Please contact

Panasonic

Matsushita Electric Works, Ltd.

INTERNATIONAL OPERATIONS DEPARTMENT
WIRING DEVICES DIVISION
☐Head Office : 1048, Kadoma, Osaka 571-8686, Japan
☐Telephone : (06) 6908-1860
☐Facsimile : (06) 6908-1864

■WWCT1X058 200704-5YZ

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Panasonic

ideas for life

2007~

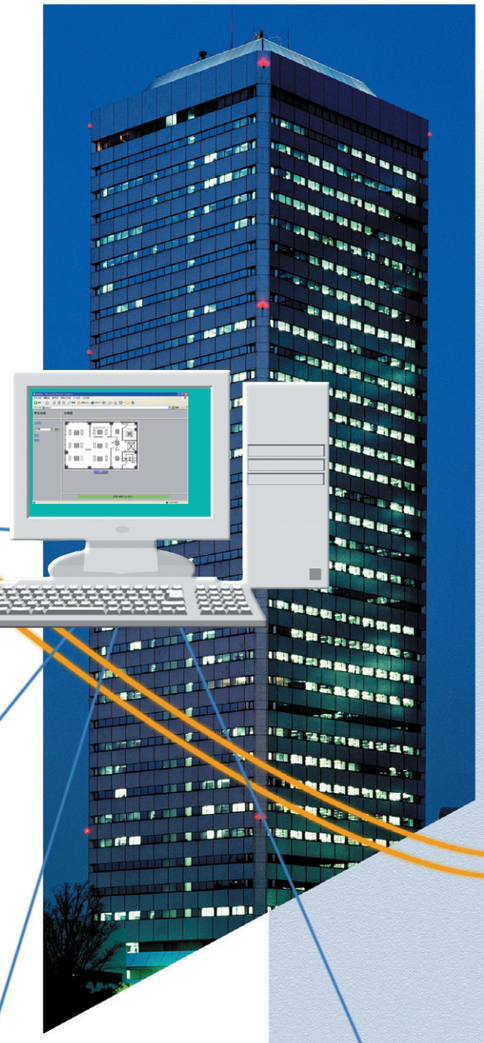
FULL-2WAY REMOTE LIGHTING CONTROL SYSTEM

The Standard of Flexible, Functional, Energy- Efficient Lighting

Multiplex Transmission
FULL-2WAY Remote Lighting Control System

Simple, Efficient Lighting Control That Matches Your Needs

Multiplex transmission FULL-2WAY remote control system uses just two ± 24 V signal wires for all the switches on a network, and controls lighting using pulse signals. This makes for a simple and flexible system that requires little maintenance. We've proved that highly functional systems does not require complex wiring. In wide use in many office buildings, these systems provide the standard for simple, efficient, and effective control.



Ecology

Save-Energy, Save-Cost

Timers and sensors control the system to provide light only when needed. This cuts energy use and costs.

Simple

Simple Design and Labor-Saving Installation

The system employs a multiplex transmission method using two non-polarized signal wires. This drastically reduces the number of wires needed compared to conventional remote control wiring.

Amenity

Matches All Lighting Control Needs

You get lighting control to match your exact needs. With just a touch of a button, you can either turn on/off all lights in one area of the building, or turn on/off individual lights as required.

Convenience

Minimal Design, Minimum Maintenance

Because switch functions can be programmed after wiring is complete, the entire process is speed up-from design and estimating, to ordering, delivery, and installation. System functions can also be quickly and easily changed.

Flexibility

Flexibility Reduces Total Costs

There's no need to modify the wiring if lighting control has to be changed due to room layout alterations. This contributes to reduced overall costs.

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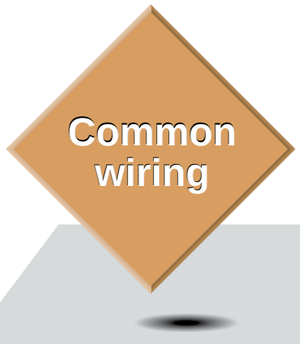
The Bigger the Building, the More Labor-saving the Installation.
The Key is Our Special Switching System.

