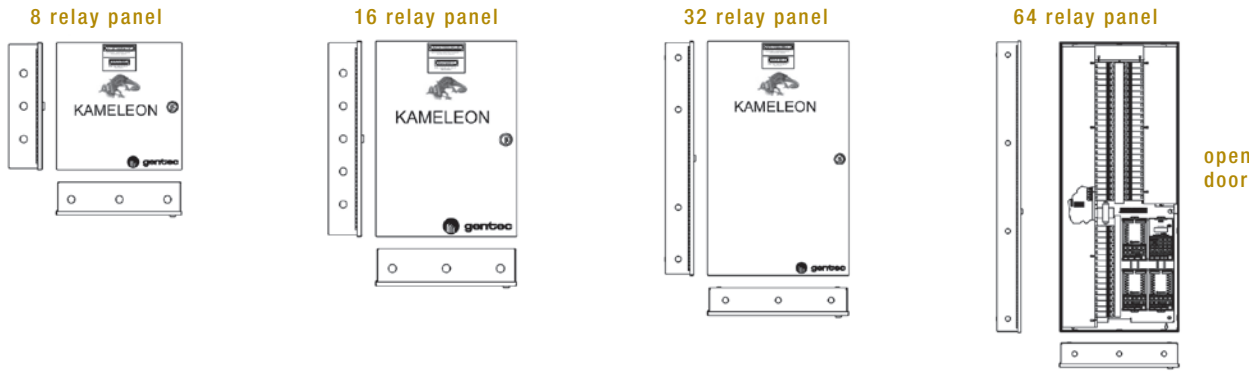


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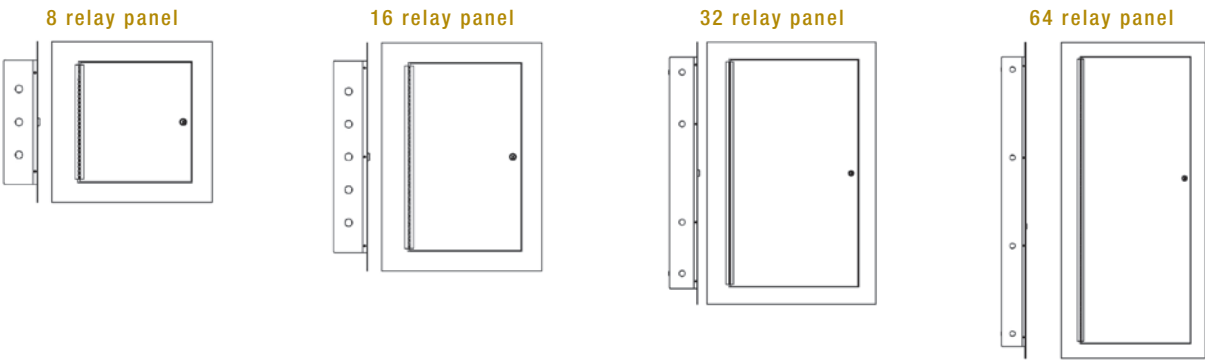
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SURFACE MOUNT ENCLOSED



FLUSH MOUNT ENCLOSED



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
32	inches	33.5	20	4.1	37.9	24.4	4.1	83	lbs
	mm	850	508	101	962	620	101	38	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		RELAY CAPACITY	MOUNTING TYPE	NEMA TYPE
K4	1 = Series			
XX	2 = Capacity			
RP	3 = Relay Panel			
S	4 = Mounting Type Surface (S) / Flush (F)			
1	5 = Nema Type 1, 2, 3R, 4X			

MODEL	RELAY CAPACITY	MOUNTING TYPE	NEMA TYPE
K4-8RP-S1	8	□ S	1
K4-16RP-F1	16	□ F	1
K4-32RP-S1	32	□ S	1
K4-64RP-F1	64	□ F	1

KC-401

Relay Controller



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GENERAL DESCRIPTION

- Field Programmable Relay Controller
- 16-Output (20 A HID Relay Controller)
- Up to 4 groups (zones) Configuration
- 2 controllers can be networked to control 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 Tone Switch
- 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

COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS



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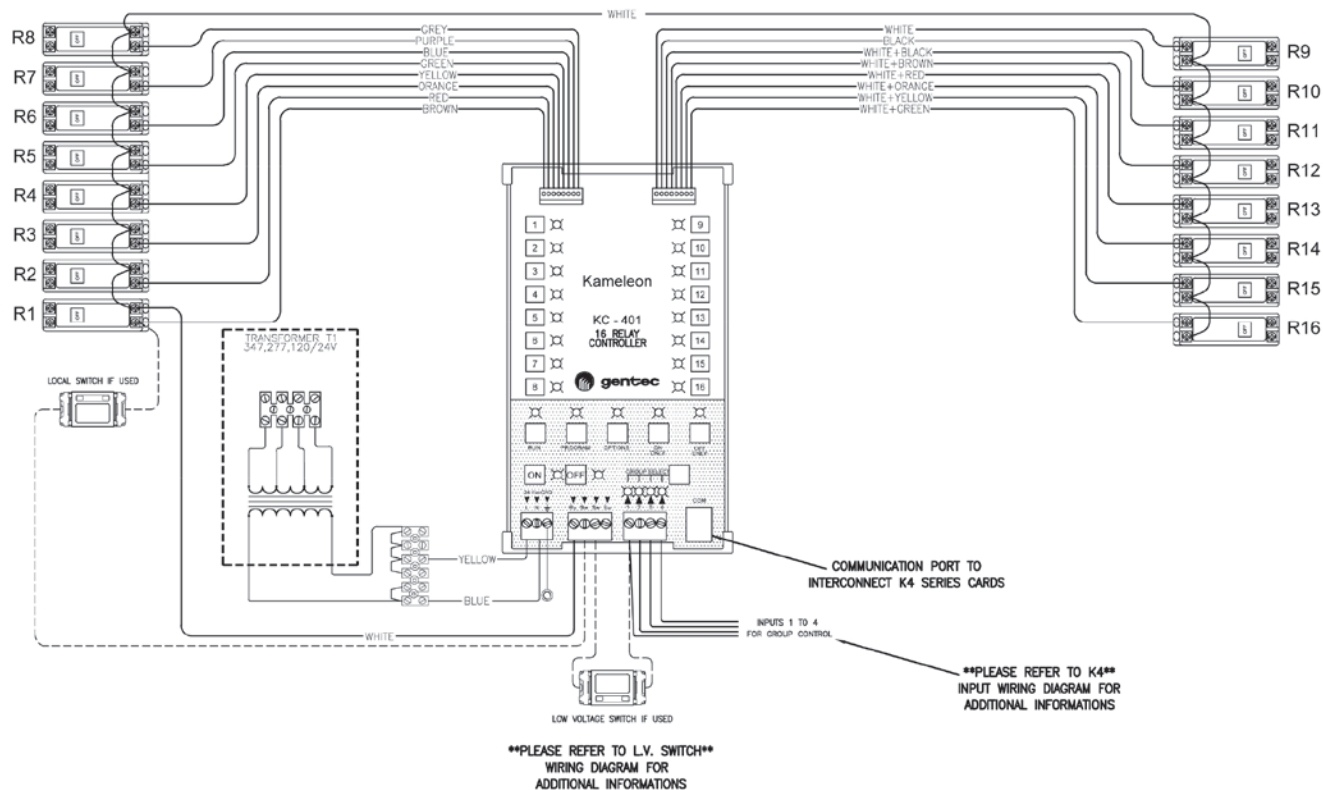
KC-401 Relay Controller

COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS



ORDERING INFORMATION

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



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KC-411

Time Clock Controller



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GENERAL DESCRIPTION

- Field Programmable Time Clock Controller
- 8 Outputs (Channels or Relays)
- Up to 2-group (zone) Configurations
- Can be networked with a KC-401 relay controller
- Multi-Group Relay Assignment Capability
- LCD Display (4 Lines – 20 Characters)
- Membrane Keypad
- Push-Button Tone Switch
- Palm Pilot Programming/Operation Capabilities (IRDA)
- Multiple Input Combination (2 devices):
 - low voltage 2-Wire Switch
 - dry contact
 - occupancy sensor (low voltage)
 - switch
 - photocell
 - light level controller
- Dedicated Photocell Input (2) (Resistive Analog Input)
- 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 Electronic Circuits
- LCD Display for Programming
- Dimensions: 4.2 in x 7.0 in (107 mm x 180 mm)

FUNCTIONAL CHARACTERISTICS

- 8 Outputs to Control 2-Wire 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

COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

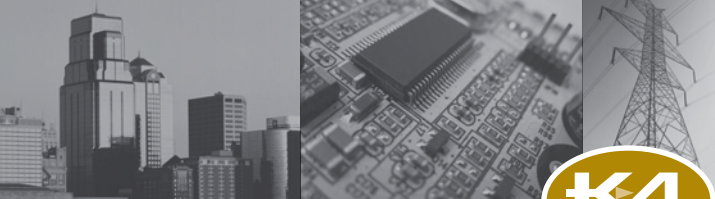
SYSTEM COMPONENTS



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KC-411

Time Clock Controller



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Adaptability in Lighting Control

