kameleon MD

K4 SERIES

Field Programming System

KC-401 & KC-411

INSTALLATION – PROGRAMMING – OPERATION MANUAL

gentec
ENERGY MANAGEMENT

HISTORIQUE DU DOCUMENT

Révision	Date	Description	Auteurs
Émission	2010 / 01 / 14	Rédaction du manuel d'opération, d'installation et d'entretien du contrôleur d'éclairage K4	Dominic Tremblay François Bilodeau Marcel Landry

APPROBATION DU DOCUMENT

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TABLE OF CONTENT

CHAPTER 1 – SYSTEM OVERALL PRESENTATION

FEATURES

The K4 Series panels are pre-wired and field programmable. Two different sizes of panels are available: 8-relay and 16-relay configuration. The 8-relay panels can control up to 8 relays, 2 groups and 2 photocells. The 16-relay panels can control up to 16 relays, 6 groups and 2 photocells.

Relay Panel Specifications

> 120/277/347 VAC
> Factory Wired

Relay Specifications

> 20 A HID Rated
> 1 Pole
> 2 Wire
> Manual Override
> Mechanically Held

KC-411 Time Clock/Relay Controller

> 8 Outputs Capacity
> Up to 2 Groups (zones) Configuration
> LCD Display (4 Lines – 20 Characters)
> Multi Group Relay Assignment Capability
> Photocell Dedicated Input (2)
> Astronomical Clock 365-days, 7-days and 24-hours Programming
> Daylight Savings
> Up To 500 Schedules (once, Daily, Weekly, Monthly, Yearly)
> Event Priority Management

KC-401 Relay Controller

> 16 Outputs Capacity
> Up To 4 Groups (zones) Configuration
> Multi Group Relay Assignment Capability

**KC-411 Time Clock /
Relay Controller**

KC-401 Relay Controller

CHAPTER 2   - CONTROLLERS INTERFACE

KC-411 MEMBRANE

1. **Relay Outputs** (1 to 8) **or Group Outputs**

2. **LCD Screen**

3. **Infrared Communication Port (IRDA)**

4. **Run and Program Keys**

    o   **RUN** **:** Run Mode Activation

    o   **PGM** **:** Program Mode Activation

5. 24VAC **Supply** and **Ground**

6. **Groups Inputs** (1 to 2)

7. **Photocells Inputs** (1 to 2)

8. **Communication Port**

9. **Keypad**

    o   **0-9** **:** Key 0 to 9

    o   **ENTER** **:** Accept Data and Return

    o   **CLEAR** **:** Clear and Cancel

    o   ⬆ **:** Menu Up or move cursor

    o   ⬇ **:** Menu down or move cursor
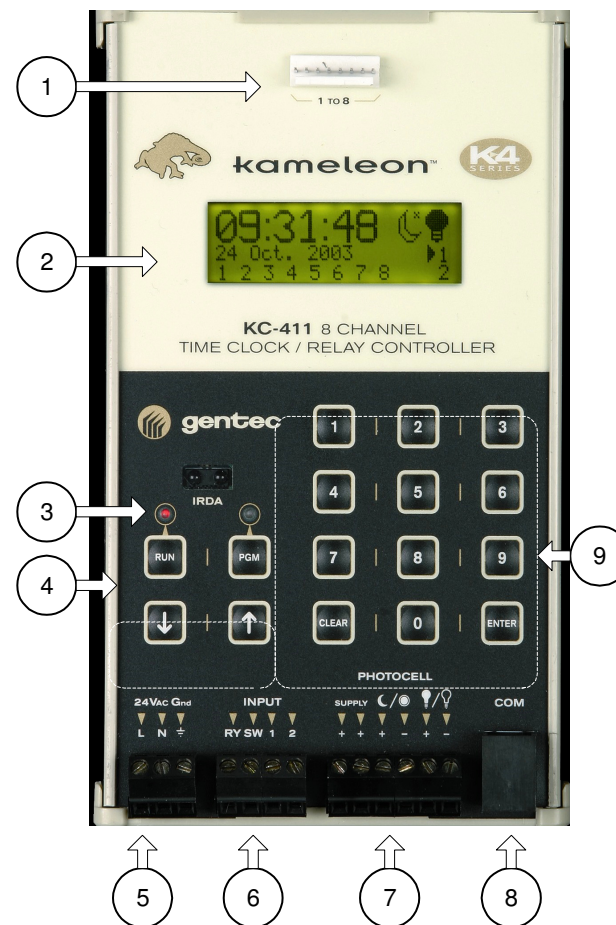
KC-411 LCD DISPLAY

Fig 1 : Main Screen

1	**Current Time and Date**
2	**Relays' status for the 8-relay panel. For the 16-relay panel, relays' status are displayed on the KC-401 membrane** Ex : 1 : Relay One is OFF or not Connected **1** : Relay one is ON
3	**Photocell 1 Inputs' Status** : Photocell 1 input is ON : Photocell 1 input is OFF Photocell 1 normally controls the exterior lights	**Photocell 2 Inputs' Status** : Photocell 2 input is On : Photocell 2 input is Off Photocell 2 normally controls the interior lights
4	**Groups One and Two Status** Ex: 1 : Group One is OFF **1** : Group One is ON
5	**Group Selection Arrow** Press the Up and Down buttons on the keypad to move the arrow.

KC-401 – MEMBRANE

1. $\boxed{1}$ to $\boxed{16}$ **:** Relay Activation Button / Relay's Status (LED)

2. $\boxed{RUN}$ **:** Run Mode Activation

   o $\boxed{PROGRAM}$ **:** Program Mode Activation

   o $\boxed{OPTIONS}$ **:** Option Selection (Time ON Extension (TOE), Flick Warning, TOE + Warning)

   o $\boxed{ON\ ONLY}$ **:** ON Only Action Activation (OFF-ON transition for the selected group)

   o $\boxed{OFF\ ONLY}$ **:** OFF Only Action Activation (ON-OFF transition for the selected group)

3. $\boxed{ON}$ **:** Manual ON Override on Group

   o $\boxed{OFF}$ **:** Manual OFF Override on Group

   o $\boxed{GROUP\ SELECT}$ **:** Group Selection

4. 24VAC **Supply** and **Ground**

5. **Ry** – Relays Return (24V neutral) **Sw** – Group Input Supply (24V in line).

6. **Groups Inputs** (3 to 6)

7. **Communication Port**

8. **Relays Outputs** (1 to 8 & 9 to 16)
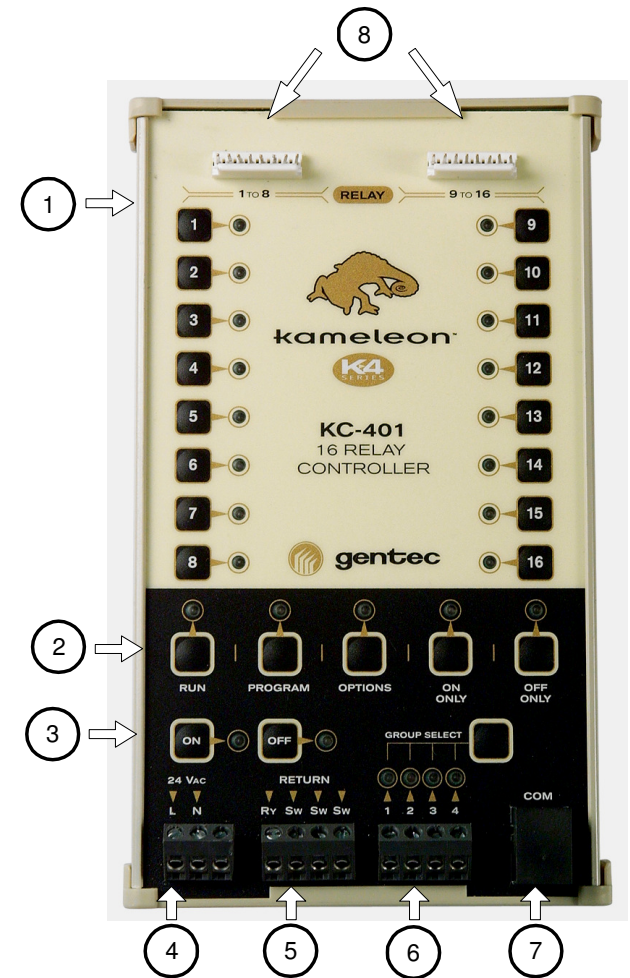
CHAPTER 3 – K4 SERIES PANEL PROGRAMMING

FIRST START-UP WARNING

- Before switching ON the K4 Series panel, the connections between the controllers and the electricity supply and between the relays and the inputs must be secured – Refer to the Wiring Diagram (Appendix A) for details.

- The KC-411 and KC-401 Controller come with no programming and pre-define groups unless specified by the factory. By default, all relays connected to the controllers are on the OFF mode.

STAGE 1 – GETTING STARTED

The programming of the K4 Series Panel is performed through the use of the KC-411 and KC-401 controllers.

The KC-411 will be used to:

- Program the clock (Time, Date, Astronomical functions)

- Program the events (Once, Daily, Weekly, Monthly)

- Program the group 1 and 2;

- Program the photocell 1 and 2;

- Assign the actions (ON/OFF, ON Only, OFF Only) to the relays that are part of group 1 and 2;

- Assign the actions (ON/OFF, ON Only, OFF Only) to the relays that are tied to photocell 1 and 2; and

- Assign the options (Normal, Time ON Extension (TOE), Warning, TOE + Warning) to the relays that are part of group 1 and 2.

The KC-401 will be used to:

- Assign the 16 relays to group 1,2, 3, 4, 5 and 6;

- Program the group 3, 4, 5 and 6 (if necessary);

- Assign the actions (ON/OFF, ON Only, OFF Only) to the relays that are part of group 3 to 6; and

- Assign the options (Normal, Time ON Extension (TOE), Warning, TOE + Warning) to the relays that are part of group 3 to 6.

STARTING PROGRAM MODE

Description – To program the K4 Series panel, both KC-411 and KC-401 need to be put into Program Mode. Since both controllers are connected, it is important to notice that by putting one controller into Program Mode will automatically put the other controller into Program Mode.

Action – Press PGM button on the KC-411

Results – PGM button LED of the KC-411 turns red and the PROGRAM button LED of the KC-401 is flashing.

Thus, the KC-411 becomes the master and the KC-401 the slave for programming process.

The Set Event Screen is displayed on the LCD Screen of the

```
Program
< Set Event --->
```
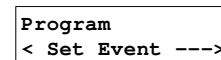
KC-411.

Each configuration and programming action performed in the field in PROGRAM mode will be saved in permanent (Flash) memory when the RUN mode will be activated. All information related to the system will then be stored forever until future changes even after a power failure.

Already Programmed Controllers

By pressing the PGM button, the user can modify the entire programming of the controllers.

EXITING PROGRAM MODE

Description –   Once both controllers have been programmed, the K4 Series panel is ready to operate.

Action –   Press RUN button on KC-411 when the Set Event Screen is displayed on the LCD Screen of the KC-411

```
Program
< Set Event --->
```

Results –   RUN button LED of the KC-411 and KC-401 turns red. Main Screen is displayed on the LCD Screen of the KC-411.

IMPORTANT NOTICE

EACH CONFIGURATION AND PROGRAMMING ACTION WILL BE SAVED IN PERMANENT (FLASH) MEMORY WHEN THE RUN MODE WILL BE ACTIVATED. ALL INFORMATION RELATED TO THE SYSTEM WILL THEN BE STORED UNTIL FUTURE CHANGES EVEN AFTER A POWER FAILURE

THE RUN MODE WILL AUTOMATICALLY BE ACTIVATED AFTER A PERIOD OF 2 MINUTES IF NO COMMAND IS ENTERED ON THE KEYPAD.

STAGE 2 – TIME & ASTRONOMICAL CLOCK PROGRAMMING

For the time programming the following information are required:

o   Actual date and time

o   Day Light Saving application: Yes or No

If the Solar Time is used, the following information are required:

o   Latitude

o   Longitude

o   Time zone

Ex :

New York City, NY: Latitude = 40 deg 47 min, Longitude = 73 deg 58 min, Time zone = -5

San Diego, CA: Latitude = 32 deg 43 min, Longitude = 117 deg 09 min, Time zone = -8

Refer to the following Web Site for your location Latitude and Longitude **http://www.bcca.org/misc/qiblih/latlong.html**

Step 1

```
Program
< Set Event ——>
```

UP/DOWN

```
Program
< Set Time ——>
```

UP/DOWN

```
Program
< Set I/O ——>
```

Step 2

```
Set Time
Date 2003/08/08
     ^
```

Step 3

```
Set Time
Time 21:34
     ^
```

Step 4

```
Set Time
Daylight saving:YES
```

Step 5

```
Latitude
DEG 045  MIN 00
        ^
```

Step 6

```
Longitude
DEG 045  MIN 00
        ^
```

Step 7

```
Time Zone
Time Zone = -05
```

ENTER → (Step1 to Step2), ENTER → (Step2 to Step3), ENTER → (Step3 to Step4), ENTER → (Step4 to Step5), ENTER → (Step5 to Step6), ENTER → (Step6 to Step7)

Enter

Time & Astronomical Clock Programming Diagram

Notice

Anytime during programming, the CLEAR button can be pressed to restart the activated Step. The default value of that Step will than appears. If the CLEAR button is pressed a second time, the ongoing stage programming will be terminated and the Set Event Screen

```
Program
< Set Event --->
```
will appear.