Multiplex transmission FULL-2WAY wiring is designed differently than common wiring methods. Commands are signaled from remote locations and lighting controlled using just two ±24V non-polarized wires, so installation unit labor costs decrease despite the increasing of building size.

•The difference in switching methods

The switch is located between the load and the power source, so it can directly turn the power on and off.

Direct Control



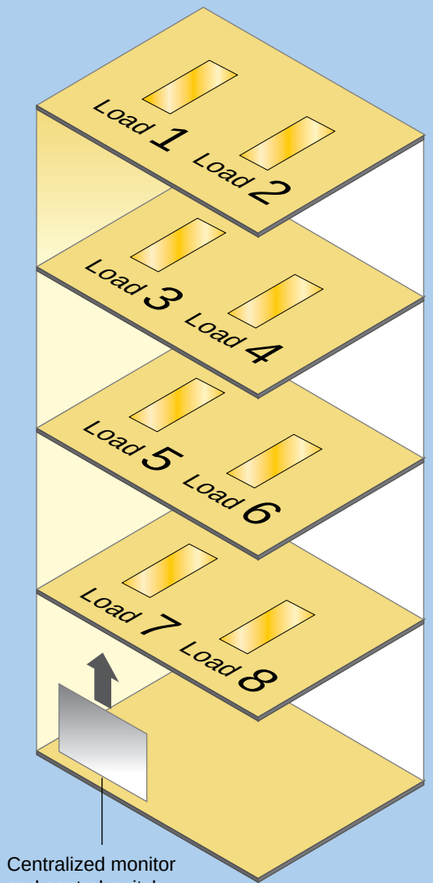
The remote control relay is located between the switch and the power source. The switch acts as a signal transmitter, sending commands to the relay to turn the power on and off.

Remote Control

Multiplex transmission FULL-2WAY control

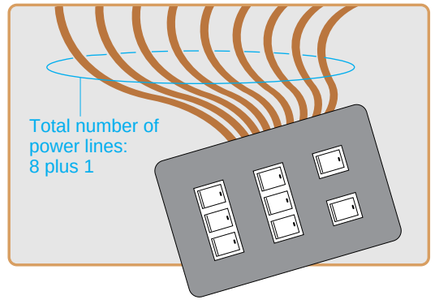
The switch controls lighting by selecting one of the remote control relays. Power on and off commands are given by transmitting signals via the signal wires to a remote control relay at a preset location.

This diagram illustrates the difference in systems. Compare an application of centralized monitor and control of a load of eight circuits.



Centralized monitor and control switch (selector switch)

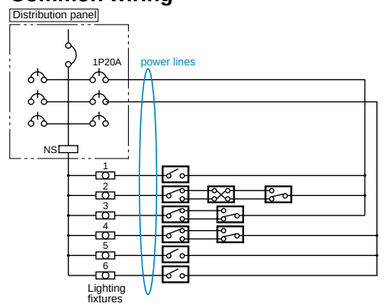
Common wiring method



This means a total of 9 power lines are needed to the centralized control switch section.

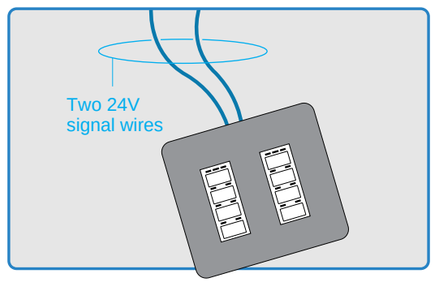
This requires a thick conduit which the wires going to the switch.

Common wiring



Common wiring is suitable only for small-scale projects

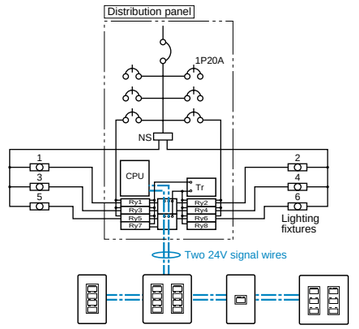
FULL-2WAY remote control method



There are just two 24V signal wires to the centralized control switch section.