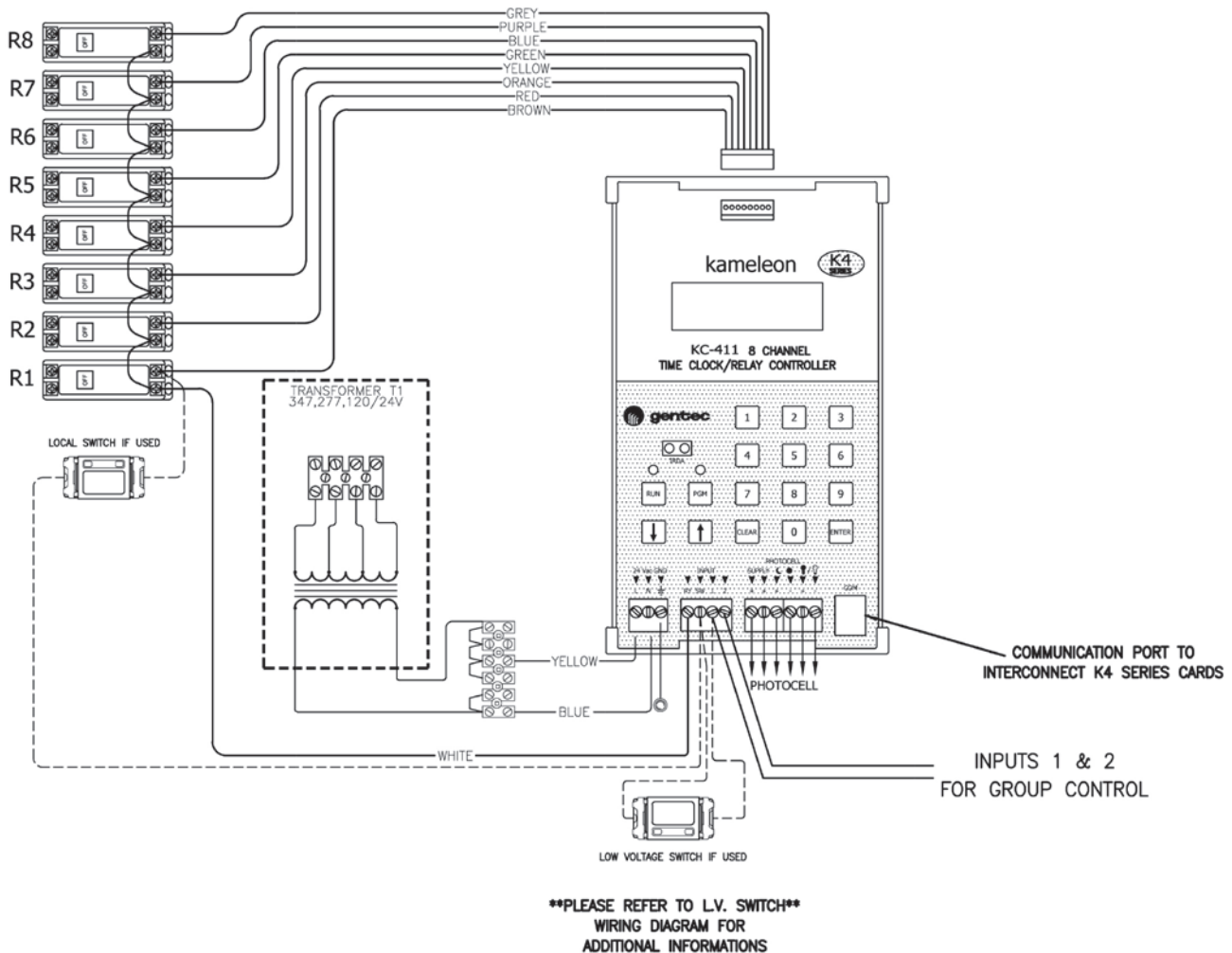


COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS



ORDERING INFORMATION

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



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K6 Relay Panels



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Adaptability in Lighting Control

GENERAL DESCRIPTION

- Practical design offering easy installation and high efficiency running
- Standard sizes for 8, 16, 32 & 64 relay panels
- 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 duty relays as well as electronic cards c/w wiring duct
- 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

COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS

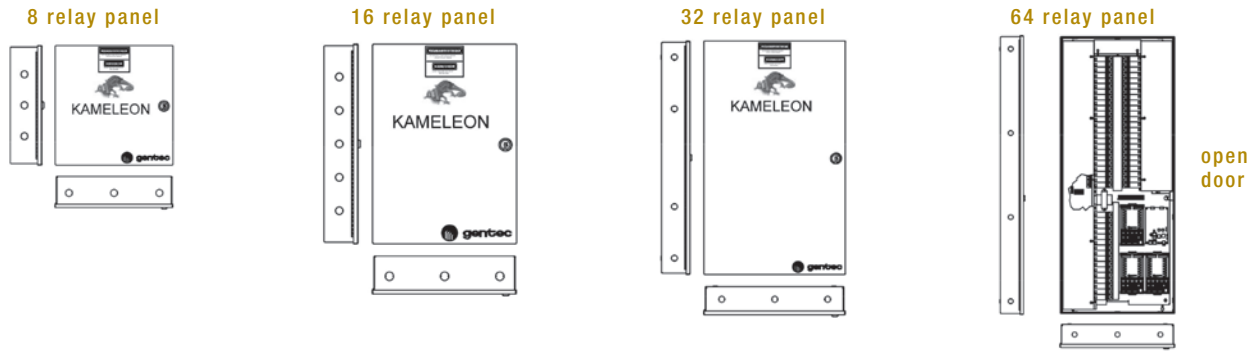


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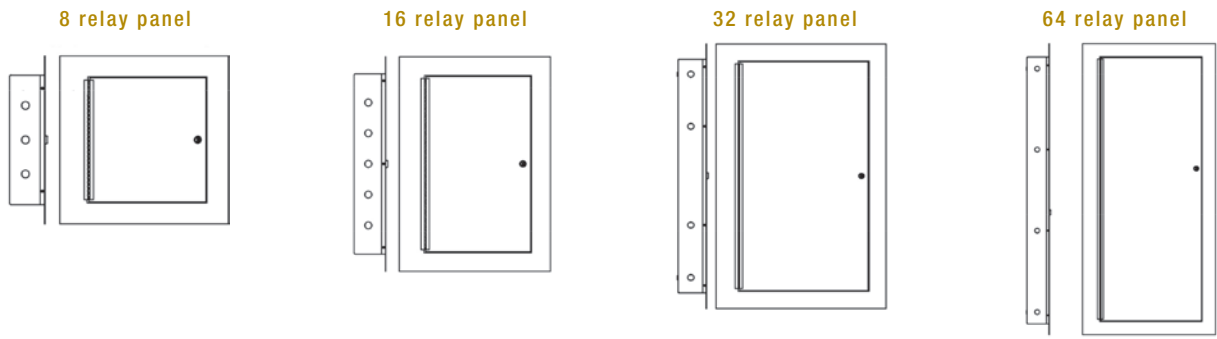
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SURFACE MOUNT ENCLOSURES



FLUSH MOUNT ENCLOSURES



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
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
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		MODEL	RELAY CAPACITY	MOUNTING TYPE	NEMA TYPE
K6	1 = Series	K6-8RP-S1	8	<input type="checkbox"/> S	1
XX	2 = Capacity	K6-16RP-F1	16	<input type="checkbox"/> F	1
RP	3 = Relay Panel	K6-32RP-S1	32	<input type="checkbox"/> S	1
S	4 = Mounting Type Surface (S) / Flush (F)	K6-64RP-F1	64	<input type="checkbox"/> F	1
1	5 = Nema Type 1, 2, 3R, 4X				

KC-601

Interface BACnet



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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.

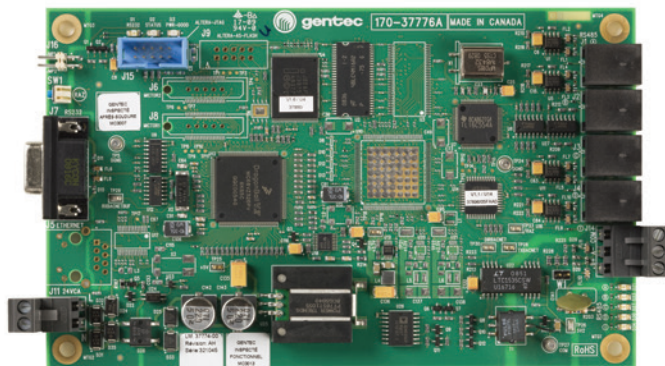
- Field Programmable KC-601 Controller
- 4-Output RS-485 LAN @ 9600, 19200, 38400, 11520 bds
- Support up to 4 Groups (KC-401) Configuration
- A KC-601 can be networked with a KC-401 Relay Controller to control up to 64 relays and 4 groups
- Multi-Group Relay Assignments Capability
- Multiple Output 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

SPECIFICATIONS

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

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.



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%

ACCESSORIES/OPTIONS

- Installation Kit

COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

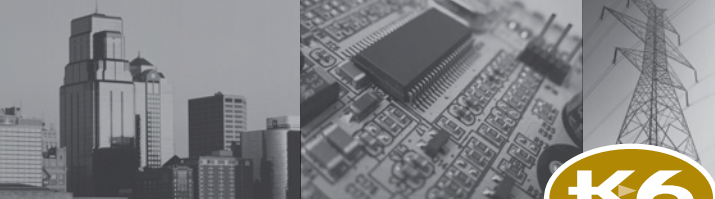
SYSTEM COMPONENTS



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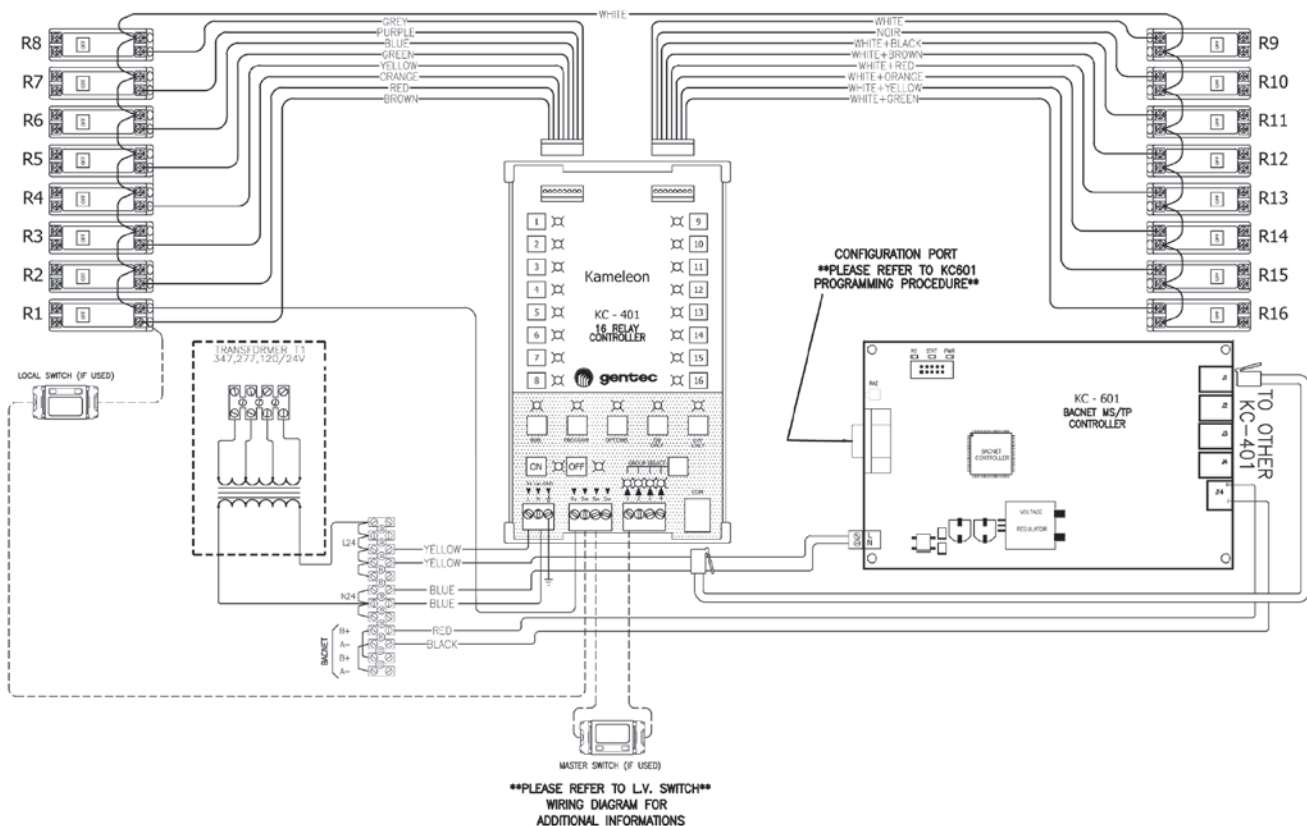
KC-601 Interface BACnet

COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS



- 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	



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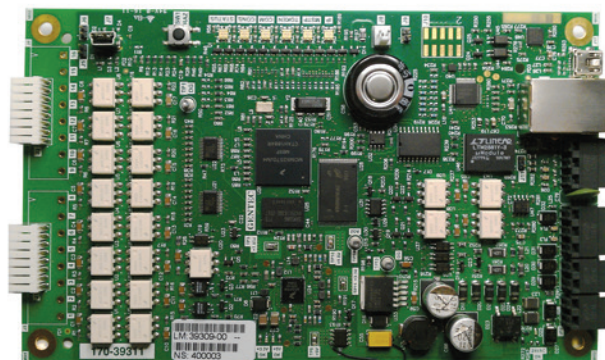
KC-600 BACnet Controller



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GENERAL DESCRIPTION

- Lighting Controller BACnet Ethernet IP conforming to the standards of BACnet
- Card conforms 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.