STEPS	DESCRIPTION	ACTIONS
Step 1	Time Programming Selection	**Enter:** Go to Step 2
Step 2	Date programming Format: YEAR/MONTH/DATE	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Step 3
Step 3	Time Entry Format: 00:00 to 23:59	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Step 4
Step 4	Day Light Savings Activation	**UP, DOWN:** Selection **Enter:** Go to Step5
Step 5	Latitude	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Step 6
Step 6	Longitude	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Step 7
Step 7	Time zone	**UP, DOWN:** Selection. **Enter:** Go to Set Event Screen

STAGE 3 – EVENT PROGRAMMING

EVENTS TYPES

Events Types	Occurrence	
Once	Once, Specific Date	
Daily	Every Day	
Weekly	Selection of one or many days of the week	
Monthly	Selection:	Specific date of the month (1-31)
		First Sunday…Saturday
		Second Sunday…Saturday
		Third Sunday…Saturday
		Fourth Sunday…Saturday
		Last Sunday…Saturday

EVENTS PRIORITIES

There are four possible priorities for each programmed event. The highest number corresponds to the highest priority.

Priority 1 – Normal Event

Priority 2 – Seasonal Event

Priority 3 and 4 – Particular Event (ex: Holiday)

EVENT PROGRAMMING - ONCE

ONCE events occur at a specific date. To program an ONCE event, the following values are necessary:

- o Priority of the event (1-4)
- o Group(s) and relay(s) tied to that event as well as their function (ON, OFF)
- o Event date
- o Selection Solar or Legal Time
  - o Solar Time:
    - ▪ Sunrise or Sunset +- Offset.
  - o Legal Time:
    - ▪ Event Time + Hold time.

Step 1

Step 1

```
Event[1]   #(id)
< Once ——————>
```

Step 2

```
Once[On]    #(id)
G:-2 O:—3——8
```

Step 3

```
Once[On]   #(id)
Date 2003/12/28
         ^
```

Step 4

```
Once[On]    #(id)
< Legal Time —>
```

UP / DOWN

```
Once[On]     #(id)
< Solar Time —>
```

Program
```
Program
< Set Event —->
```

ENTER

Event
```
Event
< Add ——————>
```

ENTER

ENTER

ENTER

ENTER

UP / DOWN

```
Event[1]   #(id)
< Daily ——————>
```

UP / DOWN

```
Event[1]    #(id)
< Weekly ——————>
```

UP / DOWN

```
Event[1]    #(id)
< Monthly ——————>
```

Enter

Enter

Step 5

```
Once[On]    #(id)
Time 21:34
       ^
```

Enter

Step 6

```
Once[On]    #(id)
Hold 00:00
       ^
```

Step 7

```
Once[On]    #(id)
Sunrise
```

up/down

```
Once[On]    #(id)
Sunset
```

Enter

Step 8

```
Once[On]     #(id)
Offset +
```

up/down

```
Once[On]    #(id)
Offset –
```

Enter

Enter

Step 9

```
Once[On]     #(id)
Offset +0:00
        ^
```
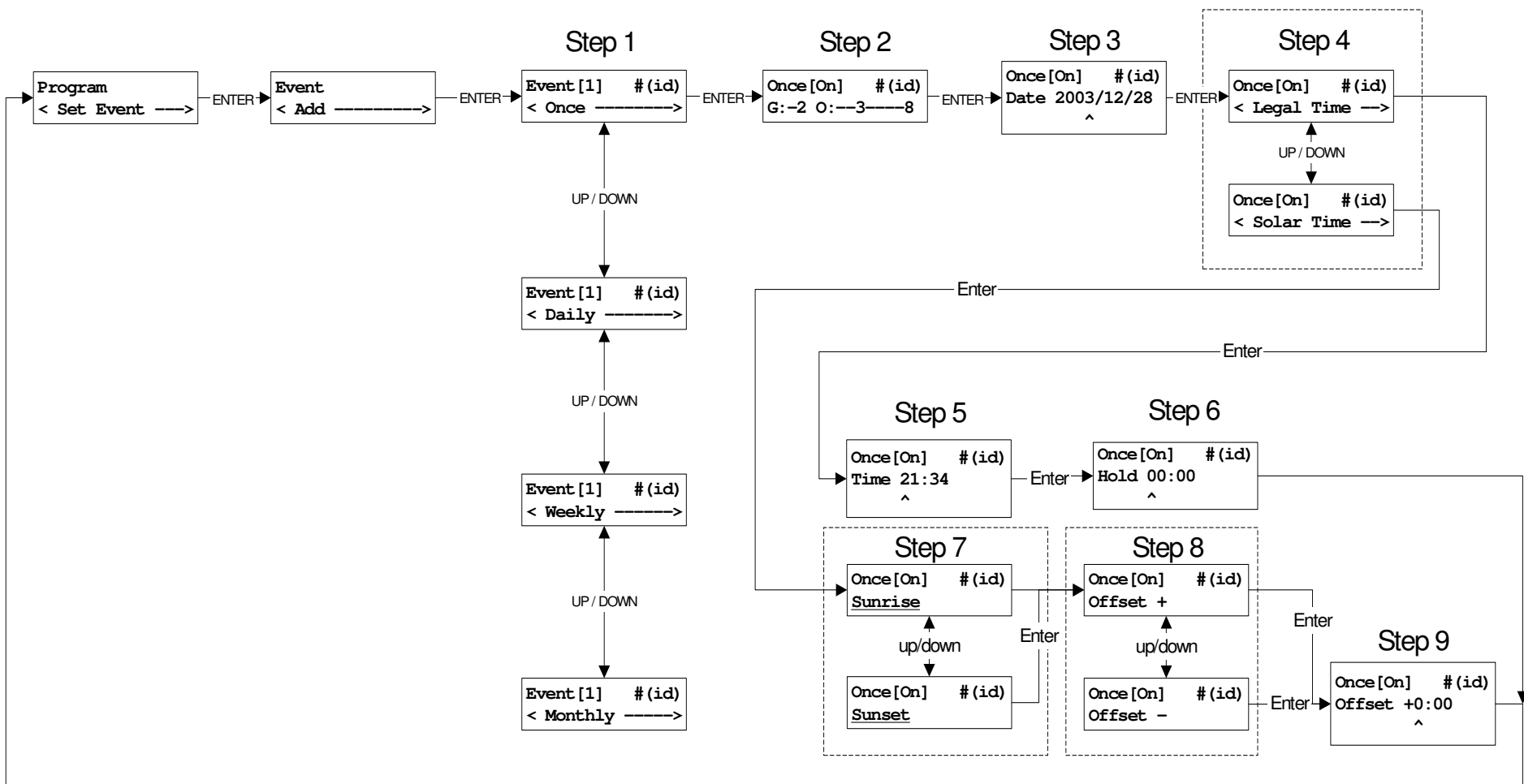
Event Programming – Once Diagram

Notice

Anytime during programming, the CLEAR button can be pressed to restart the activated Step. The default value of that Step will than appears. If the CLEAR button is pressed a second time, the ongoing stage programming will be terminated and the Set Event Screen
```
Program
< Set Event —->
```
will appear.

Step-by-Step Event Programming – Once

| STEPS	DESCRIPTION	ACTIONS
Step 1	Event's Recurrence Selection - (ONCE) Event's Priority Selection - (1-4) Note: An identification number is automatically awarded to each event and is located in the top right corner (#(id))	**1-4:** Event's Priority Selection. Priority 4 is the highest **Enter:** Go to Step 2

Step 2	Group(s) (G) and/ or Output(s) (O) Selection
	
	    Selection Options per Panel:
	
	        8-Relay Panel: G: Group 1 to 2
	                        O: Relay 1 to 8
	        16-Relay Panel: G: Group 1 to 2
	                        O: Group 3 to 6
	
	IMPORTANT NOTICE
	    O: 1 → GROUP 3
	    O: 2 → GROUP 4
	    O: 3 → GROUP 5
	    O: 4 → GROUP 6
	
	Operation Selection - (ON, OFF)
		8-Relay Panel
		    3-8: Relay 3 to 8 Selection
		    1 and 2: Relay 1 and 2 and Group 1 and 2 Selection
		    1st Press = Group 1 or 2 only are selected
		    2nd Press = Relay 1 or 2 only are selected
		    3rd Press = Group 1 or 2 + Relay 1 or 2 are selected
		    4th Press = None
		    UP, DOWN: Operation Selection (ON, OFF)
		    Enter: Go to Step 3
		
		16-Relay Panel
		    5-6: Group 5 and 6 Selection
		    1 and 2: Group 1, 2, 3 and 4 Selection
		    1st Press = Group 1 or 2 only are selected
		    2nd Press = Group 3 or 4 only are selected
		    3rd Press = Group 1 or 2 + Group 3 or 4 are selected
		    4th Press = None
		    UP, DOWN: Operation Selection (ON, OFF)
		    Enter: Go to Step 3

STEPS	DESCRIPTION	ACTIONS
Step 3	Date Selection	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Step 4
Step 4	Event Time Type Selection – Solar Time or Legal Time	**UP, DOWN:** Solar or Legal Time Selection **Enter (legal):** Go to Step 5 **Enter (solar):** Go to Step 7
Step 5	Event Start Time - Legal Time Format: 00:00h to 23:59h	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Step 6
Step 6	Hold Time Programming - Duration of the event Ex : Event Start Time = 8:00, Operation ON, Hold time = 8:00 Event End Time = 16:00 Operation OFF	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Set Event Screen
Step 7	Event Start Time – Solar Time. Sunrise or Sunset Option Selection	**UP, DOWN:** Sunrise and Sunset Selection **Enter:** Go to Step 8
Step 8	Offset Selection. To be programmed if either a positive or negative Offset has to be applied to the solar time.	**UP, DOWN:** Positive or Negative Offset Selection **Enter:** Go to Step 9
Step 9	Offset's Value Entry. This value will be added or removed from the Solar Time. Ex: A +00:30 Offset will add 30 minutes to the Solar Time	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Set Event Screen

Event Programming - Daily

DAILY events occur every days of the week. To program a DAILY event, the following values are necessary:

- o   Priority of the event (1-4)

- o   Start date and end date, as specified by the event priority.

- o   Group(s) and relay(s) tied to that event as well as their function (ON, OFF)

- o   Selection Solar or Legal Time

  - o   Solar Time:

    - ▪   Sunrise or Sunset +- Offset.

  - o   Legal Time:

    - ▪   Event Time + Hold time.
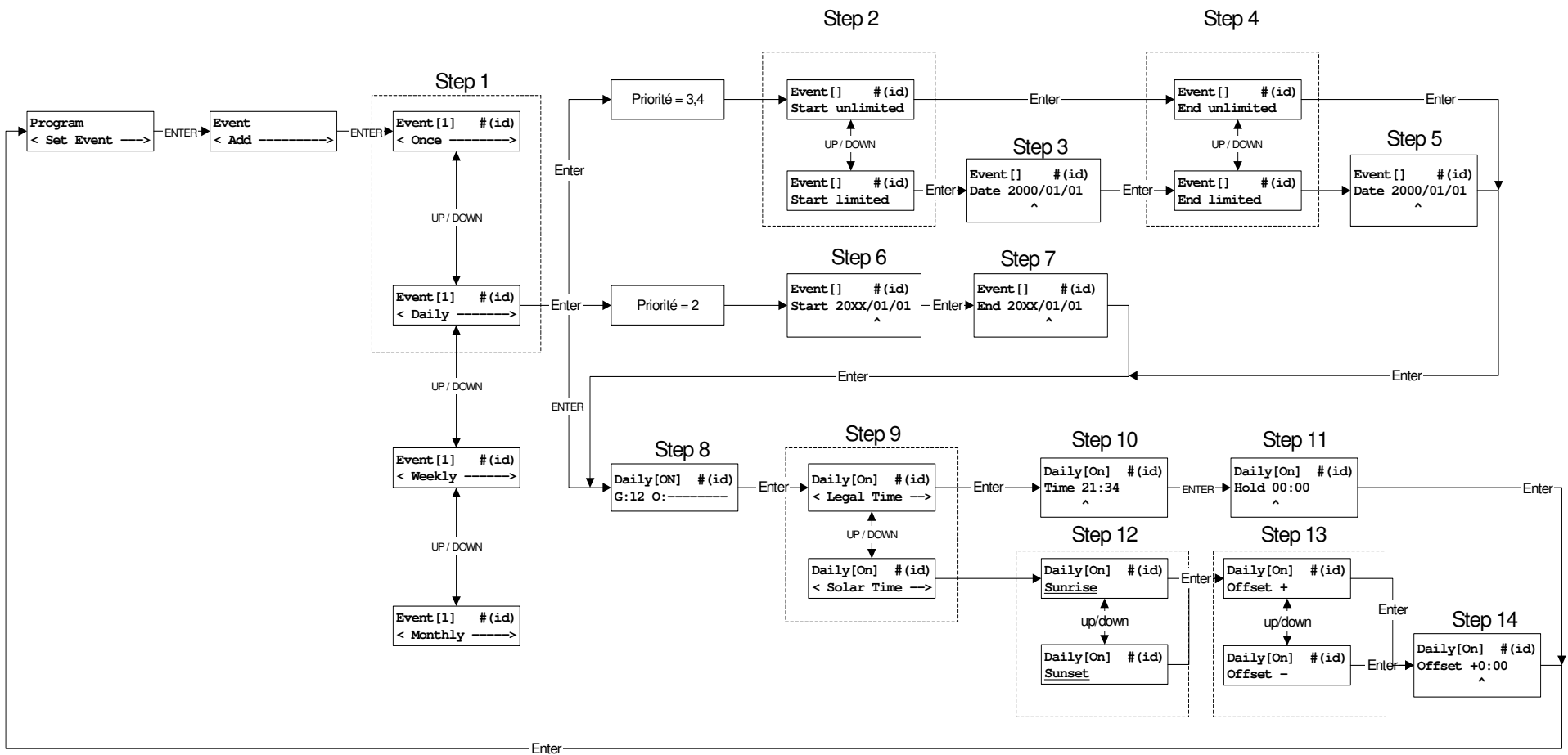
Event Programming - Daily Diagram

Notice

Anytime during programming, the CLEAR button can be pressed to restart the activated Step. The default value of that Step will than appears. If the CLEAR button is pressed a second time, the ongoing stage programming will be terminated and the Set Event Screen

```
Program
< Set Event --->
```
will appear.