Wires going to the switch can be housed in a thin conduit.

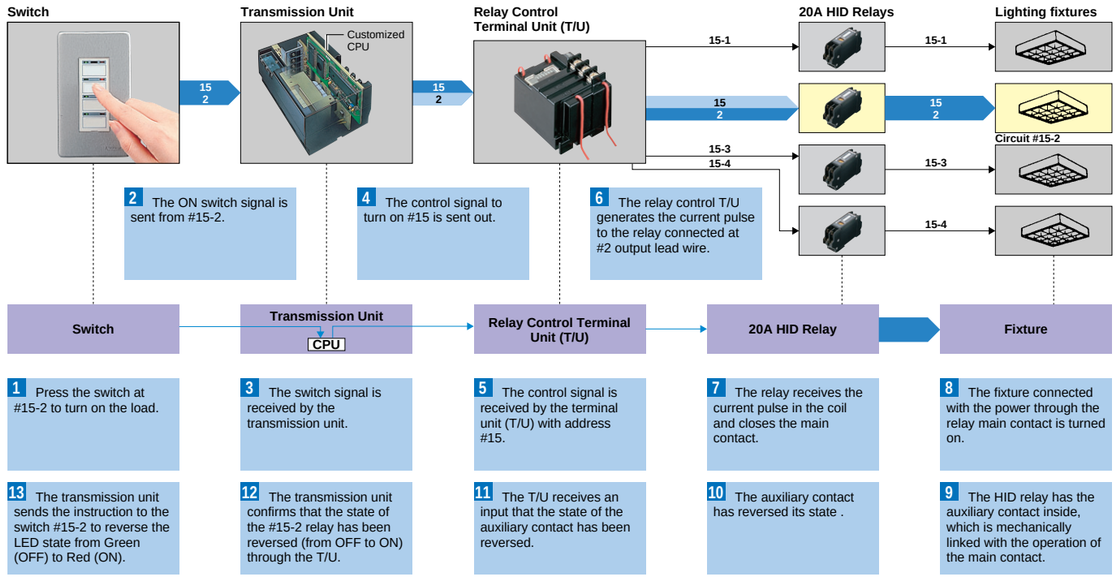
FULL-2WAY remote control wiring



FULL-2WAY remote control wiring is suitable for any medium- and small-scale projects.

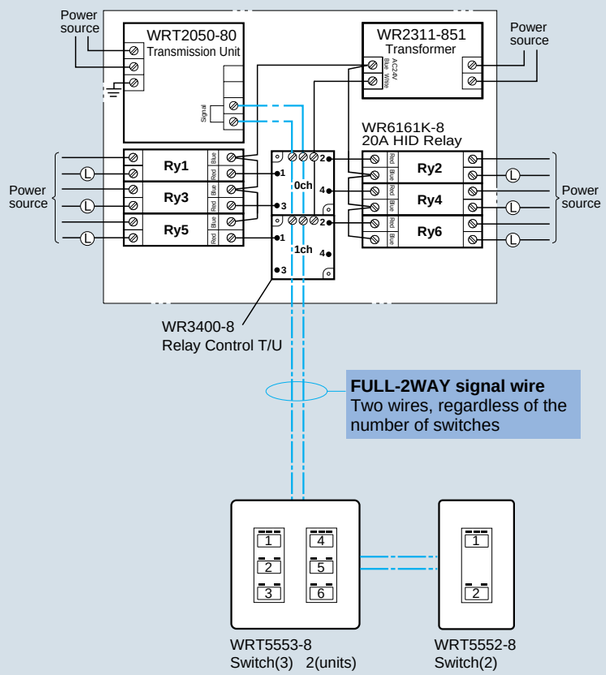
System Principle

2-wire multiplex transmission technology helps to simplify lighting control system.



■Basic circuit

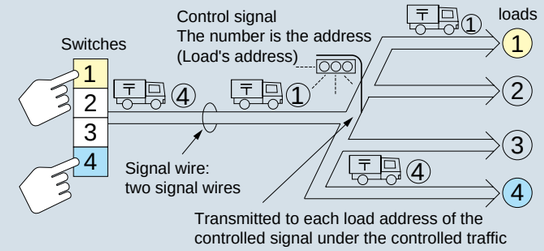
Easy installation-just match to the applicable load and the switch T/U address.