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.



Max (4) Cards
Inputs (66)

Max (3) Cards
Inputs (64)

SPECIFICATIONS

BACnet Requests Supported	Ethernet IP "Native BACnet protocol"
	<ul style="list-style-type: none">• 64 BACnet objects of type "binary output" to represent individual output (relays) controlled• 32 Output groups by KC-600 card, represented by other objects BACnet of type "binary output"• Each created group, is able to show "analog value" in order to indicate the options applied to a group• 32 Object of type "schedule"• 32 Objects of type "calendar" (linked to previous)• 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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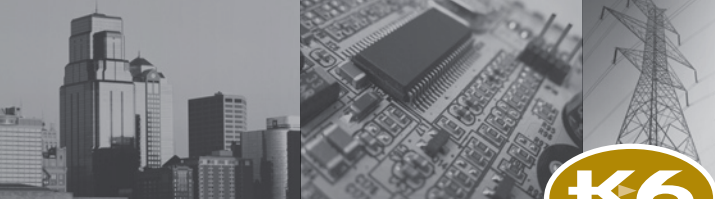


COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS



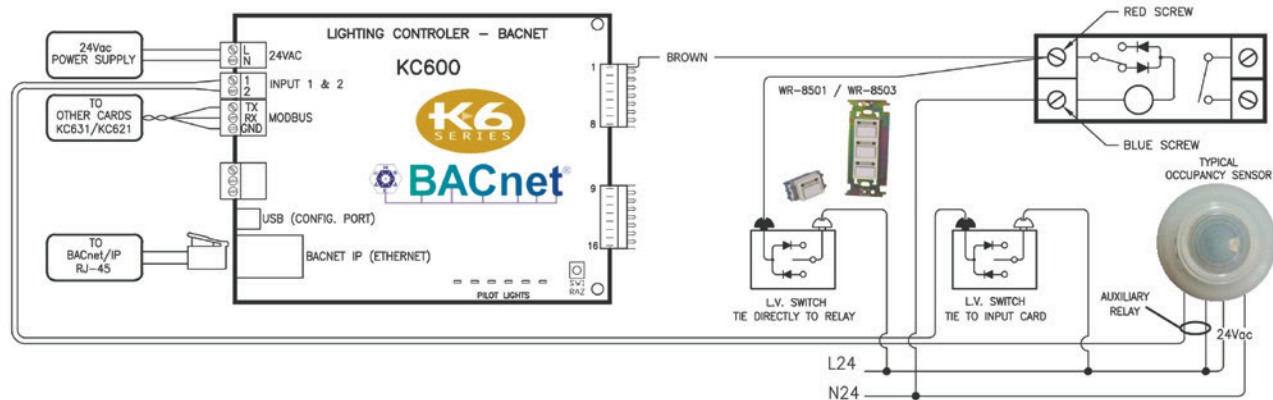
KC-600 BACnet Controller



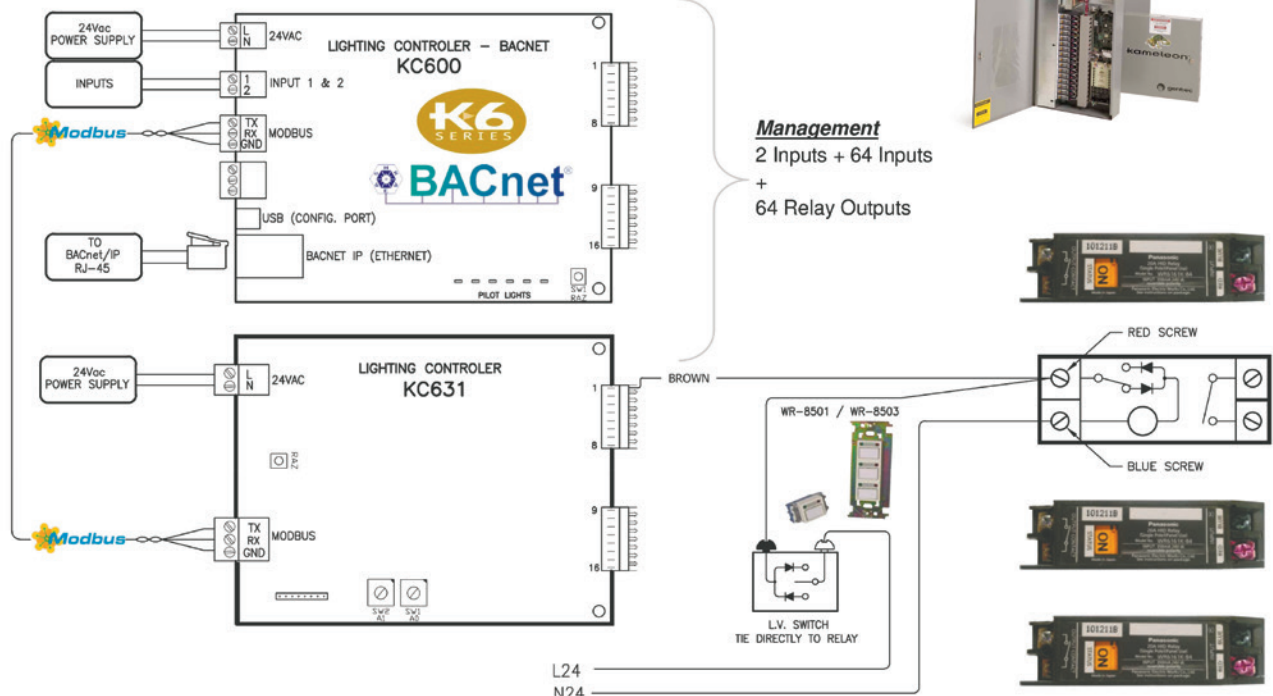
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Adaptability in Lighting Control



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)



Management
2 Inputs + 64 Inputs
+
64 Relay Outputs

ORDERING INFORMATION

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



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KC-631

16-Output Card



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GENERAL DESCRIPTION

- The KC-631 output lighting control card is designed to control 16 low voltage 2-wire type relays (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.

TECHNICAL CHARACTERISTICS

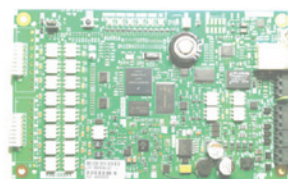
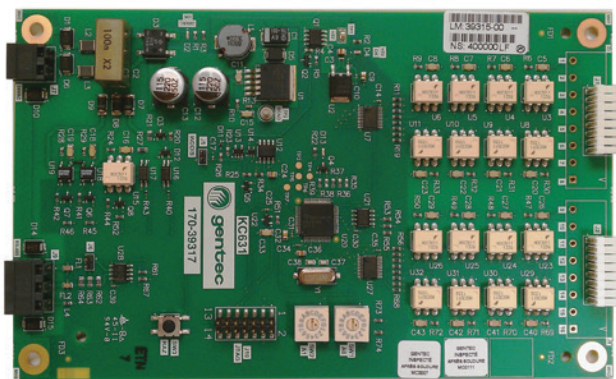
The KC-631 card offers a flexible control management of zones according to each zone requirement.

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



**BACnet
Controller
KC-600 IP**



**Control Relay
2 Wires**

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

COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS



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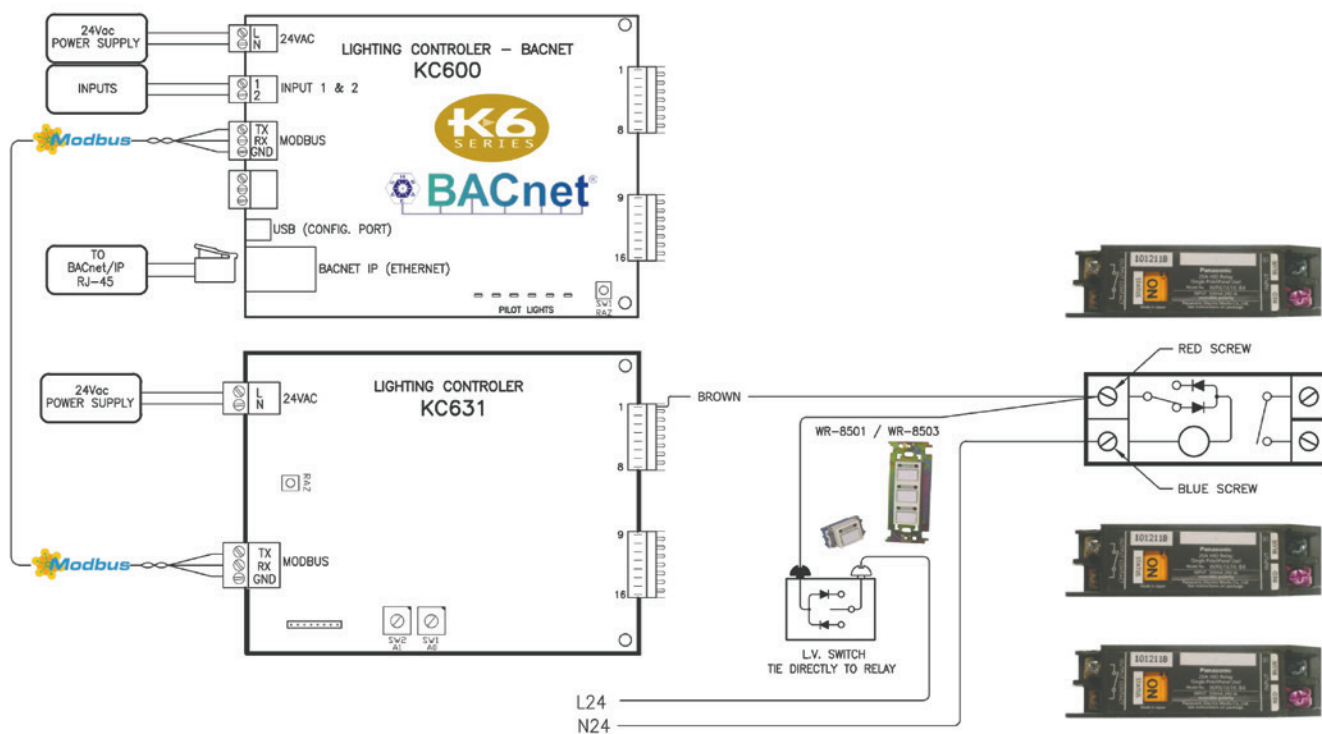
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Adaptability in Lighting Control



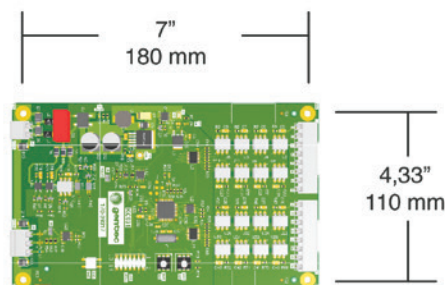
KC-631

16-Output Card

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	



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KC-621

16-Input Card



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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