Step-by-Step Event Programming – Daily

STEPS	DESCRIPTION	ACTIONS
Step 1	Event's Recurrence Selection - (DAILY) Event's Priority Selection - (1-4) Note: An identification number is automatically awarded to each event and is located in the top right corner (#(id))	**DOWN (x1):** Recurrence Selection **1-4:** Event's Priority Selection. Priority 4 is the highest **Enter (priority = 1):** Go to Step 8 **Enter (priority = 2):** Go to Step 6 **Enter (priority = 3,4):** Go to Step 2
Step 2	Event Starting Date Type Selection Unlimited: No starting date Limited: Defined starting date	**UP, DOWN:** Limited or Unlimited Option Selection **Enter (unlimited):** Go to Step 4 **Enter (limited):** Go to Step 3
Step 3	Event Starting Date Entry	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Step 4
Step 4	Event Ending Date Type Selection Unlimited: No ending date, the programmed event will last for ever Limited: Defined ending date	**UP, DOWN:** Limited or Unlimited Option Selection **Enter (unlimited):** Go to Step 8 **Enter (limited):** Go to Step 5
Step 5	Event Ending Date Entry	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Step 8
Step 6	Event Starting Date Entry Note: The year is not seized, the event is seasonal and it is repeated every year.	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Step 7

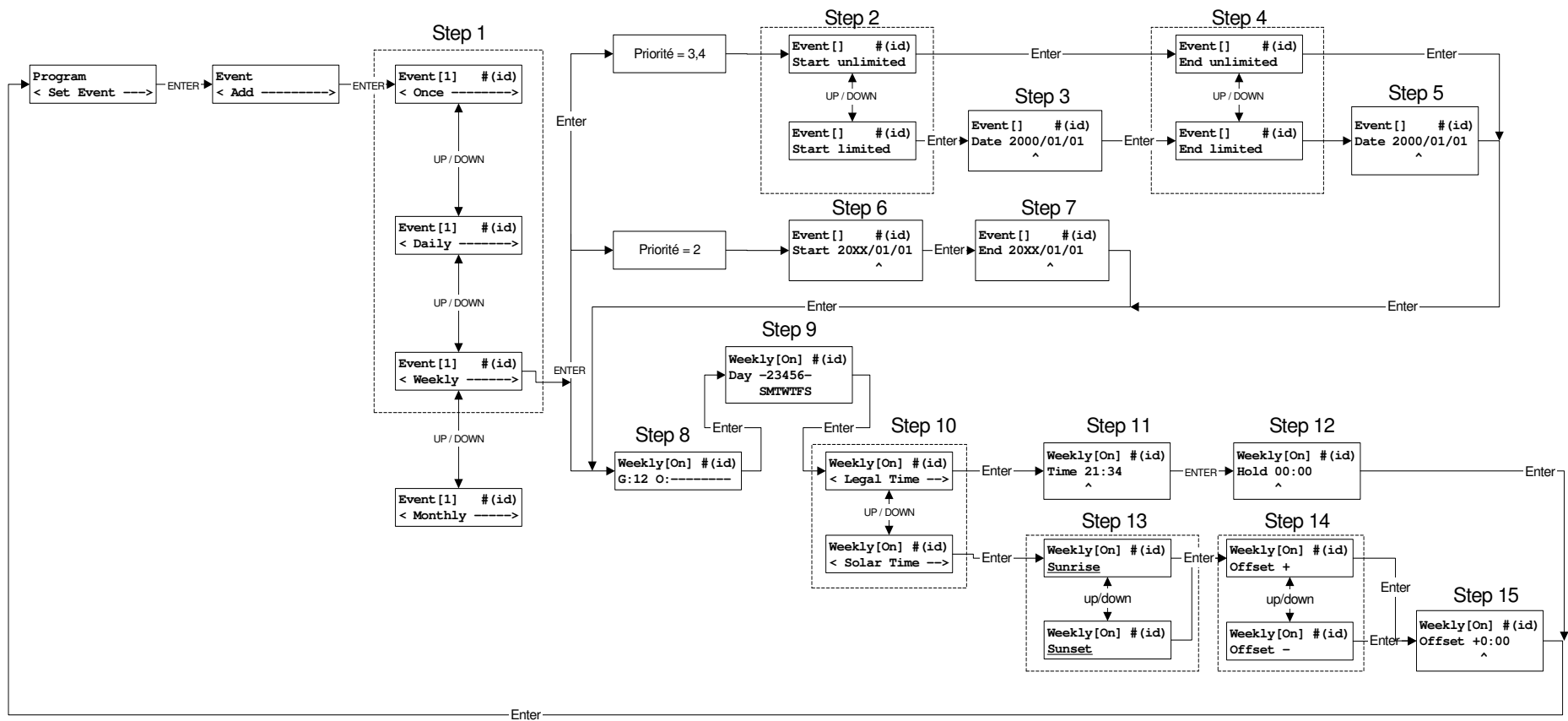| STEPS	DESCRIPTION	ACTIONS
Step 7	Entering end date. The year is not seized, the event is seasonal and is repeated every year.	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Step 8

Step 8	Group(s) (G) and/ or Output(s) (O) Selection
	
	    Selection Options per Panel:
	
	      8-**Relay Panel: G: Group 1 to 2**
	
	              O: Relay 1 to 8
	
	    16-Relay Panel: G: Group 1 to 2
	
	              O: Group 3 to 6
	
	IMPORTANT NOTICE
	O: 1 → GROUP 3
	O: 2 → GROUP 4
	O: 3 → GROUP 5
	O: 4 → GROUP 6
	
	Operation Selection - (ON, OFF)
		8-Relay Panel
		
		    3-8: Relay 3 to 8 Selection
		
		    1 and 2: Relay 1 and 2 and Group 1 and 2 Selection
		
		    1st Press = Group 1 or 2 only are selected
		
		    2nd Press = Relay 1 or 2 only are selected
		
		    3rd Press = Group 1 or 2 + Relay 1 or 2 are selected
		
		    4th Press = None
		
		    UP, DOWN: Operation Selection (ON, OFF)
		
		    Enter: Go to Step 9
		
		16-Relay Panel
		
		    5-6: Group 5 and 6 Selection
		
		    1 and 2: Group 1, 2, 3 and 4 Selection
		
		    1st Press = Group 1 or 2 only are selected
		
		    2nd Press = Group 3 or 4 only are selected
		
		    3rd Press = Group 1 or 2 + Group 3 or 4 are selected
		
		    4th Press = None
		
		    UP, DOWN: Operation Selection (ON, OFF)
		
		Enter: Go to Step 9

Step 9	Event Time Type Selection – Solar Time or Legal Time	**UP, DOWN:** Solar or Legal Time Selection **Enter (legal):** Go to Step 10 **Enter (solar):** Go to Step 12

STEPS	DESCRIPTION	ACTIONS
Step 10	Event Start Time - Legal Time Format: 00:00h to 23:59h	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Step 11
Step 11	Hold Time Programming - Duration of the event Ex : Event Start Time = 8:00, Operation ON, Hold time = 8:00 Event End Time = 16:00 Operation OFF	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Set Event Screen
Step 12	Event Start Time – Solar Time. Sunrise or Sunset Option Selection	**UP, DOWN:** Sunrise and Sunset Selection **Enter:** Go to Step 13
Step 13	Offset Selection. To be programmed if either a positive or negative Offset has to be applied to the solar time.	**UP, DOWN:** Positive or Negative Offset Selection **Enter:** Go to Step 14
Step 14	Offset's Value Entry. This value will be added or removed from the Solar Time. Ex: A +00:30 Offset will add 30 minutes to the Solar Time	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Set Event Screen

Event Programming - Weekly

WEEKLY events occur every weeks of the year. To program a WEEKLY event, the following values are necessary:

- o Priority of the event (1-4)
- o Start date and end date, as specified by the event priority.
- o Group(s) and relay(s) tied to that event as well as their function (ON, OFF)
- o Days of week.
- o Selection Solar or Legal Time
    - o Solar Time:
        - ▪ Sunrise or Sunset +- Offset.
    - o Legal Time:
        - ▪ Event Time + Hold time.

Event Programming - Weekly Diagram

Step 1

```
Program
< Set Event --->
```
ENTER

```
Event
< Add ---------->
```
ENTER

```
Event[1]    #(id)
< Once -------->
```

UP / DOWN

```
Event[1]    #(id)
< Daily ------->
```

UP / DOWN

```
Event[1]    #(id)
< Weekly ------>
```

UP / DOWN

```
Event[1]    #(id)
< Monthly ----->
```

Enter → Priorité = 3,4 →

Step 2
```
Event[]     #(id)
Start unlimited
```
UP / DOWN
```
Event[]     #(id)
Start limited
```

Enter →

Step 3
```
Event[]     #(id)
Date 2000/01/01
         ^
```
Enter →

Step 4
```
Event[]     #(id)
End unlimited
```
UP / DOWN
```
Event[]     #(id)
End limited
```

Enter →

Step 5
```
Event[]     #(id)
Date 2000/01/01
         ^
```

Priorité = 2 →

Step 6
```
Event[]     #(id)
Start 20XX/01/01
         ^
```
Enter →

Step 7
```
Event[]     #(id)
End 20XX/01/01
         ^
```

ENTER

Step 8
```
Weekly[On] #(id)
G:12 O:--------
```

Enter →

Step 9
```
Weekly[On] #(id)
Day -23456-
    SMTWTFS
```

Enter →

Step 10
```
Weekly[On] #(id)
< Legal Time -->
```
UP / DOWN
```
Weekly[On] #(id)
< Solar Time -->
```

Enter →

Step 11
```
Weekly[On] #(id)
Time 21:34
       ^
```
ENTER →

Step 12
```
Weekly[On] #(id)
Hold 00:00
       ^
```
Enter →

Step 13
```
Weekly[On] #(id)
Sunrise
```
up/down
```
Weekly[On] #(id)
Sunset
```

Enter →

Step 14
```
Weekly[On] #(id)
Offset +
```
up/down
```
Weekly[On] #(id)
Offset -
```

Enter →

Step 15
```
Weekly[On] #(id)
Offset +0:00
         ^
```

Enter

Notice

Anytime during programming, the CLEAR button can be pressed to restart the activated Step. The default value of that Step will than appears. If the CLEAR button is pressed a second time, the ongoing stage programming will be terminated and the Set Event Screen
```
Program
< Set Event --->
```
will appear.

Step-by-Step Event Programming – Weekly

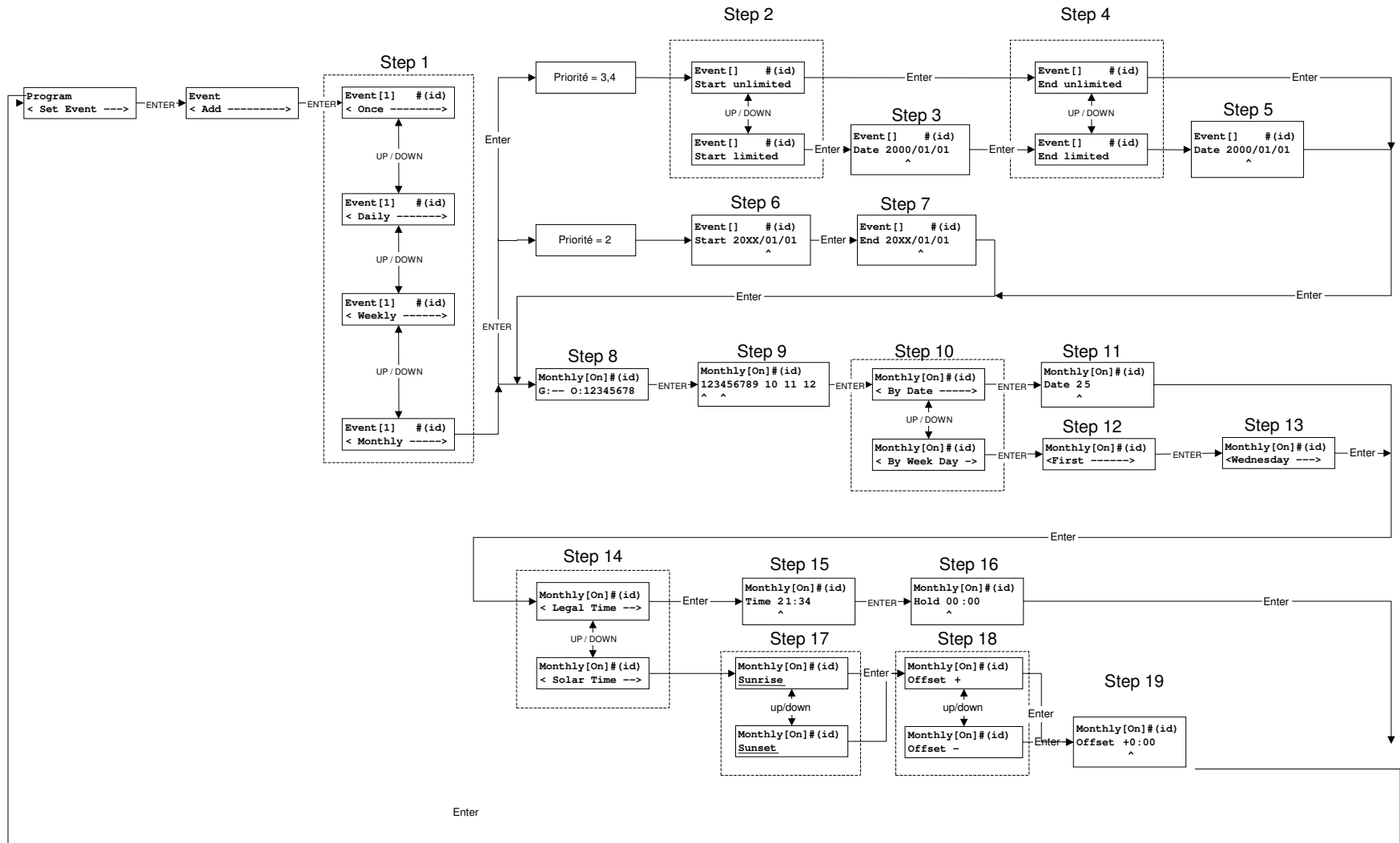| STEPS	DESCRIPTION	ACTIONS
Step 1	Event's Recurrence Selection - (WEEKLY) Event's Priority Selection - (1-4) Note: An identification number is automatically awarded to each event and is located in the top right corner (#(id))	**DOWN (x2):** Recurrence Selection **1-4:** Event's Priority Selection. Priority 4 is the highest **Enter (priority = 1):** Go to Step 8 **Enter (priority = 2):** Go to Step 6 **Enter (priority = 3,4):** Go to Step 2
Step 2	Event Starting Date Type Selection Unlimited: No starting date Limited: Defined starting date	**UP, DOWN:** Limited or Unlimited Option Selection **Enter (unlimited):** Go to Step 4 **Enter (limited):** Go to Step 3
Step 3	Event Starting Date Entry	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Step 4
Step 4	Event Ending Date Type Selection Unlimited: No ending date, the programmed event will last for ever Limited: Defined ending date	**UP, DOWN:** Limited or Unlimited Option Selection **Enter (unlimited):** Go to Step 8 **Enter (limited):** Go to Step 5
Step 5	Event Ending Date Entry	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Step 8
Step 6	Event Starting Date Entry Note: The year is not seized, the event is seasonal and it is repeated every year.	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Step 7