■The transmission system features of FULL-2WAY remote control system

FULL-2WAY remote control system

- Multiple transmission system allows 2 signal wires to control multiple loads.
- Load address for switches and T/U need to be matched according to the loads.



■Specifications of the Transmission Unit

Signal transmission method	Cyclic time sharing multiplex transmission with cut-in signal method
Signal wires	Two wires with no polarity
Signal voltage	±24V
Output current	500mA max.
Transmission speed	Approx. 15 msec. per terminal unit (10Kbit/sec.)
Relay activation time	0.2 sec. max.
Max. number of circuits	256 circuits
Signal transmission distance	
Maximum signal wiring length	500m max. with 1.2 mm dia.wire (Between transmission unit and the farthest point)
Total signal wiring length	1,500m max. with 1.2 mm - dia wire
Extension of transmission distance	with use of 5 amplifiers (WR 3913-80); Maximum signal wire distance: 3,000 m, Total signal wire length: 9,000 m
Ambient temperature range	-10˚C to 50˚C
Power failure backup	Flash memory for groups/patterns (no battery backup)

■What is multiple transmission?

The system transmits signals via two wires to circuits which are to be switched on and off.
With FULL-2WAY multiple transmission, load addresses comprised of channel and load numbers are set up in advance, and the signal is transmitted to the designated addresses that correspond to remote controlled relays HID when switches are operated.

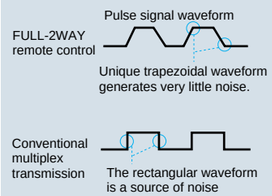
■With multiple transmission, the signal is transmitted by pulse signals

What is a pulse signal?

The number of signals is limited only by the number of different possible arrangements of 0s and 1s, thus making it possible to handle many signal destinations (circuits to be switched on and off).

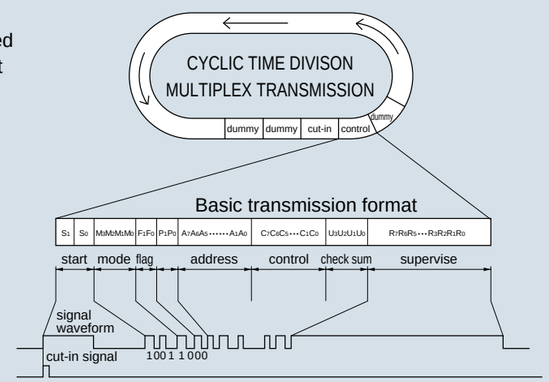
Pulse signals are transmitted at an interval of 0.015 second for each Terminal Unit, so there is no chance of signal interference in the two signal wires.

Reduced noise level with the special trapezoidal waveform for the pulse signal



■FULL-2WAY remote control has the cut-in method of high-speed control response and signal indication

In addition to "CYCLIC TIME DIVISION MULTIPLE TRANSMISSION METHOD", a new technology called the "CUT-IN SIGNAL CIRCUIT" can control relays at high speed and indicate on the ON/OFF status.



Functions and Features of FULL-2WAY Remote Control

Ecology

Save-Energy, Save-Cost

Timers and sensors can control the system to provide light only when needed. This cuts energy use and costs. The ability to carry out centralized monitoring and control of lighting for up to 256 circuits makes it easy to cut unnecessary light use.

Centralized monitoring and control

Control and monitor all lighting from a central location.

Functional display of lighting status

An LED displays lighting status.

On: Red LED is lit

Off: Green LED is lit

Timer and sensor controlled

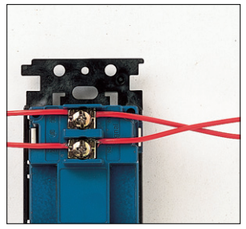
The system interconnects devices like passive infrared ceiling units, Timer setting unit.