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:

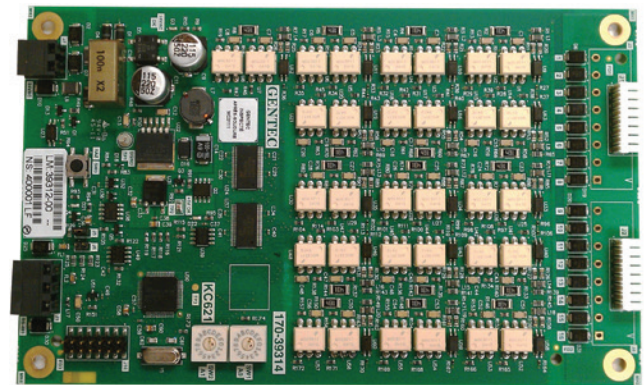
- management of groups and inputs
- input status management

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”



BACnet KC-600 “Native”
Controller

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

COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS

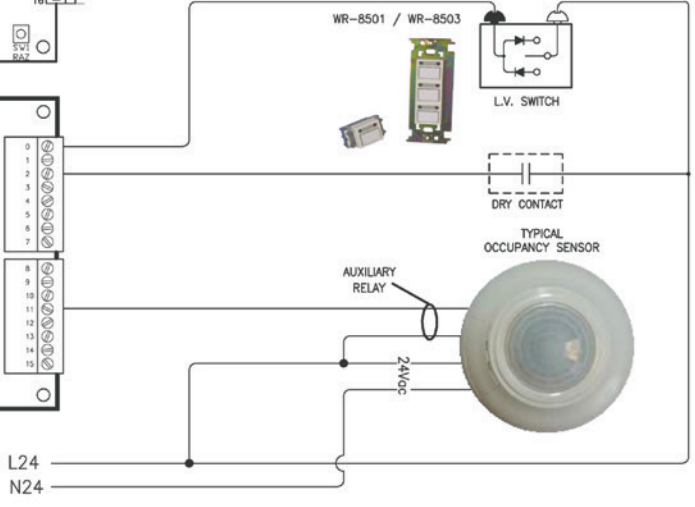
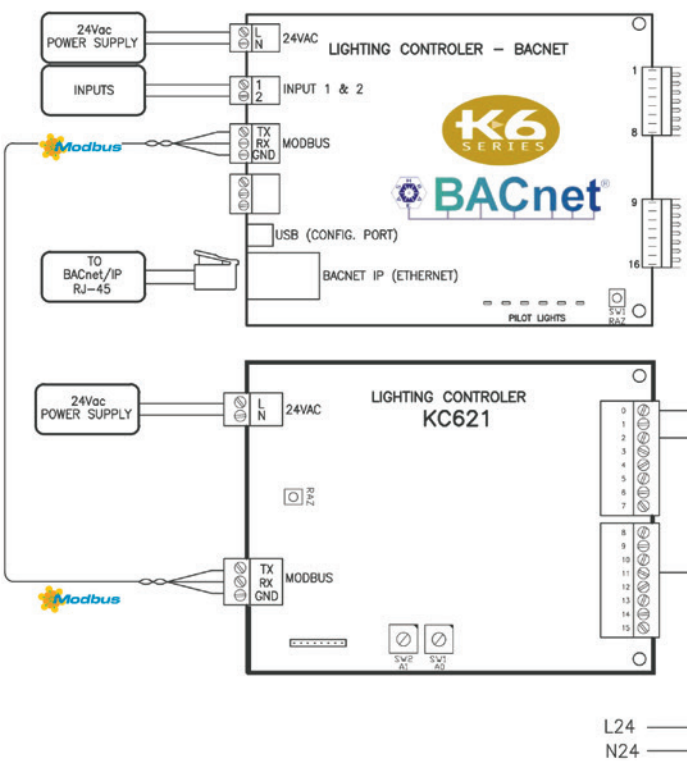


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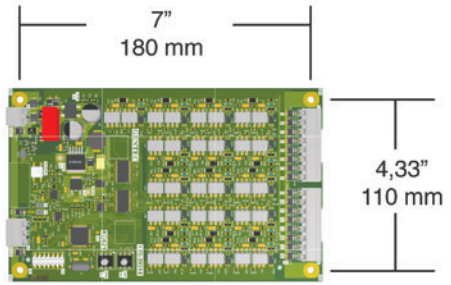
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KC-621 - Low Voltage Lighting Control – Modbus RTU Network in Lighting Control Cabinet



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



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GENERAL DESCRIPTION

- Kameleon software executed under Windows XP, 7,8 or 10 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

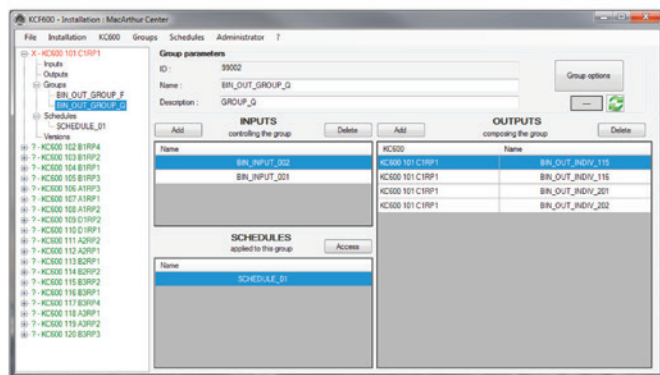
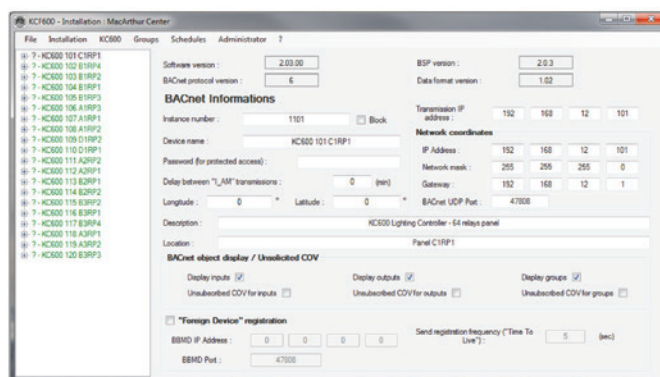
- Configuration and definition of groups
- Inputs/Outputs Bindings Configuration
- Schedule creation for groups
- User management (level, password, user name)

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



COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

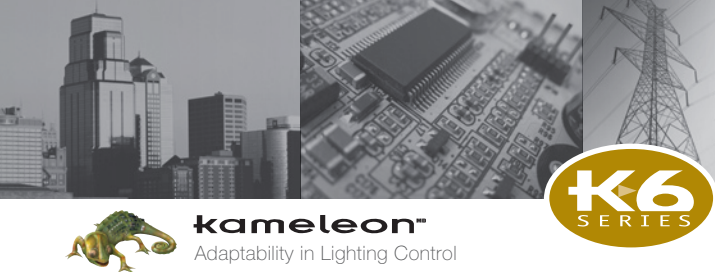
SYSTEM COMPONENTS



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KCF600 Kameleon Software



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SPECIFICATIONS

Scheduler

- Many types of event scheduling available: daily, weekly, monthly, annually, once.
- Capacity to program events based 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.

Cardtype	Address	Version number
KC501	0	2.03.00
KC600 (BSP)	0	2.0.3
KC631	1	1.00.03
KC631	2	1.00.03

ORDERING INFORMATION

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



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PICS K600 Series



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Protocol Implementation Conformance Statement



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



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COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS



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Adaptability in Lighting Control



PICS K600 Series

COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS

OBJECT TYPE SUPPORTED

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 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 chaîne : 64
Schedule	No	No	Description, Exception Schedule, Weekly Schedule	Description	None	None	Nombre maximal de caractères par chaîne : 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.



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K8 Relay Panels



kameleon™
Adaptability in Lighting Control

GENERAL DESCRIPTION

- Practical design offering easy installation and high efficiency running
- Standard sizes for 8, 16, 32 & 64-relay panels
- 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 duct
- 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 Controller KC-811
- Dimming Controller KC-851

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



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

COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS



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USB Network Interface



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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 use 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	<ul style="list-style-type: none">• U10 Interface: TP/FT-10 (ANSI/CEA-709.3 and LonMark standard channel type); link power compatible• U20 Interface: PL-20 (ANSI/CEA-709.2 and LonMark standard channel type); EN50065.1 Band protocol software configurable
Network Connector	<ul style="list-style-type: none">• U10 Interface: Removable spring clamp and screw terminal connectors included• 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

COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS



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USB Network Interface



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COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS

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



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KC-821

16-Input Controller



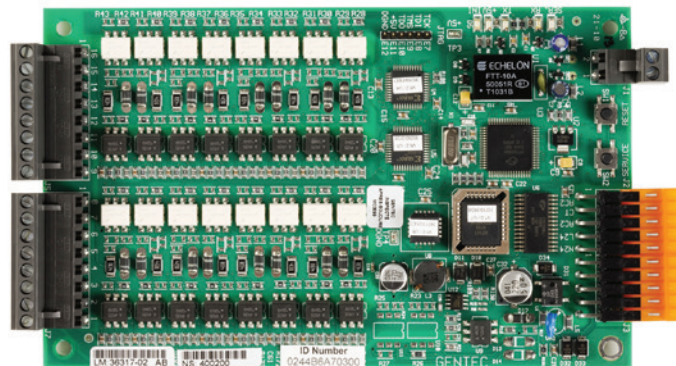
kameleon™
Adaptability in Lighting Control

GENERAL DESCRIPTION

- Interfaces 8 Low Voltage Switches or 16 Dry Contacts.
- Simple wiring via a twisted pair of #22 wires for the network.
- Easily Programmed and Commissioned
- Uses LonWorks Network Communication

SPECIFICATIONS

Microprocessor	Echelon® 3150®
Input	8 Low Voltage Switches, with or without LED or 16 Dry Contacts
Transceiver	FTT-10A
Communication Network	LonWorks®, Echelon®, Pair of Twisted # 22 Wires
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

COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

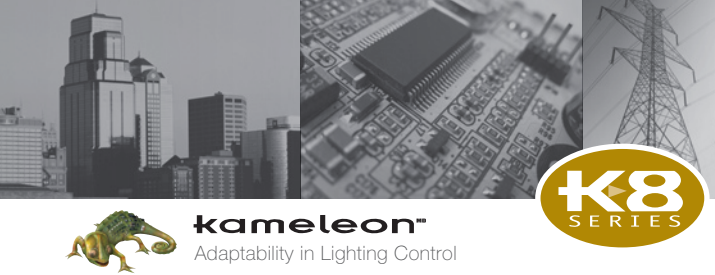
SYSTEM COMPONENTS



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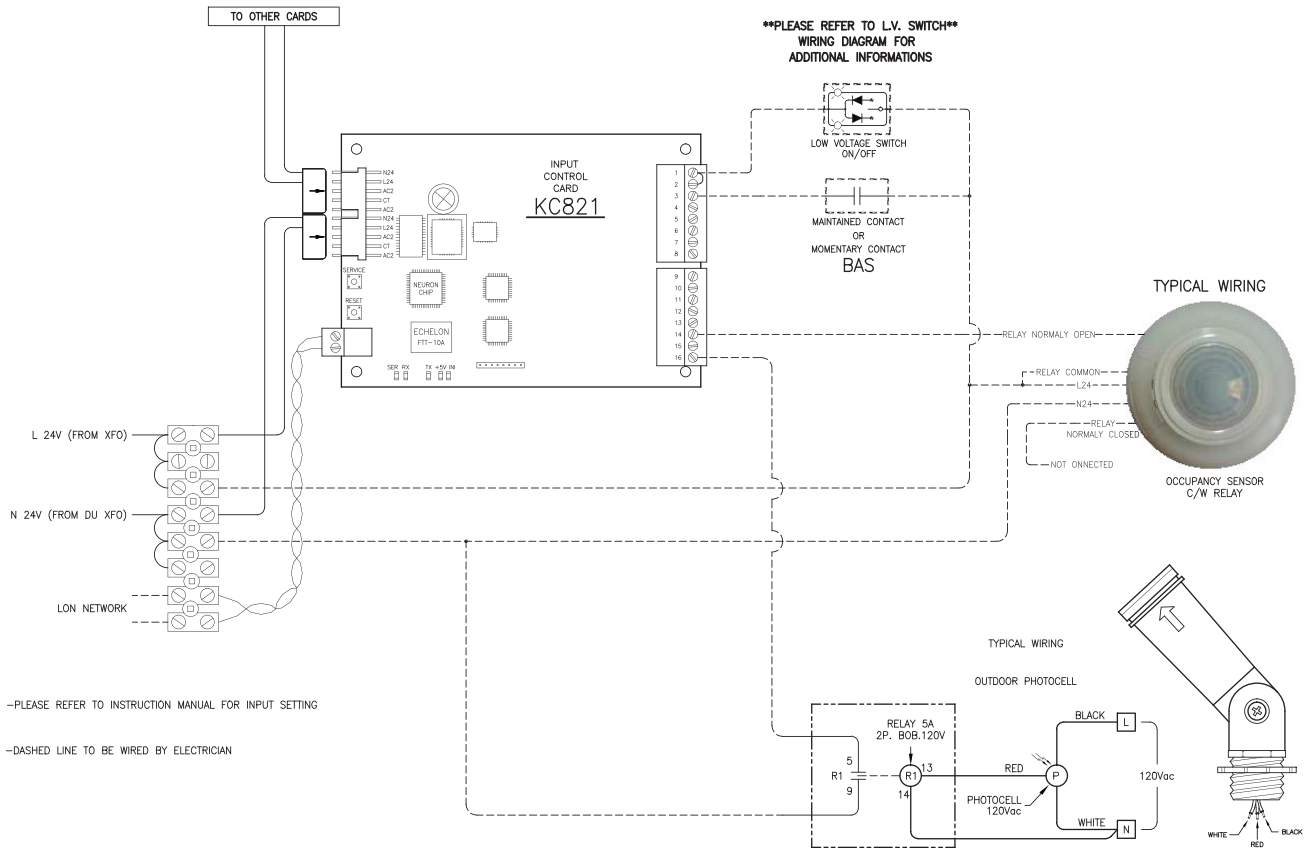




KC-821

16-Input Controller

WIRING DIAGRAM



ORDERING INFORMATION

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



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KC-83x

Output Controller



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Adaptability in Lighting Control

GENERAL DESCRIPTION

- Part Numbers:
 - KC-831 (Two-Wire Relay Controller)
 - KC-832 (Three-Wire Relay Controller)
- Simple wiring via a twisted pair of #22 wires for the network.
- Easily Programmed and Commissioned
- 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

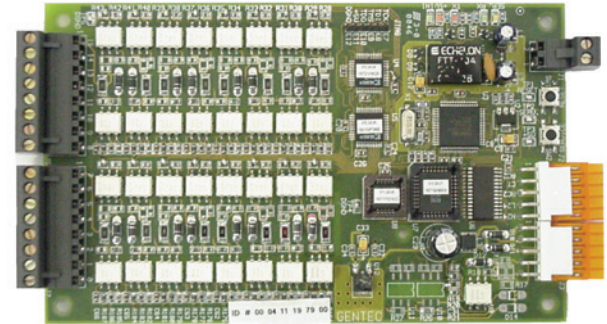
- KC-831 uses FTT-10A transceiver to communicate on a LON twisted pair network (CEA-709) with other K8 devices or with any other LON devices.

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 Wires
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 Available
- 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



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 Available
- 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

COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

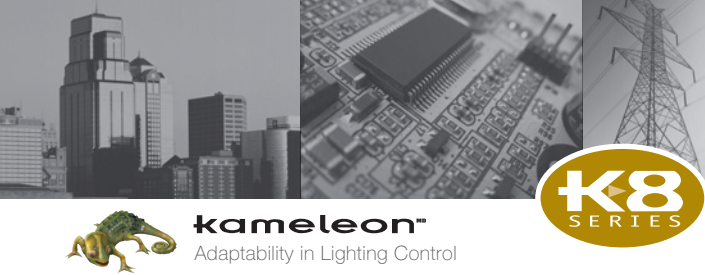
SYSTEM COMPONENTS



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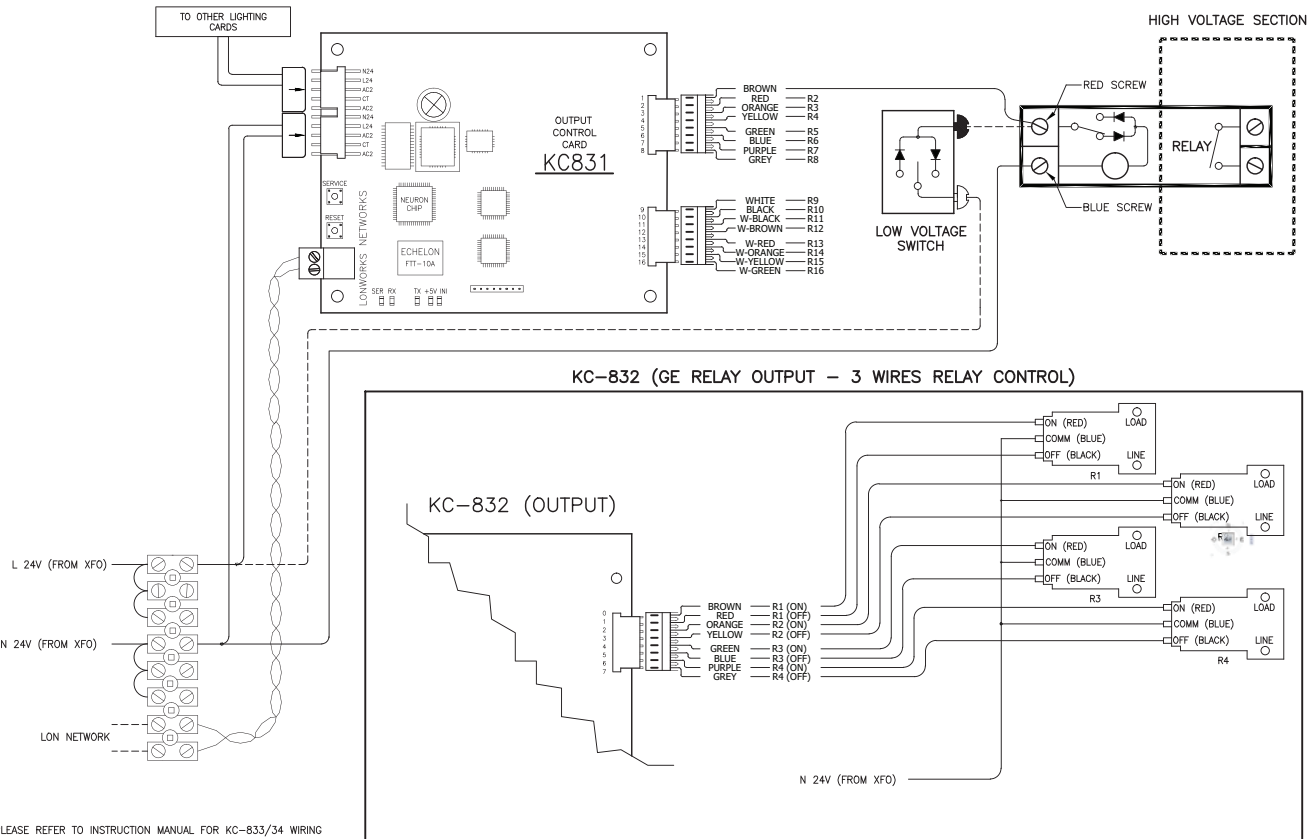
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KC-83x Output Controller

WIRING DIAGRAM



—PLEASE REFER TO INSTRUCTION MANUAL FOR KC-833/34 WIRING

—DASHED LINE TO BE WIRED BY ELECTRICIAN

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



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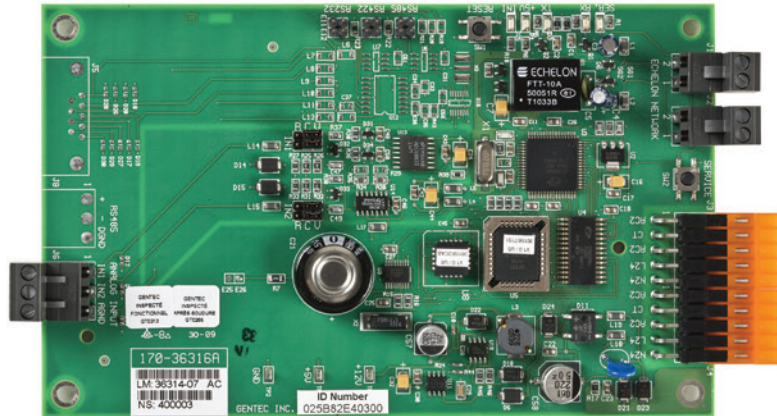
KC-811 Time Clock Controller



kameleon™
Adaptability in Lighting Control

GENERAL DESCRIPTION

- Astronomical Clock
- Built-In Scheduler
- Used for Scheduler or Serial Port Simple Network wiring via a twisted pair of #22 wires for the network.
- Easily Programmed and Commissioned
- 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 Wires
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

COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

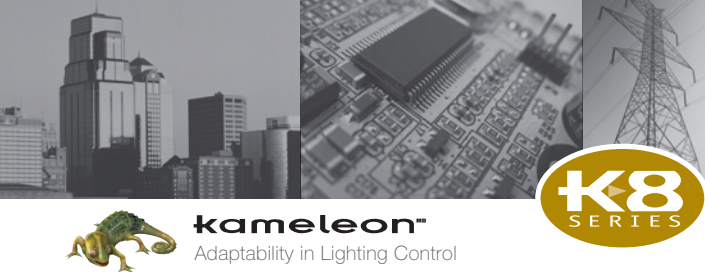
SYSTEM COMPONENTS



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KC-811 Time Clock Controller