STEPS	DESCRIPTION	ACTIONS
Step 7	Entering end date. The year is not seized, the event is seasonal and is repeated every year.	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Step 8

Step 8	Group(s) (G) and/ or Output(s) (O) Selection
	
	    Selection Options per Panel:
	
	    8-**Relay Panel: G: Group 1 to 2**
	                O: Relay 1 to 8
	    16-Relay Panel: G: Group 1 to 2
	                O: Group 3 to 6
	
	IMPORTANT NOTICE
	    O: 1 → GROUP 3
	    O: 2 → GROUP 4
	    O: 3 → GROUP 5
	    O: 4 → GROUP 6
	
	Operation Selection - (ON, OFF)
		8-Relay Panel
		
		    3-8: Relay 3 to 8 Selection
		    1 and 2: Relay 1 and 2 and Group 1 and 2 Selection
		    1st Press = Group 1 or 2 only are selected
		    2nd Press = Relay 1 or 2 only are selected
		    3rd Press = Group 1 or 2 + Relay 1 or 2 are selected
		    4th Press = None
		    UP, DOWN: Operation Selection (ON, OFF)
		    Enter: Go to Step 9
		
		16-Relay Panel
		
		    5-6: Group 5 and 6 Selection
		    1 and 2: Group 1, 2, 3 and 4 Selection
		    1st Press = Group 1 or 2 only are selected
		    2nd Press = Group 3 or 4 only are selected
		    3rd Press = Group 1 or 2 + Group 3 or 4 are selected
		    4th Press = None
		    UP, DOWN: Operation Selection (ON, OFF)
		Enter: Go to Step 9

Step 9	Weekday(s) Selection	**1-7:** 1 (Sunday) … 7 (Saturday) **Enter:** Go to Step 10

STEPS	DESCRIPTION	ACTIONS
Step 10	Event Time Type Selection – Solar Time or Legal Time	**UP, DOWN:** Solar or Legal Time Selection **Enter (legal):** Go to Step 11 **Enter (solar):** Go to Step 13
Step 11	Event Start Time - Legal Time Format: 00:00h to 23:59h	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Step 12
Step 12	Hold Time Programming - Duration of the event Ex : Event Start Time = 8:00, Operation ON, Hold time = 8:00 Event End Time = 16:00 Operation OFF	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Set Event Screen
Step 13	Event Start Time – Solar Time. Sunrise or Sunset Option Selection	**UP, DOWN:** Sunrise and Sunset Selection **Enter:** Go to Step 14
Step 14	Offset Selection. To be programmed if either a positive or negative Offset has to be applied to the solar time.	**UP, DOWN:** Positive or Negative Offset Selection **Enter:** Go to Step 15
Step 15	Offset's Value Entry. This value will be added or removed from the Solar Time. Ex: A +00:30 Offset will add 30 minutes to the Solar Time	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Set Event Screen

Event Programming - Monthly

MONTHLY events occur every months of the year. To program a MONTHLY event, the following values are necessary:

- o Priority of the event (1-4)
- o Start date and end date, as specified by the event priority.
- o Group(s) and relay(s) tied to that event as well as their function (ON, OFF)
- o Date (1-31) or specific day of week (ex. First Monday of September or Last Thursday of November).
- o Selection Solar or Legal Time
    - o Solar Time:
        - ▪ Sunrise or Sunset +- Offset.
    - o Legal Time:
        - ▪ Event Time + Hold time.

Event Programming – Monthly Diagram

Program
< Set Event --->   —ENTER→   Event
< Add --------->   —ENTER→

Step 1

Event[1]   #(id)
< Once -------->

UP / DOWN

Event[1]   #(id)
< Daily ------->

UP / DOWN

Event[1]   #(id)
< Weekly ------>

UP / DOWN

Event[1]   #(id)
< Monthly ----->

Enter → Priorité = 3,4

Step 2

Event[]   #(id)
Start unlimited

UP / DOWN

Event[]   #(id)
Start limited   —Enter→

Step 3

Event[]   #(id)
Date 2000/01/01
       ^

Step 4

Event[]   #(id)
End unlimited

UP / DOWN

Event[]   #(id)
End limited

Step 5

Event[]   #(id)
Date 2000/01/01
       ^

Priorité = 2

Step 6

Event[]   #(id)
Start 20XX/01/01
       ^

Step 7

Event[]   #(id)
End 20XX/01/01
       ^

ENTER →

Step 8

Monthly[On]#(id)
G:-- O:12345678

—ENTER→

Step 9

Monthly[On]#(id)
123456789 10 11 12
^   ^

—ENTER→

Step 10

Monthly[On]#(id)
< By Date ----->

UP / DOWN

Monthly[On]#(id)
< By Week Day ->

—ENTER→

Step 11

Monthly[On]#(id)
Date 25
       ^

Step 12

Monthly[On]#(id)
<First ------>

—ENTER→

Step 13

Monthly[On]#(id)
<Wednesday --->

—Enter→

Step 14

Monthly[On]#(id)
< Legal Time -->

UP / DOWN

Monthly[On]#(id)
< Solar Time -->

—Enter→

Step 15

Monthly[On]#(id)
Time 21:34
       ^

—ENTER→

Step 16

Monthly[On]#(id)
Hold 00:00
       ^

—Enter→

Step 17

Monthly[On]#(id)
Sunrise

up/down

Monthly[On]#(id)
Sunset

—Enter→

Step 18

Monthly[On]#(id)
Offset +

up/down

Monthly[On]#(id)
Offset -

—Enter→

Step 19

Monthly[On]#(id)
Offset +0:00
       ^

Enter

Notice

Anytime during programming, the CLEAR button can be pressed to restart the activated Step. The default value of that Step will than appears. If the CLEAR button is pressed a second time, the ongoing stage programming will be terminated and the Set Event Screen

Program
< Set Event ---> will appear.

Step-by-Step Event Programming – Monthly

STEPS	DESCRIPTION	ACTIONS
Step 1	Event's Recurrence Selection - (MONTHLY) Event's Priority Selection - (1-4) Note: An identification number is automatically awarded to each event and is located in the top right corner (#(id))	**DOWN (x2):** Recurrence Selection **1-4:** Event's Priority Selection. Priority 4 is the highest **Enter (priority = 1):** Go to Step 8 **Enter (priority = 2):** Go to Step 6 **Enter (priority = 3,4):** Go to Step 2
Step 2	Event Starting Date Type Selection Unlimited: No starting date Limited: Defined starting date	**UP, DOWN:** Limited or Unlimited Option Selection **Enter (unlimited):** Go to Step 4 **Enter (limited):** Go to Step 3
Step 3	Event Starting Date Entry	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Step 4
Step 4	Event Ending Date Type Selection Unlimited: No ending date, the programmed event will last for ever Limited: Defined ending date	**UP, DOWN:** Limited or Unlimited Option Selection **Enter (unlimited):** Go to Step 8 **Enter (limited):** Go to Step 5
Step 5	Event Ending Date Entry	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Step 8
Step 6	Event Starting Date Entry Note: The year is not seized, the event is seasonal and it is repeated every year.	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Step 7

STEPS	DESCRIPTION	ACTIONS
Step 7	Entering end date. The year is not seized, the event is seasonal and is repeated every year.	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Step 8
Step 8	Group(s) (G) and/ or Output(s) (O) Selection **Selection Options per Panel:** 8**-Relay Panel: G: Group 1 to 2** **O: Relay 1 to 8** **16-Relay Panel: G: Group 1 to 2** **O: Group 3 to 6** **IMPORTANT NOTICE** O: 1 → GROUP 3 O: 2 → GROUP 4 O: 3 → GROUP 5 O: 4 → GROUP 6 Operation Selection - (ON, OFF)	**8-Relay Panel** **3-8:** Relay 3 to 8 Selection **1 and 2:** Relay 1 and 2 and Group 1 and 2 Selection 1st Press = Group 1 or 2 only are selected 2nd Press = Relay 1 or 2 only are selected 3rd Press = Group 1 or 2 + Relay 1 or 2 are selected 4th Press = None **UP, DOWN:** Operation Selection (ON, OFF) **Enter:** Go to Step 9 **16-Relay Panel** **5-6:** Group 5 and 6 Selection **1 and 2:** Group 1, 2, 3 and 4 Selection 1st Press = Group 1 or 2 only are selected 2nd Press = Group 3 or 4 only are selected 3rd Press = Group 1 or 2 + Group 3 or 4 are selected 4th Press = None **UP, DOWN:** Operation Selection (ON, OFF) **Enter:** Go to Step 9

STEPS	DESCRIPTION	ACTIONS
Step 9	Month(s) Selection	**0:** Month 10 Selection **1 et 2:** Month 1, 2, 11 and 11 Selection Example button 1: 1st press = Month 1 2nd press = Month 11 3rd press = Month 1 & Month 11 4th press = None **3-9:** Month 3 to 9 Selection **Enter:** Go to Step 10
Step 10	Fixed Date VS Specific Day Selection	**UP, DOWN:** Selection **Enter (fixed date):** Go to Step 11 **Enter (specific day):** Go to Step 12
Step 11	Fixed Date Entry Format: Day-Month	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Step 14
Step 12	Month Position of the Specific Day: FIRST, SECOND, THIRD, FOURTH, LAST	**UP, DOWN:** Selection **Enter:** Go to Step 13
Step 13	Specific Day Selection: SUNDAY … SATURDAY	**UP, DOWN:** Selection **Enter:** Go to Step 14
Step 14	Event Time Type Selection – Solar Time or Legal Time	**UP, DOWN:** Solar or Legal Time Selection **Enter (legal):** Go to Step 15 **Enter (solar):** Go to Step 17

STEPS	DESCRIPTION	ACTIONS
Step 15	Event Start Time - Legal Time Format: 00:00h to 23:59h	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Step 16
Step 16	Hold Time Programming - Duration of the event Ex : Event Start Time = 8:00, Operation ON, Hold time = 8:00 Event End Time = 16:00 Operation OFF	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Set Event Screen
Step 17	Event Start Time – Solar Time. Sunrise or Sunset Option Selection	**UP, DOWN:** Sunrise and Sunset Selection **Enter:** Go to Step 18
Step 18	Offset Selection. To be programmed if either a positive or negative Offset has to be applied to the solar time.	**UP, DOWN:** Positive or Negative Offset Selection **Enter:** Go to Step 19
Step 19	Offset's Value Entry. This value will be added or removed from the Solar Time. Ex: A +00:30 Offset will add 30 minutes to the Solar Time	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter:** Go to Set Event Screen