WRT3540K-8
Program Timer Unit

Simple

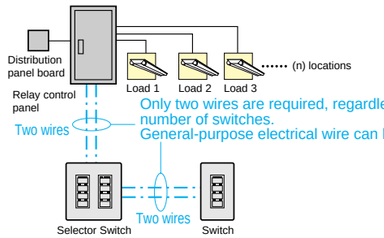
Simple Design and Labor-Saving Installation

The system employs a multiplexed transmission system using two non-polarized signal wires. This reduces the number of wires needed compared to conventional remote control wiring.



Switch connection involves merely connecting two signal wires.
The wires are non-polarized, so there's less chance of installation errors.

All switches are networked via two±24V signal wires.



Note: For types of signal wire, see page 22.

Amenity

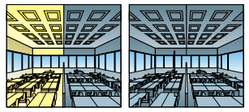
Amenity means user-friendly

Group control allows you to control multiple lighting, turning on or off an entire section of the building with one switch. Pattern control allows you to match lighting to the time of day or to the work habits of people in the building.

Group control

Turn on all lights in the sales department.

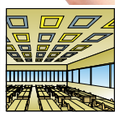
Turn off all lights in the sales department.



Pattern control

9:00 a.m. Work starts — Turn on all lights

Noon to 1:00 p.m. Lunch break — Turn off some lights



2:00 to 3:00 p.m. Natural light enters offices from outside — Turn off lights near windows

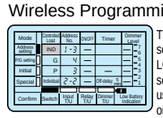
6:00 p.m. — Turn off all lights

Convenience

Minimal Design, Minimum Maintenance

With the compact wireless address setting unit, switch functions like pattern and group control and delayed turning off of lighting can be programmed after wiring is complete. This speeds up the entire process-from design and estimate to ordering, delivery, and installation. The unit also allows you to quickly and easily change system functions.

Wireless Programming Unit



The wireless address setting unit has an LCD that shows the settings made by the user, like the example on the left.

Four functions in one unit

WRT5554-8
Switch (4)
(Infrared I/O)

1. Individual on/off control
Switch controls individual lights. An LED shows whether the lighting is on or off.

2. Group control
A single switch controls multiple lights, turning them all on or off with one touch.

3. Pattern control
A push of the switch changes the lighting conditions to a pre-programmed pattern that matches the time of day or work habits.

4. Timer control
This can be programmed to automatically perform tasks like delay the turning on or off of the lights or to turn the lights on temporarily.

Flexibility

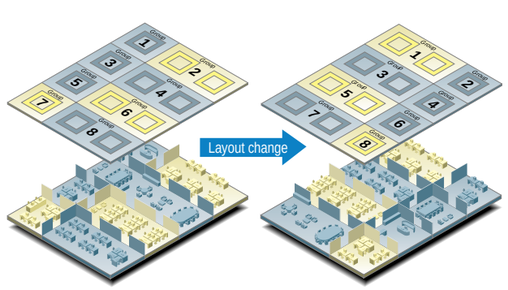
Flexibility Reduces Total Costs

There's no need to modify the wiring if lighting control has to be changed due to room layout alterations. This contributes to reduced overall costs.

Wireless Programming Unit

WRT9600-8

Changing of the lighting control parameters can be carried out easily using either the group or pattern switches of the selector switch unit or the Wireless Programming Unit.



Examples of Building Applications Recommendation Number 1

Office Build.

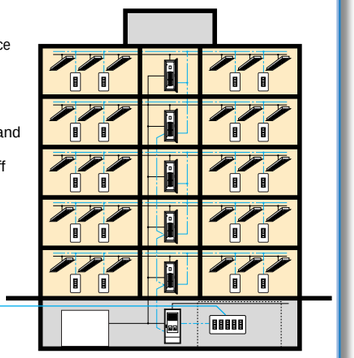
Centralized monitoring and control — Basic control

Centralized monitoring and control of lighting can handle up to 256 circuits per system.