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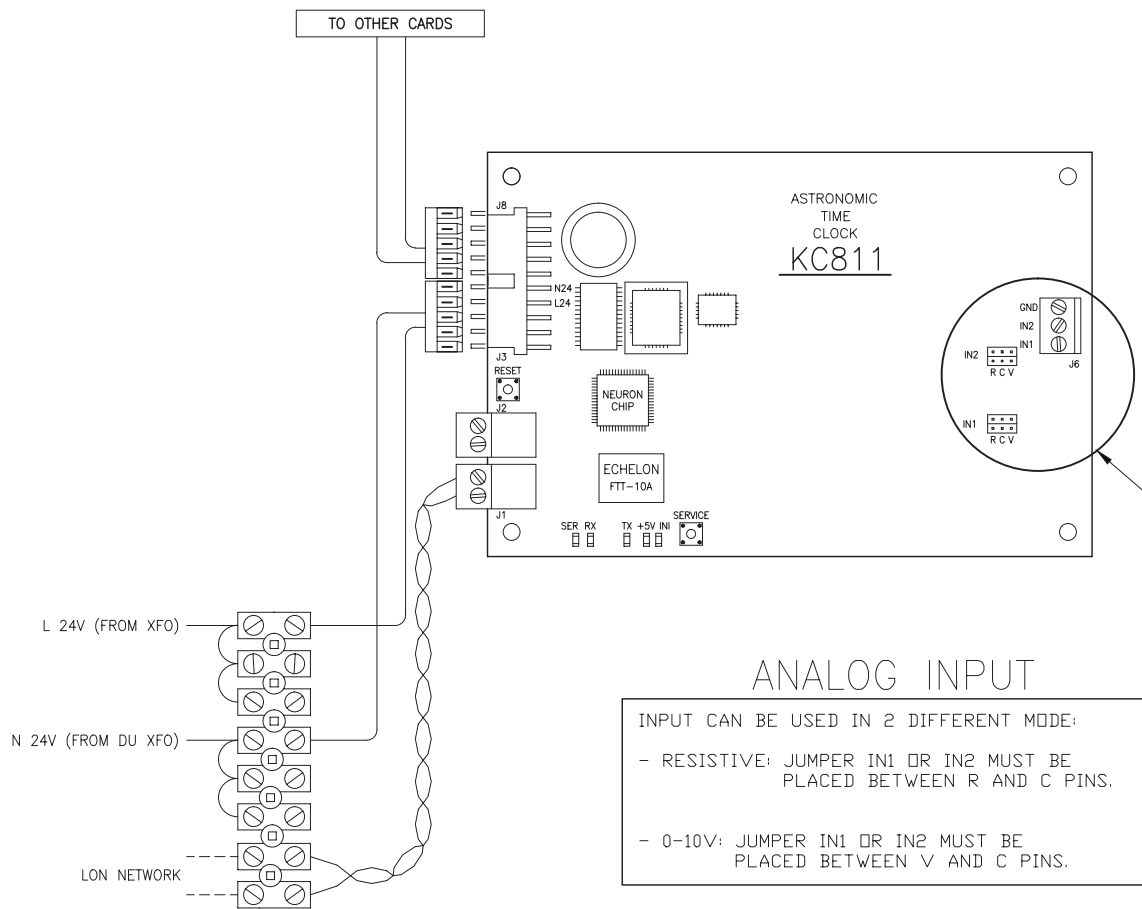
COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS

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



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K8 Kameleon Software



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GENERAL DESCRIPTION

- Kameleon software's operating system runs under Windows XP, 7, 8 & 10 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

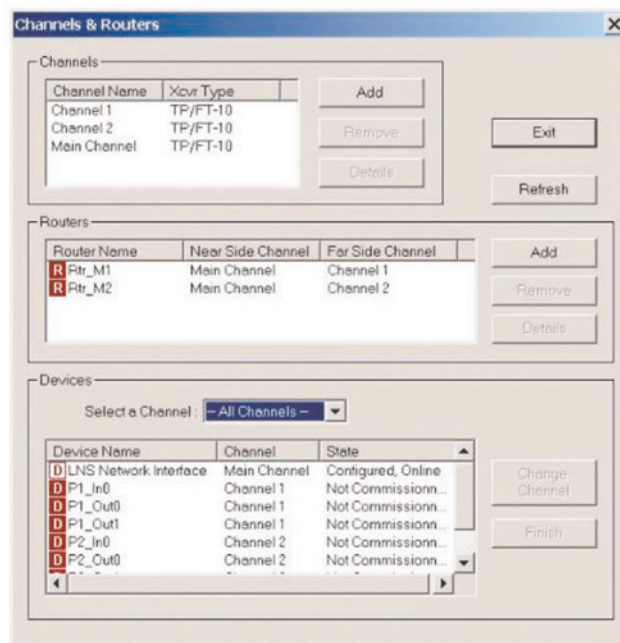
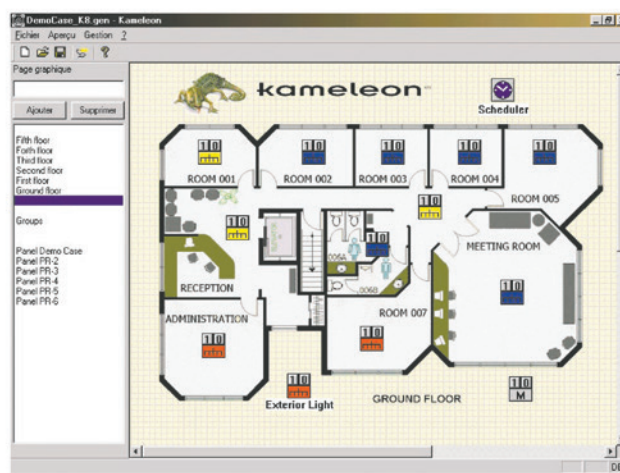
- Group Configuration
- Zone Definition
- Switch-Relay Links Configuration
- Schedules Definition for each Group or Zone
- User Configuration (level, password, user)

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
- Real Time Status View of Individual Lighting Circuits, Groups or Zones



COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

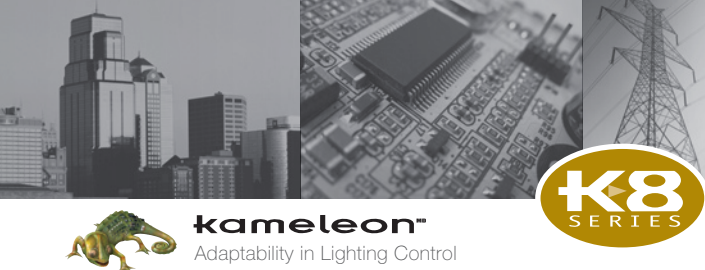
SYSTEM COMPONENTS



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K8 Kameleon Software



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Adaptability in Lighting Control



SPECIFICATIONS CONTINUED

Scheduler

- Many Schedule Types Available; Daily, Weekly, Monthly, One-Time Event
- Programming of a Delayed Operating Schedule; (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



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ACCESSORIES

KS Network Switch

ACCESSORIES



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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
- 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.



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	<ul style="list-style-type: none">• IEC 61000-4-3 Radiated, radio-frequency, electromagnetic field immunity• IEC 61000-4-4 Electrical fast transient/burst immunity• IEC 61000-4-6 Immunity to conducted disturbances, induced by radio-frequency
Network Limitations	LON: Network limitation LON (64 devices) 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



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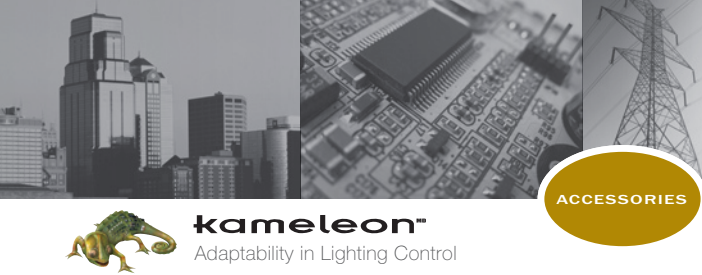
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COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS



KS Network Switch

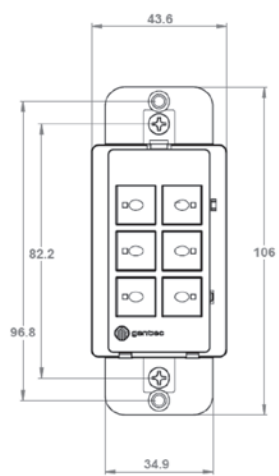
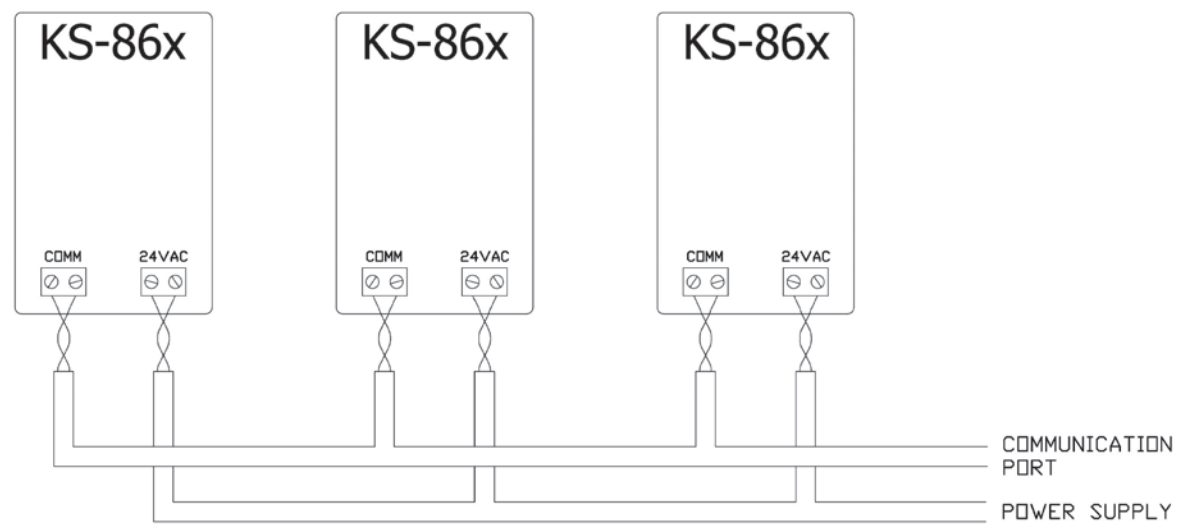
ACCESSORIES



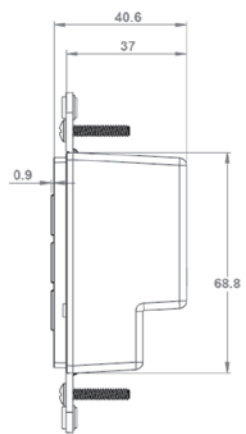
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Adaptability in Lighting Control

COMMON CONTROL SEQUENCES
TYPICAL APPLICATIONS
SYSTEM CONFIGURATION
SYSTEM COMPONENTS

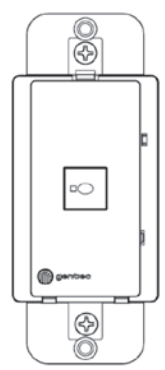
ELECTRICAL CONNECTIONS



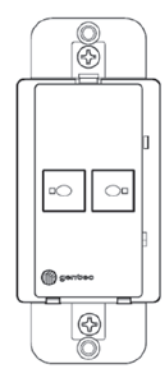
front view
(Units in mm)