PROGRAMMED EVENT MODIFICATION

Step 1

```
Program
< Set Event --->
```

ENTER →

```
Event
< Add ---------->
```

UP / DOWN

```
Event
< Modify ------>
```

UP / DOWN

```
Event
< Remove ------>
```

ENTER →

Step 2

```
Event
ID #1   Total:3
Type ONCE
Time 10:00
```

ENTER →

Programming tree for event:
ONCE,DAILY,WEEKLY,MONTHLY.

```
Event
No event found!
```
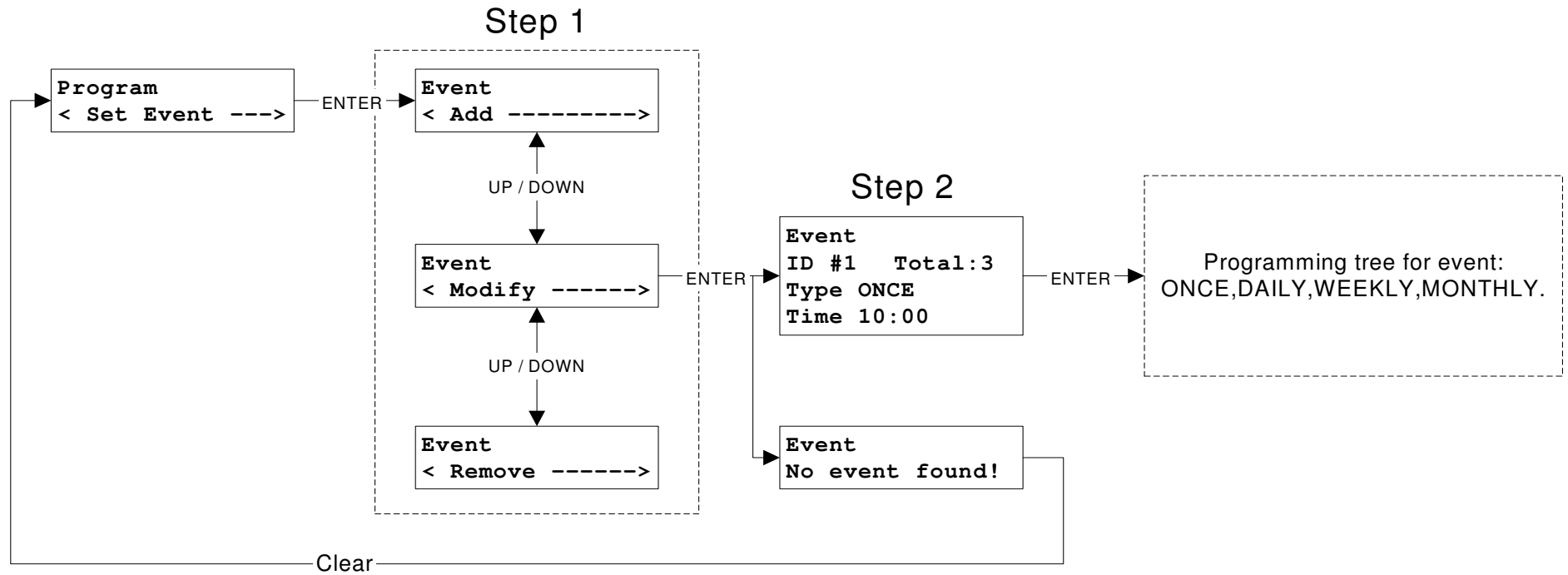
── Clear ──

Programmed Event Modification Diagram

Notice

Anytime during programming, the CLEAR button can be pressed to restart the activated Step. The default value of that Step will than appears. If the CLEAR button is pressed a second time, the ongoing stage programming will be terminated and the Set Event Screen

```
Program
< Set Event --->
```
will appear.

Step-by-Step Event Modification Programming

STEPS	DESCRIPTION	ACTIONS
Step 1	Event Modification Action Selection	**DOWN (X1):** Modify Action Selection **Enter:** Go to Step 2
Step 2	Event Selection	**UP, DOWN:** Event Selection **Enter:** Go to the Event Programming Diagrams –Once, Daily, Weekly or Monthly

PROGRAMMED EVENT DELETING
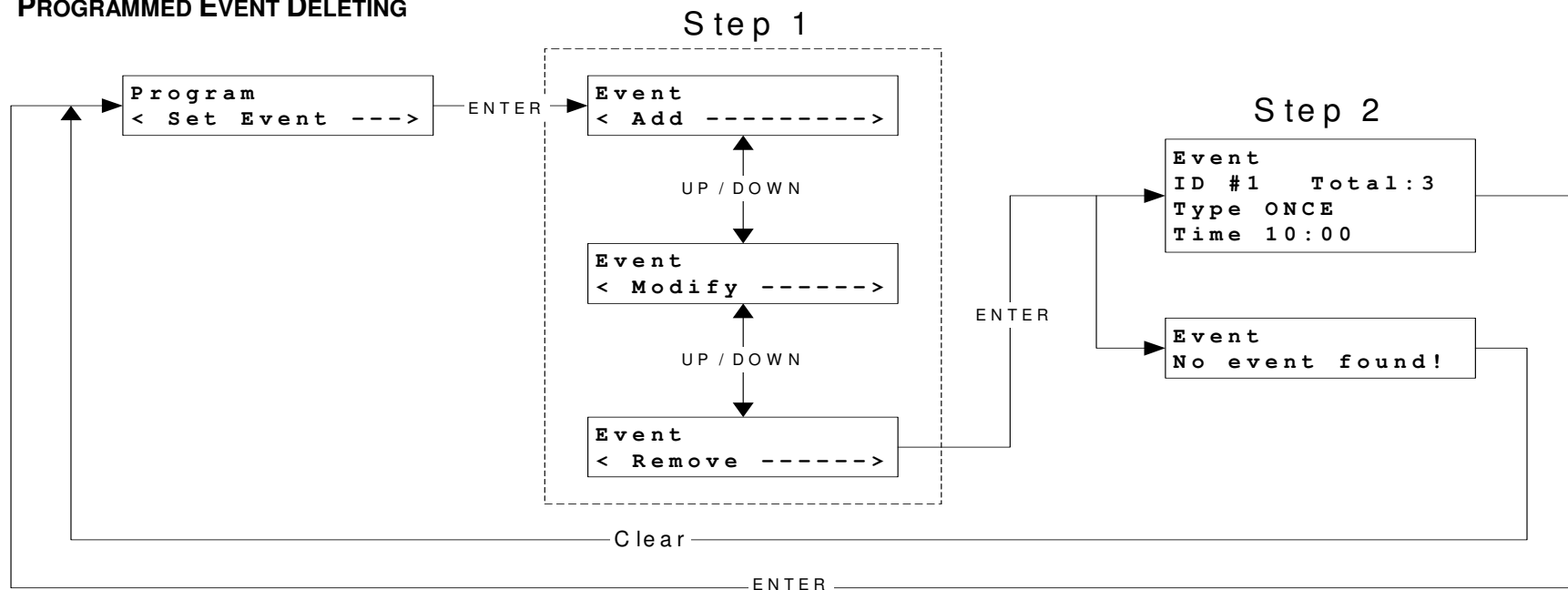
Programmed Event Deleting Diagram

<table>
<tr><td colspan="2">Notice</td></tr>
<tr><td colspan="2">Anytime during programming, the CLEAR button can be pressed to restart the activated Step. The default value of that Step will than appears. If the CLEAR button is pressed a second time, the ongoing stage programming will be terminated and the Set Event Screen</td></tr>
</table>

```
Program
< Set Event --->
```
will appear.

Step-by-Step Event Deleting Programming

STEPS	DESCRIPTION	ACTIONS
Step 1	Events Deleting Action Selection	**DOWN (X2):** Delete Action Selection **Enter:** Go to Step 2
Step 2	Event Selection and Event Deleting	**UP, DOWN:** Event Selection **Enter:** Deleting the Selected Event

STAGE 4 - GROUP 1 AND 2 PROGRAMMING

2 different groups of relays can be programmed inside a 8-relay K4 Series panel and 6 inside an16-relay K4 Series Panel.   Group 1 and 2 are programmed from the KC-411 Controller and group 3,4 5 and 6 from the KC-401 Controller.

The group programming operation allows to:

1. Associate one or many relays to each group; and

2. Assign the actions (ON/OFF, ON Only, OFF Only) and options (Time ON Extension (TOE), Warning, TOE + Warning, No option) to all the relays part of the group.

Actions Description

ON/OFF (Normal):   With this action the relays will be turned ON on the first command and turned OFF on the second one.

ON Only: With this action relays will only be turned ON. To turn OFF these relays, they will need to be assigned to a second group on which an ON/OFF or OFF Only action will be assigned.

OFF Only: With this action the relays will only be turned OFF. To turn ON these relays, they will need to be assigned to a second group on which an ON/OFF or ON Only action will be assigned.

Options Description

No Option (Normal):   No options is assigned to the group

Time ON Extension (TOE): When the TOE option is assigned to a group and the group is OFF, all the relays will stay ON for a maximum period of 2 hours when activated. Occupants can manually turn OFF the relays before that delay through their wall switch and restart another TOE if they press on the switch after the delay.

IMPORTANT NOTICE

TO PERFORM A TOE, A RELAY MUST PASS FROM AN OFF STATUS TO AN ON STATUS AND ONLY IS GROUP WAS ALREADY OFF.

Warning (Flick Warn):   This option is used to warn occupants that lights will be switched OFF in 5 minutes. The relays will be switched OFF for a period of 500 ms to warn the occupants. Occupants can cancel the controller's OFF command if they press on their wall switch before the end of the 5 minutes delay.

TOE + Warning: A group can be programmed with TOE and Flick Warn options.
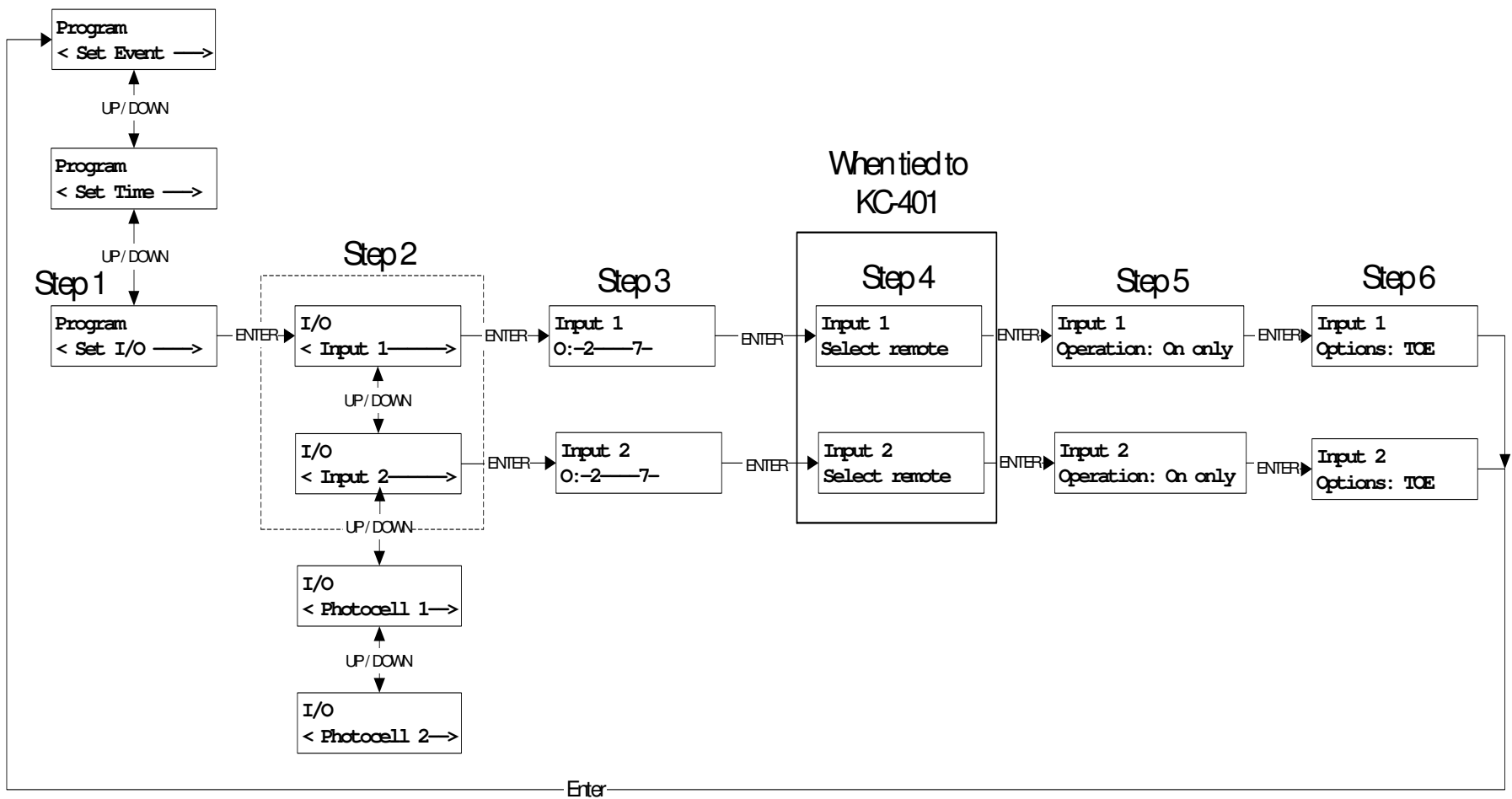
Group 1 and 2 Programming Diagram

Notice

Anytime during programming, the CLEAR button can be pressed to restart the activated Step. The default value of that Step will than appears. If the CLEAR button is pressed a second time, the ongoing stage programming will be terminated and the Set Event Screen

```
Program
< Set Event --->
```
will appear.