Uses
- Building superintendent's office
- Emergency management center

Effect
- Reduced labor for control and management
- Lights always get turned off automatically

Centralized monitor and control from superintendent's office

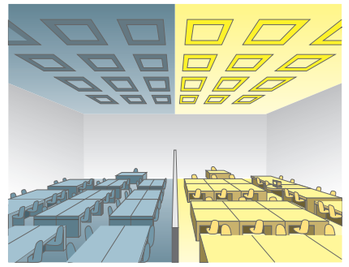


Group control — Basic control

Turn on and off all lights in an entire section of a building.

Uses
- Offices
- Conference rooms

Effect
- No re-wiring needed for lighting layout changes

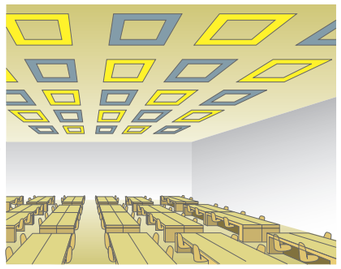


Pattern control — Basic control

The system can be programmed to match work schedules or habits, allowing you, for example, to turn down office lighting during lunch hour with a push of a switch.

Uses
- Offices or conference rooms
- Common areas: restrooms, corridors, hall, stairwells

Effect
- Energy saving-
- Lights only on when necessary
- Lights always get turned off automatically-
- Turn off all lights together at end of day
- Optimum lighting level-
- For audio-visual presentation rooms



Timer control — Option control

Lights are turned on or off automatically at a preset time to match a company's daily schedule.

Uses
- Building entrance
- Lobby
- Restrooms
- Elevator area
- Common areas: restrooms, stairwells

Effect
- Energy saving
- Reduced labor for control and management

WRT3540K-8
Program Timer Unit

Building entrance

Corridors

Office area

Passive infrared sensor control — Option control

Lights automatically turn on and off as people enter and leave places like locker rooms.

Uses
- Locker rooms
- Coffee rooms
- Restrooms

Effect
- Energy saving
- Reduced labor for control and management
- Most cost-effective use of lighting

Passive Infrared Ceiling Unit

Lights can be programmed to turn off after a certain period (Approx. 10 sec. to 30 min.) after people have left a room.

Lights automatically turn on upon entering a room.

Lights automatically turn off after a set time (Approx. 10 sec. to 30 min.) after the person leaves the room.

Wireless control — Option control

Remote controller allows you to manually adjust lighting, equipment, air conditioning, and audio during meetings and conferences.

Uses
- Conference rooms
- Presentation rooms
- Showrooms

Effect
- Adjust lighting as needed
- Total control-lighting, air conditioning, and audio equipment

Conferences

OHP presentations

Audio-visual presentations

Wireless remote controller allows manual control in any situation.

Examples of Building Applications Recommendation Number 2

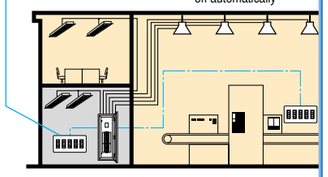
Factory

Centralized monitoring and control — Basic control

Centralized monitoring and control of the lighting in the factory and offices can be carried out from the superintendent's office.

Uses
- Control room
- Emergency center

Effect
- Reduced labor for control and management
- Lights always get turned off automatically

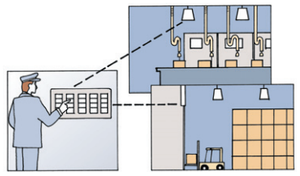


Group control — Basic control

Lighting in entire sections of the factory or warehouse can be turned on or off all at once.

Uses
- Individual sections of factories
- Individual sections of warehouses
- Offices
- Conference rooms

Effect
- No re-wiring needed for lighting layout changes

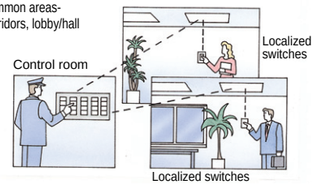


Pattern control, operation from various locations — Basic control

Control patterns can be programmed to match specific times of the day or work routines. Operation can be carried out using switches located at various doorways to large factories or warehouses.