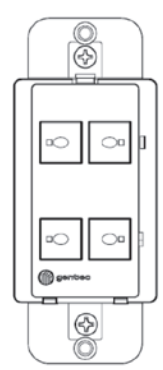
side view



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



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

ACCESSORIES



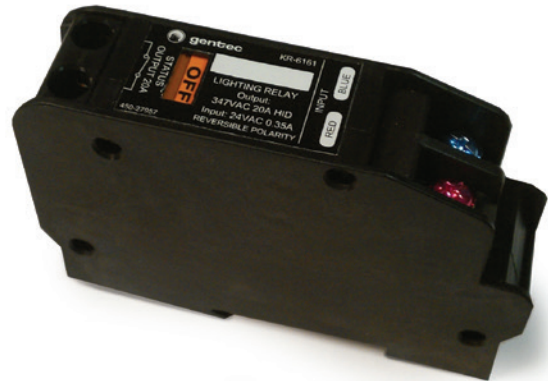
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Adaptability in Lighting Control

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	<ul style="list-style-type: none">• Between Open Contacts: 1694 V for one minute• 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		<ul style="list-style-type: none">• SPLT, Latching for WR-6161-81 and WR-6161-381• 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



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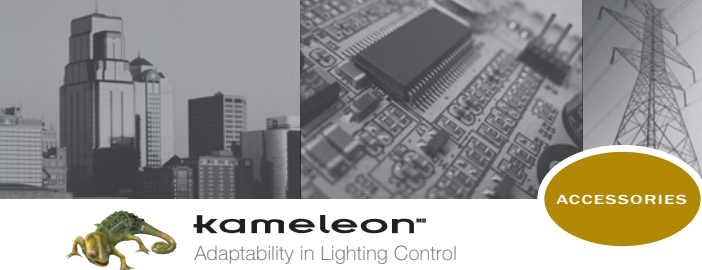


COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS



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

COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS

COIL

Operating Voltage	<ul style="list-style-type: none">• 18 V to 30 V Pulsed dc, Reversible Polarity• 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

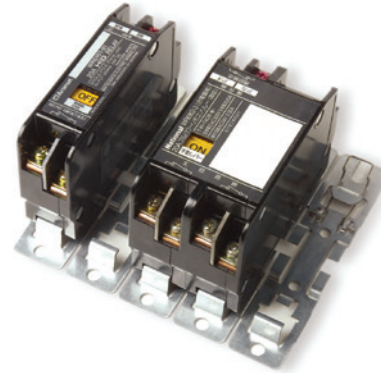
ACCESSORIES



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	<ul style="list-style-type: none">• Between Open Contacts: 1694 V for one minute• 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	<ul style="list-style-type: none">• SPLT, Latching for WR-6161-81 and WR-6161-381• 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



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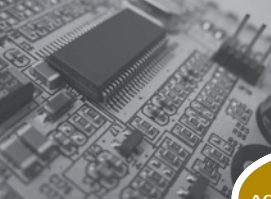


COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS



Heavy Duty HID Relay



kameleon™
Adaptability in Lighting Control

COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS

COIL

Operating Voltage	<ul style="list-style-type: none">• 18 V to 30 V Pulsed dc, Reversible Polarity• 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	<ul style="list-style-type: none">• WR-6161-381• WR-6172-381	SPST, Latching
Contact Material	Silver Alloy	
Rating	1 A 120 Vac	



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Heavy Duty HID Relay

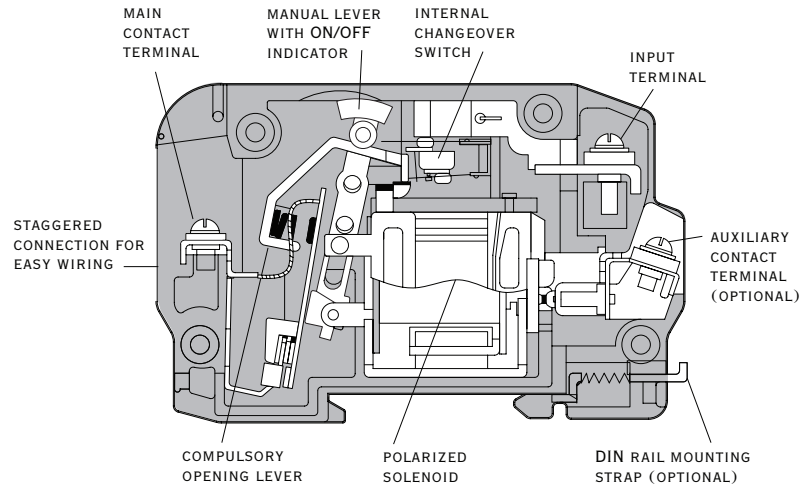
ACCESSORIES



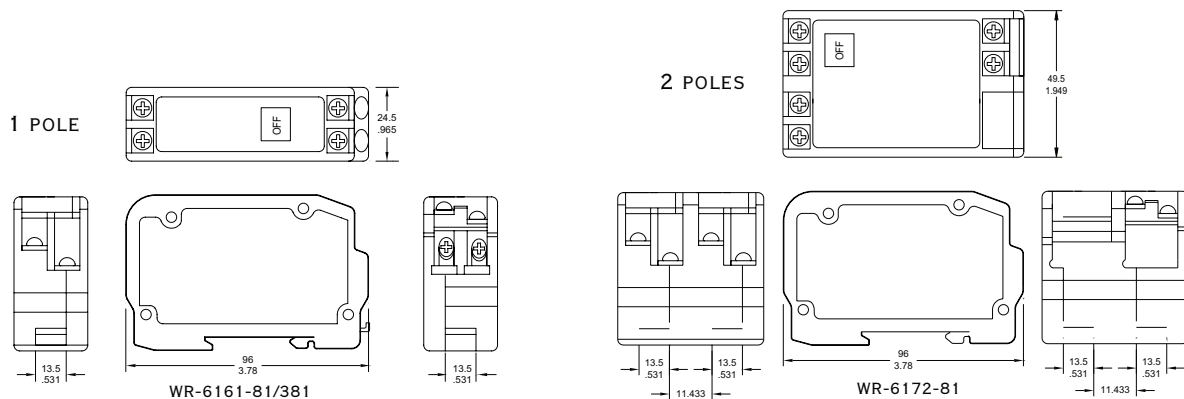
kameleon™
Adaptability in Lighting Control

CONSTRUCTION

RELAY INSIDE VIEW



DIMENSIONS



COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

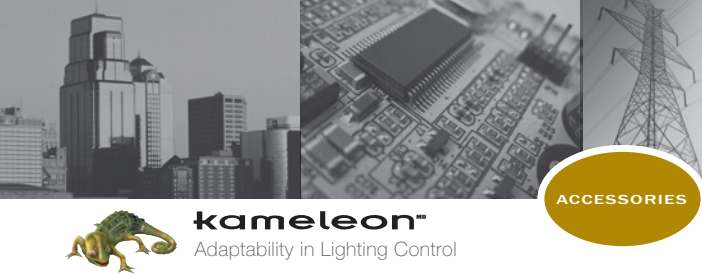
SYSTEM COMPONENTS



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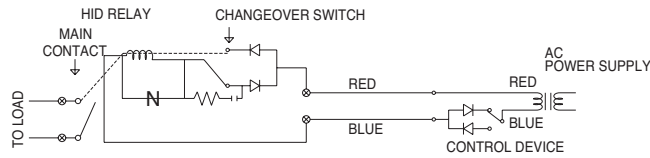


Heavy Duty HID Relay

ACCESSORIES

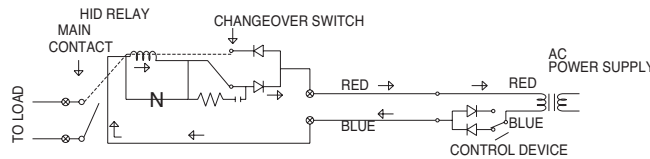
THEORY OF OPERATION

OFF CONDITION



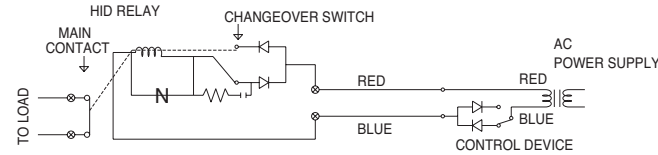
INTERNAL CHANGEOVER SWITCH IS MECHANICALLY LINKED TO MAIN CONTACT. NO CURRENT FLOWS DUE TO THE DIODE DIRECTION.

WHEN CONTROL DEVICE IS TURN ON



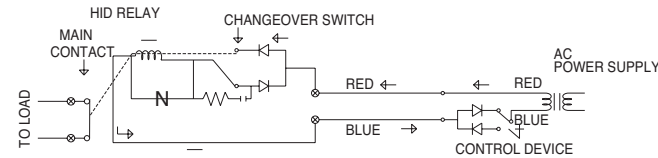
THE COIL CURRENT FLOWS TO OPERATE THE RELAY.

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



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COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS

Switches

ACCESSORIES



kameleon™
Adaptability in Lighting Control

GENERAL DESCRIPTION

GENELVS1R & GENELVS2R

- Simple momentary push button control
- LED pilot lights for status outputs
- Voltage range from 5 to 36 VDC or VAC
- Fit standard Nema wall boxes
- Designed for use with Gentec relay panels
- Decorator Style wall plate included

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-8503

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

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

GENELVS1R



GENELVS2R

WR-8501



WR-8503



MC-1138-C



COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

SYSTEM COMPONENTS

SPECIFICATIONS

GENELVS1R / GENELVS2R

- Conductor voltage rating 5 to 36 VDC or VAC
- Conductor length 6 inches from housing
- Temperature 0 to 50 oC
- Humidity Maximum 90% RH non-condensing

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

MC-1138

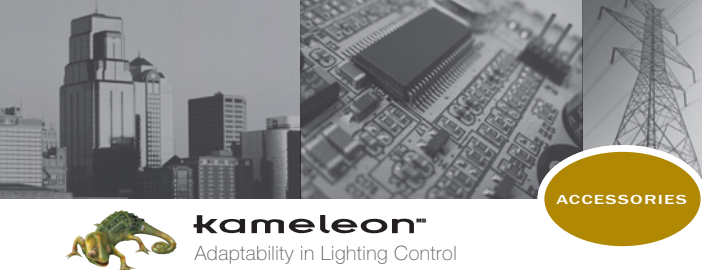
- 3 A 24 V Reversible Polarity Pulse
- Maximum of 4 relays operable with one switch
- No limit of switches connected to the relay



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Switches



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Adaptability in Lighting Control