Step-by-Step Group 1 and 2 Programming

STEPS	DESCRIPTION	ACTIONS
Step 1	Inputs (Groups) - Outputs (Relays) Programming Selection	**DOWN (x2):** SET I/O Selection **Enter:** Go to Step 2
Step 2	Input (Group) Number Selection	**UP, DOWN:** Input (Group) Number Selection **Enter:** Go to Step 3
Step 3	Selection of des Relays assigned to the selected Input (Group) **IMPORTANT NOTICE** SKIP THIS STEP IF YOU ARE PROGRAMMING A 16-RELAY PANEL.	**1-8:** Relay 1 to 8 Selection **UP, DOWN:** Operation (ON, OFF) Selection **Enter:** Go to Step 4
Step 4	Relay Selection through the KC-401 **IMPORTANT NOTICE** FOLLOW THIS STEP IF YOU ARE PROGRAMMING A 16-RELAY PANEL – USE THE KC-401 KEYPAD TO SELECT THE RELAYS SKIP THIS STEP IF YOU ARE PROGRAMMING A 8-RELAY PANEL	**Refer to the "Relay selection through the KC-401" Section hereinafter to select the Relays that will be tied to Group 1 and 2.** **After completing the Relay Selection go back to the KC-411 and:** **Enter:** Go to Step 5
Step 5	Action Selection ON/OFF (Normal), ON ONLY, OFF ONLY	**UP, DOWN:** Selection **Enter:** Go to Step 5
Step 6	Option Selection No Option (Normal), Warning, TOE, Warning + TOE	**UP, DOWN:** Selection **Enter:** Go to Set Event Screen

STEP 4 DESCRIPTION - RELAY SELECTION THROUGH THE KC-401

IMPORTANT NOTICE

FOLLOW THIS STEP IF YOU ARE PROGRAMMING A 16-RELAY PANEL – USE THE KC-401 KEYPAD TO SELECT THE RELAYS

SKIP THIS STEP IF YOU ARE PROGRAMMING A 8-RELAY PANEL

Step 4.1 – Relay Assignment - One by One

Description –   This action will assign (or remove) relays (one at the time) to (from) the selected group.

Action –   Press on the selected relay number button on the KC-401 controller.

Result –   Only the selected relays will have their LED ON.

Step 4.2 – Relay Assignment - All 16 Relays

Description –   This action will assign (or remove) all 16 relays to (from) the selected group.

Action –   Press the ON button on the KC-401 Controller to select all 16 relays.

                  Or press the OFF button of the KC-401 Controller to remove all 16 relays.

Results –   If the ON button is pressed, all the 16 LEDs next to the relay number will be ON.

                  If the OFF button is pressed, all the 16 LEDs next to the relay number will be OFF.

Step 4.2 – Return to Step 5
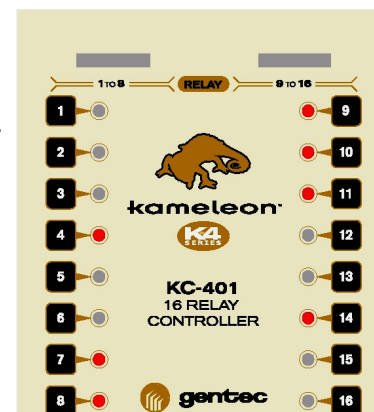
STAGE 6 - GROUP 3,4, 5 AND 6 PROGRAMMING

IMPORTANT NOTICE

BEFORE STARTING THE GROUP 3,4,5 AND 6 PROGRAMMING THE FOLLOWING ACTIONS MUST BE PERFORMED:

THE KC-411 CONTROLLER MUST BE PUT IN RUN MODE. REFER TO STAGE 1 – EXITING PROGRAM MODE SECTION.

THE KC-401 CONTROLLER MUST BE PUT IN PROGRAM MODE. REFER TO STEP 1 – STARTING THE PROGRAM MODE HEREINAFTER.

AFTER COMPLETING THE GROUP 3,4, 5 AND 6 PROGRAMMING, THE FOLLOWING ACTIONS MUST BE PERFORMED:

THE KC-401 CONTROLLER MUST BE PUT IN RUN MODE. REFER TO STEP 8 – EXITING PROGRAM MODE HEREINAFTER.

THE KC-411 CONTROLLER MUST BE PUT IN PROGRAM MODE. REFER TO STAGE 1 – STARTING PROGRAM MODE SECTION.

STEP 1 – STARTING PROGRAM MODE

Description –   The Program Mode allows the user to create groups, to assign each relay to one or many groups, to assign an option to each group and to assign an action to be performed by each group.

Action –   Press PROGRAM button of the KC-401

Results –   PROGRAM button LED of the first Controller turns red and the PROGRAM button LED of the KC-411 Controller is flashing. Thus, the KC-411 Controller becomes the master and the KC-401 Controller the slave.

Already Programmed Controllers

By pressing the PROGRAM button of one Controller, the user can modify the entire programming of the KC-401 controller.

STEP 2 – GROUP SELECTION

Description –   The KC-401 can control up to four different groups of relays (group 3, 4 5 and 6). Each group can include between 1 and 16 relays and a relay can be part of more than one group.

Action –   Press the KC-401 Controller GROUP SELECT button to select the desired group number (1 to 4).

Results –   Selected group number LED turns red.
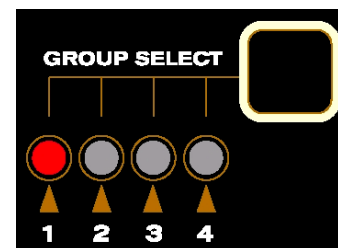
Already Programmed Controllers

Once a group has been selected by the GROUP SELECT button, the following information regarding that group can be obtain and modified:

Relay Status: The LEDs of all the relays assigned to that group will be ON.

Option Status: The OPTIONS button LED's flashing pattern on the KC-401 Controller indicates the assign option to that group (see Option Assignment section).

Action Status: An assigned action (ON ONLY or OFF ONLY) to the group will have its LED ON. When both LEDs are OFF, the group has an ON and OFF capability.

Last Command Status: An ON LED on the KC-411 Controller, either on the ON or OFF button will indicate the last command received by that group.

STEP 3 – RELAY ASSIGNMENT - ONE BY ONE

Description – This action will assign (or remove) a relay (one at the time) to (from) the selected group.

Action – Press on the selected relay number button on the KC-401 controller membrane.

Result – Only the select relays will have their LED ON.
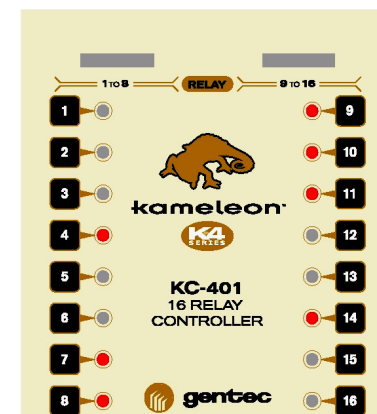
STEP 4 – RELAY ASSIGNMENT - ALL 16 RELAYS

Description – This action will assign (or remove) all 16 relays to (from) the selected group.

Action – Press the ON button on the KC-401 Controller to select all 16 relays.

Or press the OFF button on the KC-401 Controller to remove all 16 relays.

Results – If the ON button is pressed, all the 16 LEDs next to the relay number will be ON.

If the OFF button is pressed, all the 16 LEDs next to the relay number will be OFF.

STEP 5 – OPTION ASSIGNMENT (TIME ON EXTENSION – FLICK WARN)

Description – This action will assign an option to the selected group on the KC-401 controller. The available options are the following:

1. **Time ON Extension (TOE)** – When the TOE option is assigned to a group, all the relays will stay ON for a maximum period of 2 hours when activated. Occupants can manually turn OFF the relays before that delay through their wall switch and restart another TOE if they press on the switch after the delay.

> **IMPORTANT NOTICE**
>
> TO PERFORM A TOE, A RELAY MUST PASS FROM ON OFF STATUS TO AN ON STATUS AND ONLY IS GROUP WAS ALREADY OFF.

2. **Flick Warn** – This option is used to warn occupants that lights will be switched OFF in 5 minutes. The relays will be switched OFF for a period of 500 ms to warn the occupants. Occupants can cancel the controller's OFF command if they press on their wall switch before the end of the 5 minutes delay.

3. **Combination** – A group can be programmed with TOE and Flick Warn options.

4. **No options**

Action –   Press the OPTIONS button to select the required option.

OPTIONS Button (Press)	Option Selected
1	TOE Only
2	TOE + Flick Warn
3	Flick Warn Only
4	No Options

Results –

OPTIONS SELECTED	LED's Pattern
TOE Only	LED is Flashing (long ON – short OFF – long ON)
TOE + Flick Warn	LED is ON (steady)
Flick Warn Only	LED is Flashing (short ON – long OFF – short ON)
No Options	LED is OFF (steady)

Already Programmed Controllers

To assign a new Option to a selected group on the KC-401 controller, the user just need to press the OPTIONS button until the LED's flashing sequence matches the desired option pattern (for example, to move from TOE only to Flick Warn Only, the OPTIONS button need to be pressed twice).

STEP 6 – ACTION ASSIGNMENT (ON/OFF, ON ONLY, OFF ONLY)

Description – This action will assign an action to the selected group on the KC-401 controller. When a group of relays receives a command from a switch, a timer, a photocell or any other dry-contact, it will perform an action. Three different types of action can be assign to a group: an ON/OFF, an ON Only or an OFF Only.

1. **ON/OFF** – With this action, the relays will be turned ON on the first command and turned OFF on the second one.

2. **ON Only** – With this action, the relays will only be turned ON. To turn OFF these relays, they will need to be assigned to a second group on which an ON/OFF or OFF Only action will be assigned.

3. **OFF Only** - With this action, the relays will only be turned OFF. To turn ON these relays, they will need to be assigned to a second group on which an ON/OFF or ON Only action will be assigned.

Action – Press the ON Only button on the KC-401 controller to select the ON Only action – Press the ON Only button a second time to de-select the ON Only action.

Press the OFF Only button on the KC-401 controller to select the OFF Only action – Press the OFF Only button a second time to de-select the OFF Only action.

The ON/OFF only is programmed by default in the controller.

Results – The LED of the ON Only button or OFF Only button will turn ON if the action is selected.
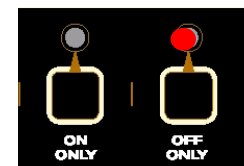
STEP 7 – REPEAT STEP 2 TO 6 FOR EACH OF THE FOUR GROUPS

STEP 8 – EXITING PROGRAM MODE

Description – Once all four groups of the KC-401 controller are created and options and actions assigned, the KC-401 controller is ready to operate.

Action – Press the RUN button of the KC-401 controller.

Results – RUN button LED turns red. The LEDs of the relays that are ON will also turn red.

STEP 9 – GO TO STAGE 5

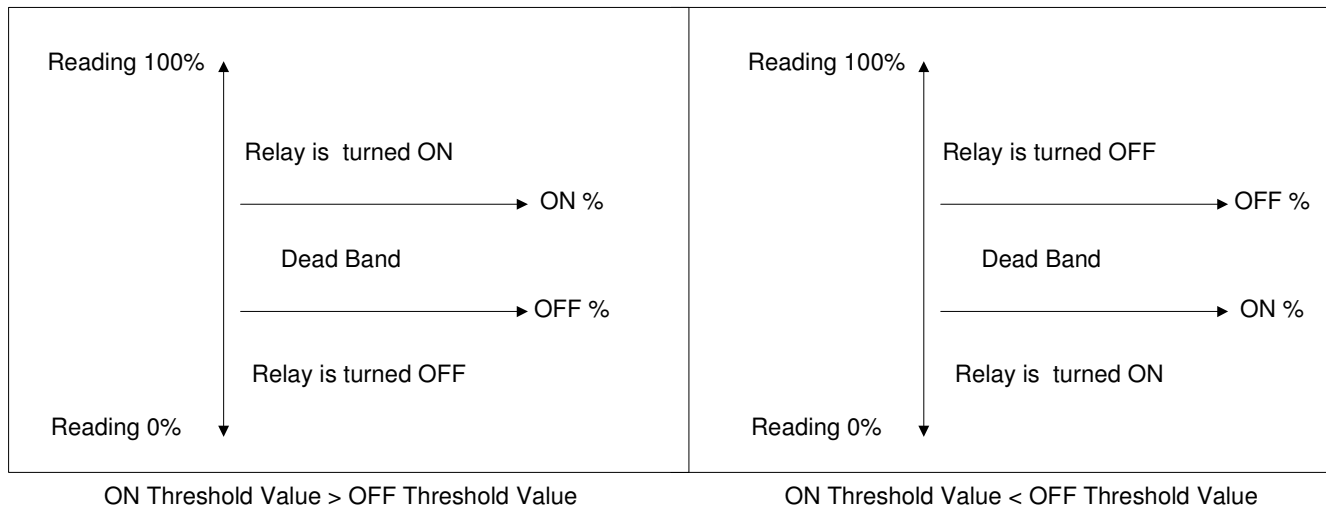## STAGE 5 - PROGRAMMING PHOTOCELLS 1 AND 2

The KC-401 can be tied to two separate photocells. Photocell 1 is normally used to control exterior lights. Photocell 2 is normally used to control interior lights. The K4 Series Series is capable to support two different types of photocells:

- Photoconductive photocell (2 Wire Type); and

- Linear Photodiode photocell (3 Wire Type).

OPERATION DESCRIPTIONS

Normal: With this action, the relays will be turned ON on the first command and turned OFF on the second one.

On Only: With this action, the relays will only be turned ON. To turn OFF these relays, they will need to be assigned to A second group on which an ON/OFF or OFF Only action will be assigned.

Off Only: With this action, the relays will only be turned OFF. To turn ON these relays, they will need to be assigned to second group on which an ON/OFF or an ON Only action will be assigned.

THRESHOLD PROGRAMMING

Reading 100%

Relay is turned ON

→ ON %

Dead Band

→ OFF %

Relay is turned OFF

Reading 0%

ON Threshold Value > OFF Threshold Value

Reading 100%

Relay is turned OFF

→ OFF %

Dead Band

→ ON %

Relay is turned ON

Reading 0%

ON Threshold Value < OFF Threshold Value
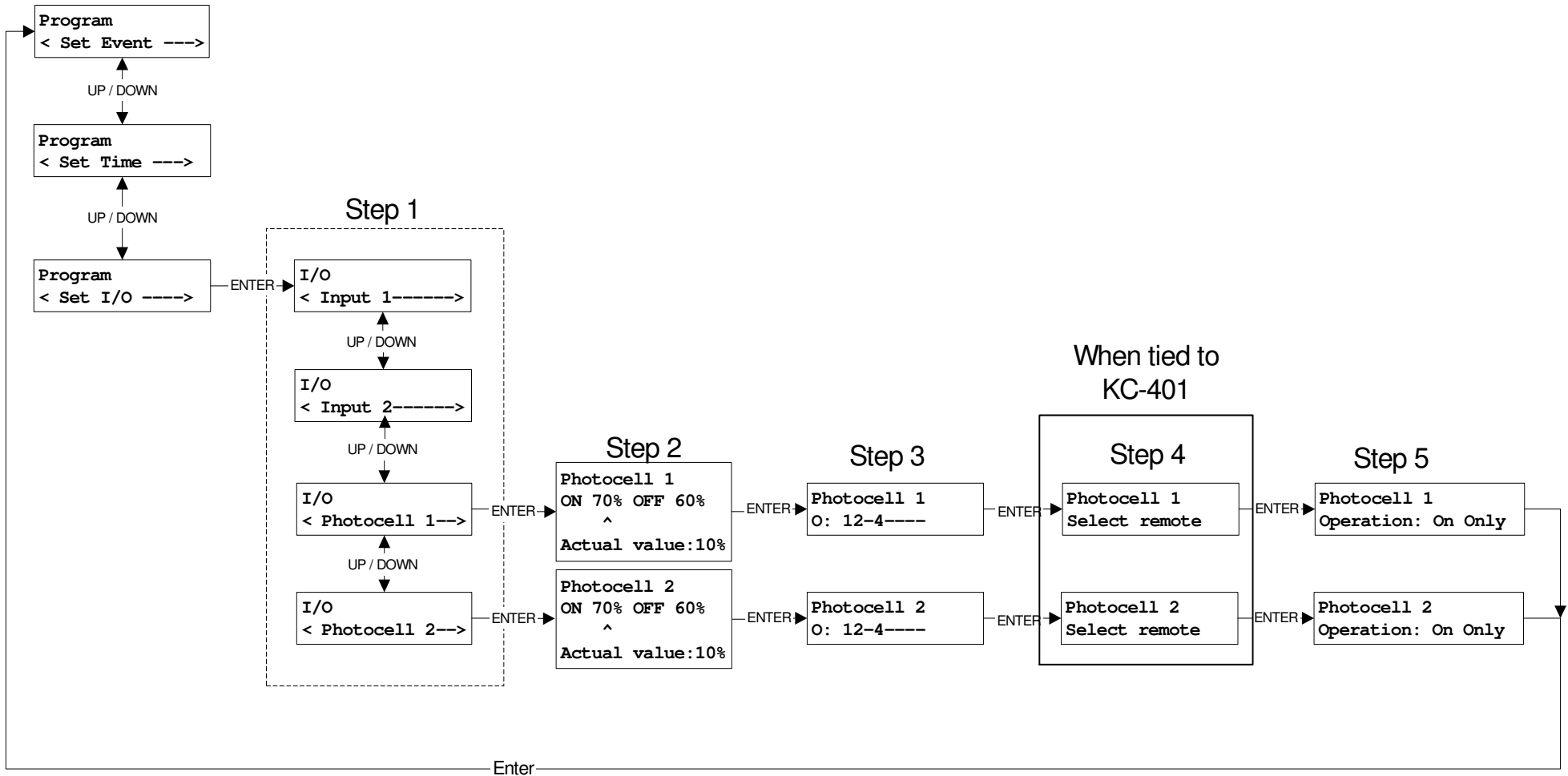
ON Threshold Value > Off Threshold Value:

If the analog output reading is **greater** than the ON threshold, the relays tied to the photocell will be turned ON.

If the analog output reading is **smaller** than the OFF threshold, the relays tied to the photocell will be turned OFF.

ON Threshold Value < OFF Threshold Value:

If the analog output reading is **smaller** than the ON threshold, the relays tied to the photocell will be turned ON.

If the analog output reading is **greater** than the OFF threshold, the relays tied to the photocell will be turned OFF.

Program
< Set Event --->

UP / DOWN

Program
< Set Time --->

UP / DOWN

Program
< Set I/O ---->

—ENTER—

Step 1

I/O
< Input 1------>

UP / DOWN

I/O
< Input 2------>

UP / DOWN

I/O
< Photocell 1-->

UP / DOWN

I/O
< Photocell 2-->

—ENTER→

Step 2

Photocell 1
ON 70% OFF 60%
^
Actual value:10%

Photocell 2
ON 70% OFF 60%
^
Actual value:10%

—ENTER→

Step 3

Photocell 1
O: 12-4----

Photocell 2
O: 12-4----

—ENTER→

When tied to KC-401

Step 4

Photocell 1
Select remote

Photocell 2
Select remote

—ENTER→

Step 5

Photocell 1
Operation: On Only

Photocell 2
Operation: On Only

—Enter—

Photocell Programming Diagram

Notice

Anytime during programming, the CLEAR button can be pressed to restart the activated Step. The default value of that Step will than appears. If the CLEAR button is pressed a second time, the ongoing stage programming will be terminated and the Set Event Screen

Program
< Set Event ---> will appear.

Step-by-Step Photocell Programming

STEPS	DESCRIPTION	ACTIONS
Step 1	Photocell Selection (1 or 2)	**UP, DOWN:** Photocell Selection (1 or 2) **Enter:** Go to Step 2
Step 2	ON Value Threshold and OFF Value Threshold Entry	**0-9:** Modifies value underlined by cursor **UP, DOWN:** Moves cursor **Enter (x1):** Go to Step 3 – If programming a 8-relays panel **Enter (x2):** Go to Step 4 – If panel is equipped whit a KC-401 Relay Controller
Step 3	Relay Selection **IMPORTANT NOTICE** SKIP THIS STEP IF YOU ARE PROGRAMMING A 16-RELAY PANEL.	**1-8:** Relay 1 to 8 Selection **UP, DOWN:** Operation Selection (ON, OFF) **Enter:** Go to Step 4
Step 4	Relay Selection through the KC-401 **IMPORTANT NOTICE** FOLLOW THIS STEP IF YOU ARE PROGRAMMING A 16-RELAY PANEL – USE THE KC-401 KEYPAD TO SELECT THE RELAYS SKIP THIS STEP IF YOU ARE PROGRAMMING A 8-RELAY PANEL	**Refer to the "Relay selection through the KC-401" Section hereinafter to select the relays that will be tied to the selected photocell.** **After completing the relay selection go back to the KC-411 and:** **Enter:** Go to Step 5
Step 5	Operation Selection NORMAL, ON ONLY, OFF ONLY.	**UP, DOWN:** operation selection **Enter:** Go to Set Event Screen

STEP 4 DESCRIPTION - RELAY SELECTION THROUGH THE KC-401

IMPORTANT NOTICE

FOLLOW THIS STEP IF YOU ARE PROGRAMMING A 16-RELAY PANEL – USE THE KC-401 KEYPAD TO SELECT THE RELAYS

SKIP THIS STEP IF YOU ARE PROGRAMMING A 8-RELAY PANEL

Step 4.2 – Relay Assignment - One by One

Description – This action will assign (or remove) relays (one at the time) to (from) the selected group.

Action – Press on the selected relay number button on the KC-401 controller.

Result – Only the selected relays will have their LED ON.
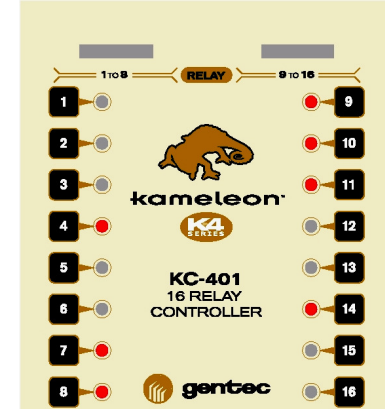
Step 4.3 – Relay Assignment - All 16 Relays

Description – This action will assign (or remove) all 16 relays to (from) the selected group.

Action – Press the ON button on the KC-401 Controller to select all 16 relays.

Or press the OFF button on the KC-401 Controller to remove all 16 relays.

Results – If the ON button is pressed, all the 16 LEDs next to the relay number will be ON.

If the OFF button is pressed, all the 16 LEDs next to the relay number will be OFF.

CHAPTER 4 – K4 SERIES PANEL OPERATION

When the RUN buttons LEDs are ON, the KC-401 and the KC-411 are in operation.

RELAYS STATUS (8-RELAY PANEL)

In RUN mode, relays' status is displayed on the LCD Main Screen of the KC-411 Controller.

RELAY NUMBER DISPLAY	RELAY'S STATUS	RELAY'S ACTION
Number Only: 4	ON	Stays ON until next command
Number with black background: 4	OFF	Stays OFF until next command
Flashing (fast and regular)	OFF Circuit	Not in operation
Flashing (long ON/short OFF)	ON with TOE Mode	ON for a max. period of 2 hours
Flashing (short ON/long OFF)	ON with Flick Warn Mode	OFF after the 5 min. delay

RELAYS STATUS (16-RELAY PANEL)

In RUN mode, relays' status is displayed on the membrane of the KC-401 Controller. Each relay as is own LED.

LED's STATUS	RELAY's STATUS	RELAY's ACTION
ON Steady	ON	Stays ON until next command
OFF Steady	OFF	Stays OFF until next command
Flashing (fast and regular)	OFF Circuit	Not in operation
Flashing (long ON/short OFF)	ON with TOE Mode	ON for a max. period of 2 hours
Flashing (short ON/long OFF)	ON with Flick Warn Mode	OFF after the 5 min. delay
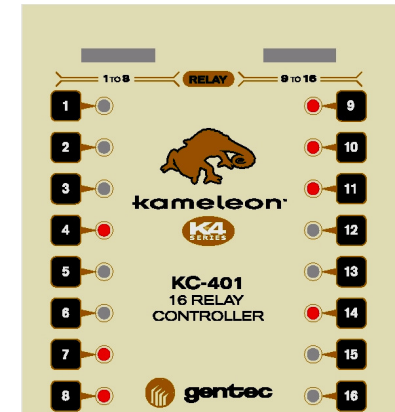
MANUAL OPERATION OF THE RELAYS (8-RELAY PANEL)

In RUN mode, pressing on the relay's number button on the KC-411 membrane will manually operate each relay.
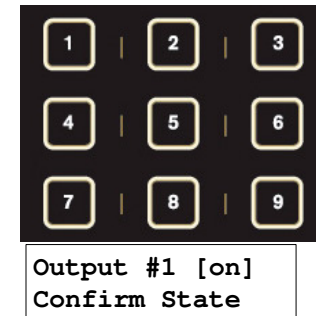
Once the button has been pressed, the Confirm State LCD Screen of the selected Output (relay) will be displayed.

```
Output #1 [on]
Confirm State
```

To confirm the ON or OFF action on the selected relay, press the ENTER button on the membrane.

To cancel the ongoing operation, press the CLEAR button.

IMPORTANT NOTICE

IF A RELAY IS PERFORMING AN OPTION (TOE OR FLICK WARNING), A PRESS ON THE RELAY BUTTON WILL AUTOMATICALLY CANCEL THE OPTION. HOWEVER, THE OPTION WILL BE REACTIVATED AT THE TIME OF THE NEXT COMMAND FROM THE EXTERNAL DEVICE TIED TO THE RELAY'S GROUP (SWITCH, TIME CLOCK, PHOTOCELL ETC…).

MANUAL OPERATION OF THE RELAYS (16-RELAY PANEL)

In RUN mode, pressing on the relay's number button on the KC-401 membrane will manually operate each relay.

> **IMPORTANT NOTICE**
>
> IF A RELAY IS PERFORMING AN OPTION (TOE OR FLICK WARNING), A PRESS ON THE RELAY BUTTON WILL AUTOMATICALLY CANCEL THE OPTION. HOWEVER, THE OPTION WILL BE REACTIVATED AT THE TIME OF THE NEXT COMMAND FROM THE EXTERNAL DEVICE TIED TO THE RELAY'S GROUP (SWITCH, TIME CLOCK, PHOTOCELL ETC…).

GROUP STATUS (8-RELAY PANEL)

In a 8-relay panel, two groups are available. In RUN mode, the groups' status is displayed on the LCD Main Screen of the KC-411 Controller.

GROUP NUMBER DISPLAY	RELAY STATUS
Number Only: 1	ON
Number with black background: 1	OFF

To move from on group to the other, use the Arrow buttons on the KC-411 Controller.

The option and action status of group 1 and 2 can be displayed only in PROGRAM mode. Refer to Stage 4, Step 5 and 6 to access to the related LCD Screens.

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GROUP STATUS (16-RELAY PANEL)

In a 16-relay panel, up to 6 groups are available.

For group 1 and 2 status, refer to the above section - Group Status (8-Relay Panel).

For group 3 to 6, the status of each group can be access by pressing the GROUP SELECT button on the KC-401 Controller. Once the desired group number has been selected, the LEDs on the keypad will display all related information of that group.
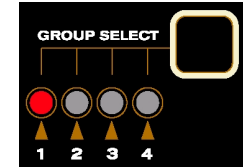
Option Status: The LED's flashing pattern of the OPTION button of the KC-411 Controller will indicates the assign Option to that group.