ACCESSORIES

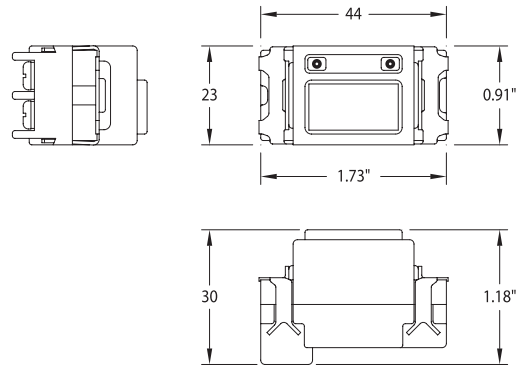
DIMENSIONS

COMMON CONTROL SEQUENCES

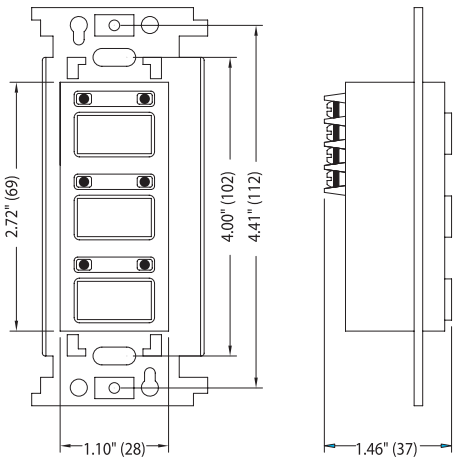
TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

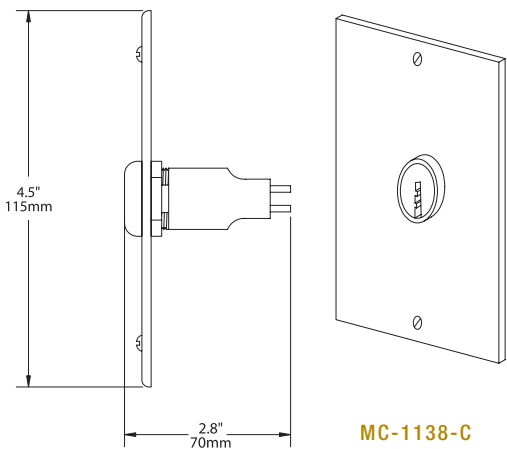
SYSTEM COMPONENTS



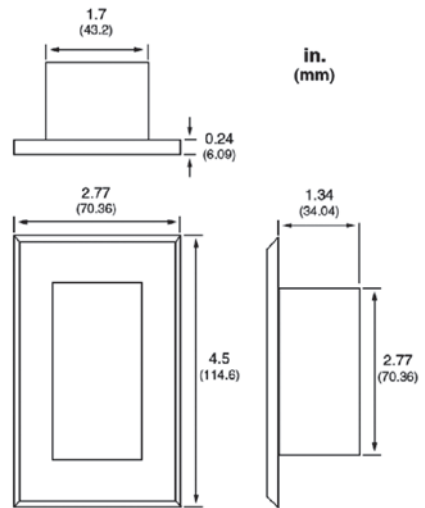
WR-8501



GENELVS1R



MC-1138-C



ORDERING INFORMATION

PART NO.	SWITCH	TYPE
30884	MC-1138-C	Key Switch
30338	WR-8501	Two Indicators, Push-Button Switch
24824	WR-8503	Three Indicators Push-Button Switch
22910	GENELVS1R	Low voltage 1-button Decorator switch
22911	GENELVS2R	Low voltage 2-button Decorator switch



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Switch Plates

ACCESSORIES



kameleon™
Adaptability in Lighting Control

GENERAL DESCRIPTION

WN-7600 Series

- Brushed stainless steel visible screws 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

COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

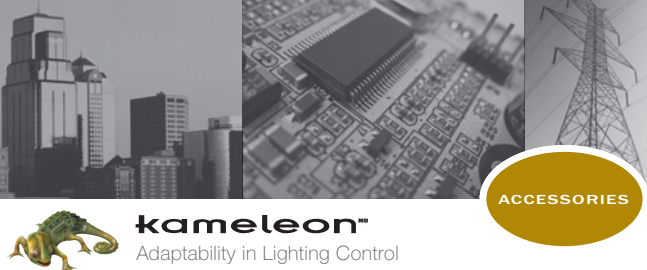
SYSTEM COMPONENTS



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Switch Plates

PART NUMBERS



WN-XX01
1 GANG
1 DEVICE



WN-XX06
2 GANG
6 DEVICE



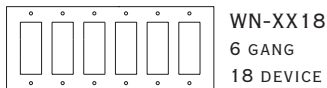
WN-XX02
1 GANG
2 DEVICE



WN-XX09
3 GANG
9 DEVICE



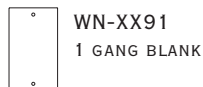
WN-XX03
1 GANG
3 DEVICE



WN-XX18
6 GANG
18 DEVICE



WN-XX04
2 GANG
4 DEVICE



WN-XX91
1 GANG BLANK

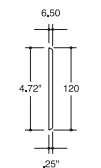


WN-XX92
2 GANG BLANK

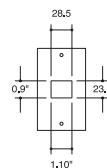


WN-XX93
3 GANG BLANK

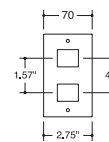
DIMENSIONS



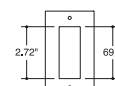
SIDE VIEW



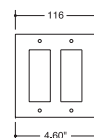
WNXX01



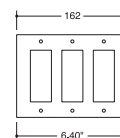
WNXX02



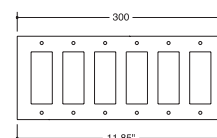
WNXX03



WNXX06



WNXX09



WNXX18

ORDERING INFORMATION

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



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

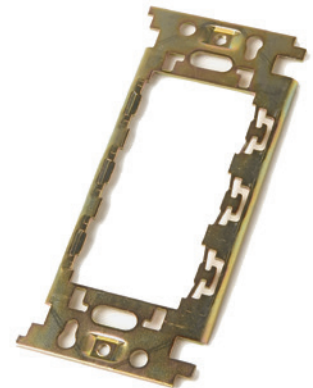
- Use filler chip to fill device spaces – color of filler chip identical to cream white of Gentec

WN-7700 Series

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



WN-2700



WN-3700



WN-3020



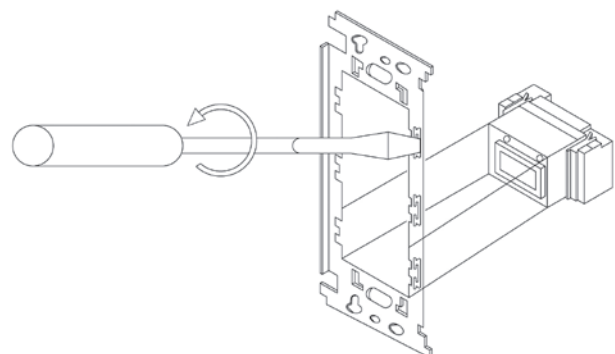
WN-7700

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



COMMON CONTROL SEQUENCES

TYPICAL APPLICATIONS

SYSTEM CONFIGURATION

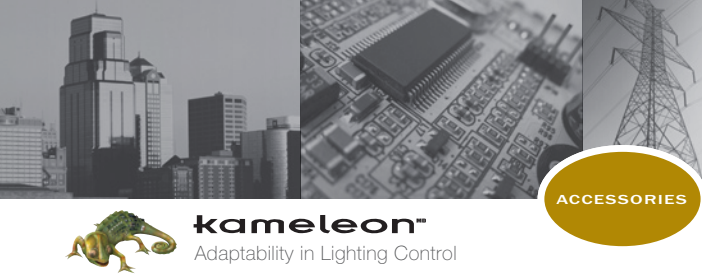
SYSTEM COMPONENTS



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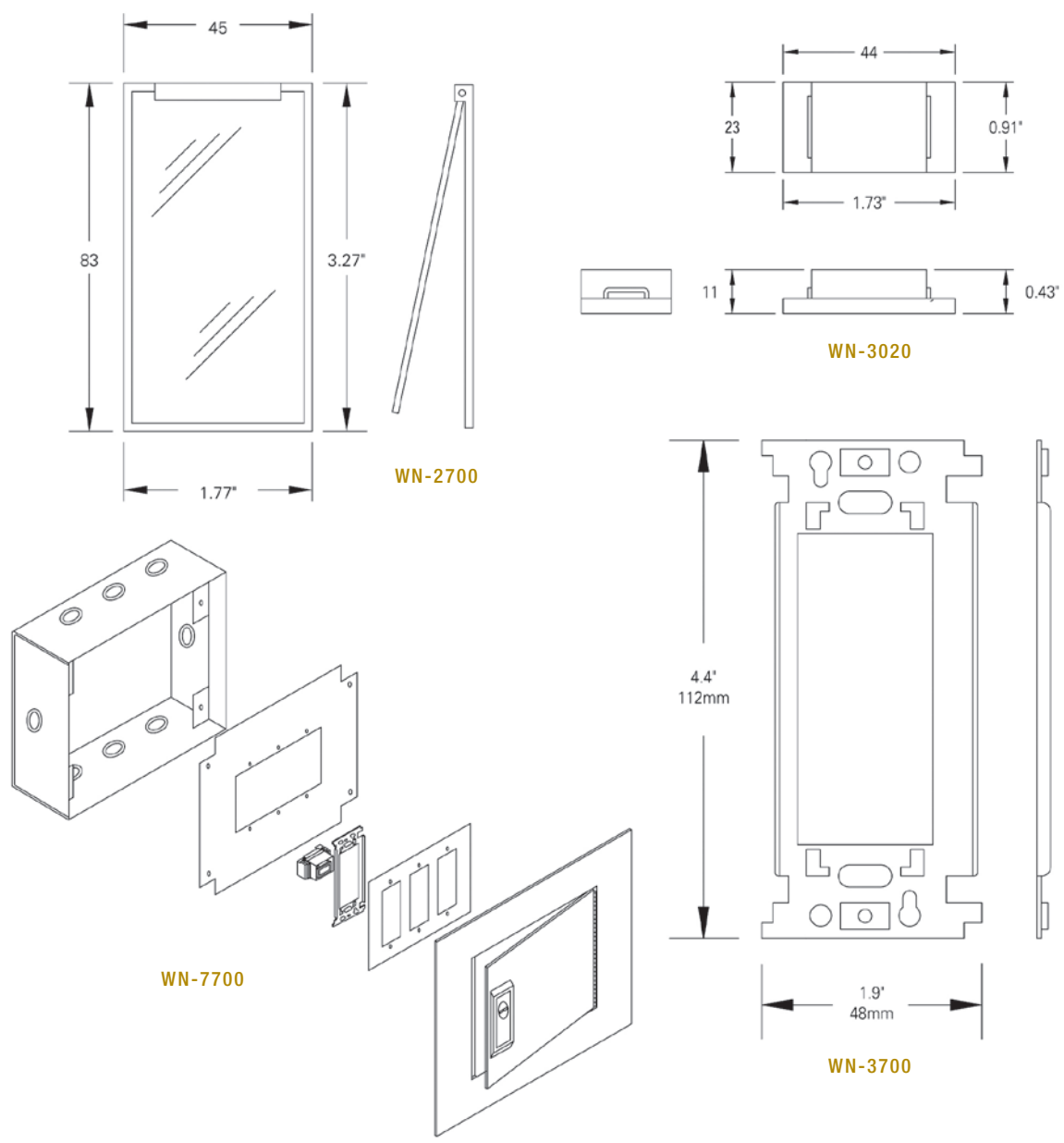
Switch Accessories



kameleon™
Adaptability in Lighting Control

COMMON CONTROL SEQUENCES
TYPICAL APPLICATIONS
SYSTEM CONFIGURATION
SYSTEM COMPONENTS

DIMENSIONS



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



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Notes

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



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