OPTION	LED's Pattern
TOE Only	LED is Flashing (long ON – short OFF – long ON)
TOE + Flick Warn	LED is ON (steady)
Flick Warn Only	LED is Flashing (short ON – long OFF – short ON)
No Options	LED is OFF (steady)

Action Status: An assigned Action (ON ONLY or OFF ONLY) to the group will have its LED ON. When both LEDs are OFF, the group has an ON and OFF capability.

Last Command Status: An ON LED on the master Controller, either on the ON or OFF button will indicate the last command received by that group.

IMPORTANT NOTICE

THE LEDS NEXT TO THE RELAYS' NUMBERS THAT ARE ON (STEADY OR FLASHING) INDICATES THE ACTUAL STATUS OF THE RELAYS. THEY DON'T DESIGNATE THE ASSIGNED RELAYS OF THE SELECTED GROUP.

MANUAL OPERATION ON THE GROUPS (8-RELAY PANEL)

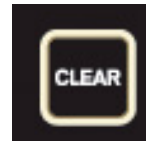In RUN mode, the two groups can be manually operated. Select the group using the Arrow buttons.

Press the ENTER button to turn ON or OFF the selected group.

The Screen form the LCD display will appear.

```
Group #1 [on]
Confirm State
```

To cancel the ongoing operation, press the CLEAR button.

## MANUAL OPERATION ON THE GROUPS (16-RELAY PANEL)

Group 1 and 2

To operate group 1 and 2 refer to the above section - Manual Operation on the groups (8-Relay Panel).

Group 3 to 6

In RUN mode, once a group has been selected (Refer to above section Group Status (16-Relay Panel)) all the relays tied to that group can be manually turned ON or OFF. To perform such task, just press the ON button or the OFF button on the KC-401 membrane.
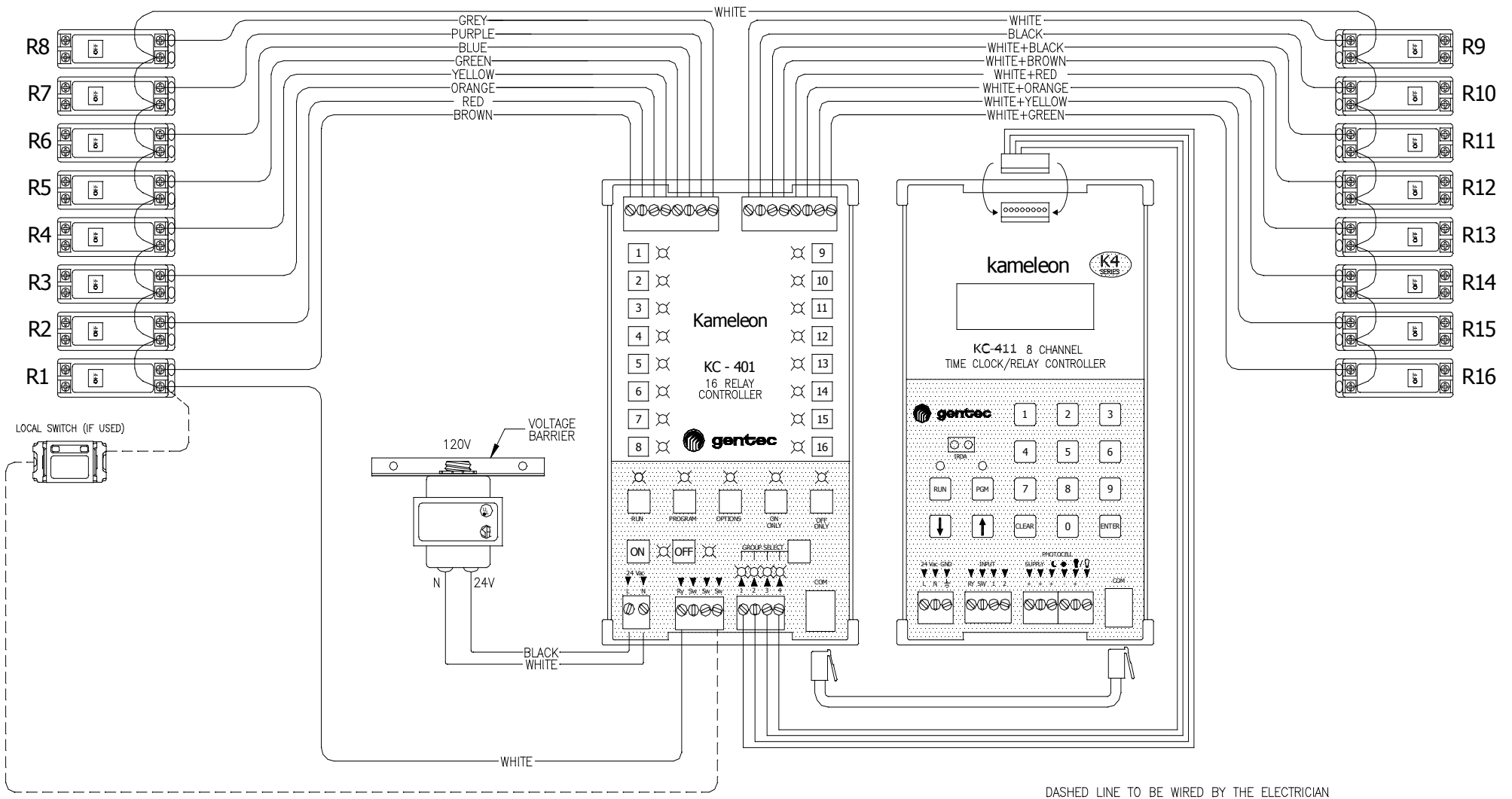
APPENDIX A – WIRING DIAGRAM KC401 + KC411
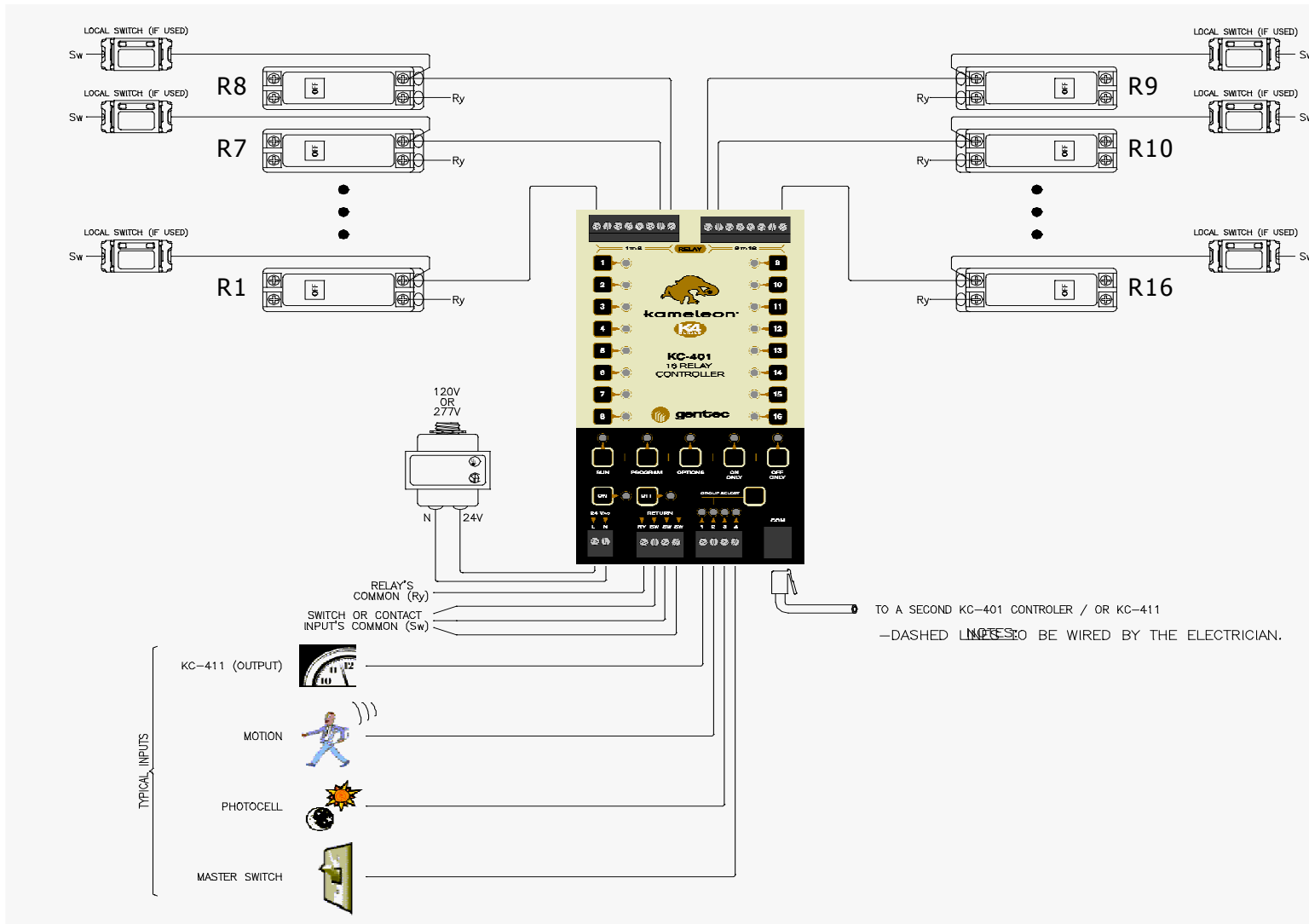
APPENDIX B – WIRING DIAGRAM KC401 + KC411
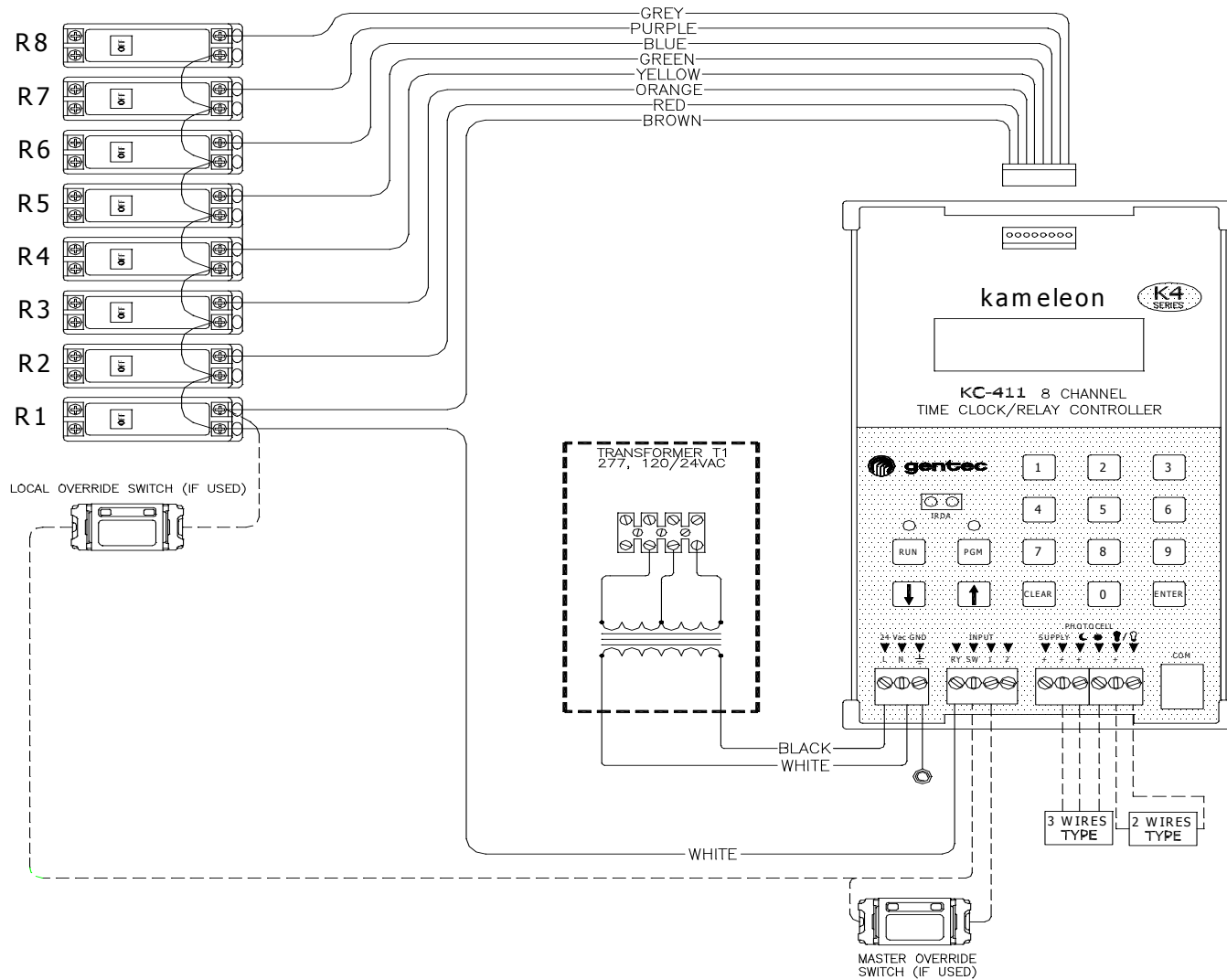
APPENDIX C   – WIRING DIAGRAM KC401 + KC411

APPENDIX D - NOTES

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