Uses
- Factories
- Warehouses
- Cafeterias
- Conference rooms
- Common areas- Corridors, lobby/hall

Effect
- Energy saving (Lights only on when necessary)
- Lights always get turned off automatically (Turn off all lights together at end of day)
- Easy lighting control



Timer control — Option control

The timer can be set so lights operate based on people's movements throughout the day, from arriving at work in the morning to lunch breaks to late night shift changes.

Uses
- Factories
- Warehouses
- Restrooms
- Elevator areas

Effect
- Energy saving
- Reduced labor for control and management

WRT3540K-8
Program Timer Unit
Enables automatic weekly or yearly control of lighting by determining the schedule for one day.

Passive infrared sensor control — Option control

Lights automatically turn on and off when people enter and leave. There's no need to worry about people forgetting to turn off the lights in changing rooms or coffee rooms.

Uses
- Locker rooms
- Coffee rooms
- Restrooms

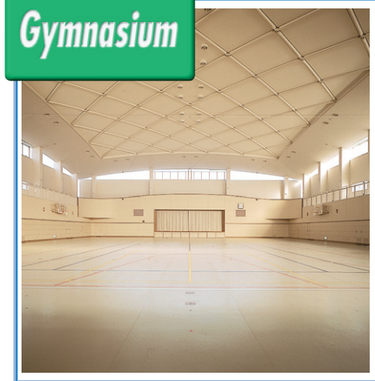
Effect
- Energy saving
- Reduced labor for control and management
- Energy saving lighting control

Passive Infrared Ceiling Unit

Lights automatically turn on upon entering a room.

Lights automatically turn off after a set time (Approx. 10 sec. to 30 min.) after the person leaves the room.

Gymnasium

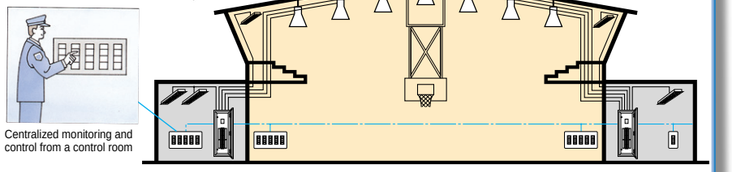


Centralized monitoring and control — Basic control

Lightings of arena and seats can be checked at a glance and centrally controlled from a control room.

Uses
- Control room
- Emergency center

Effect
- Saving energy
- Reduced labor for control and management



Centralized monitoring and control from a control room

Combined control of timers and sensors — Option control

In addition to the timer control, Labor-savings and energy conservation are achieved using EE switches that respond to the brightness of their environment.

Uses
- Lobby
- Approach
- Corridor (Staircase)
- Outside lights

Effect
- Saving energy
- Labor-saving

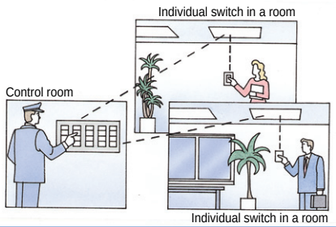
WRT3540K-8
Program Timer Unit

Pattern control — Basic control

Single push of a switch creates ideal lighting environment according to user's needs.

Uses
- Arena
- Seats

Effect
- Energy conservation during lighting operation



Passive infrared ceiling unit — Option control

With passive infrared ceiling unit, a person need not be concerned with the switches ON or OFF of lights in areas such as restrooms and locker rooms.

Uses
- Locker
- Warehouse
- Restroom

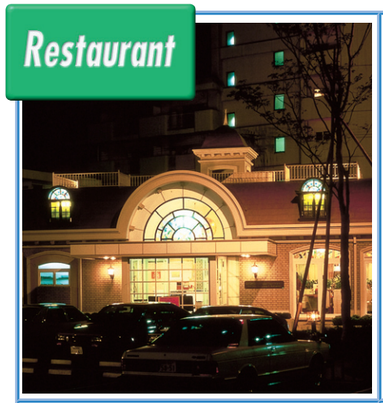
Effect
- Energy saving
- Reduced labor for control and management
- Optimum lighting control

Passive Infrared Ceiling Unit

The light of a room turns on automatically when a person enters a room.

The light is turned off automatically after a preset interval (ten seconds to thirty minutes) after the person leaves a room.

Restaurant



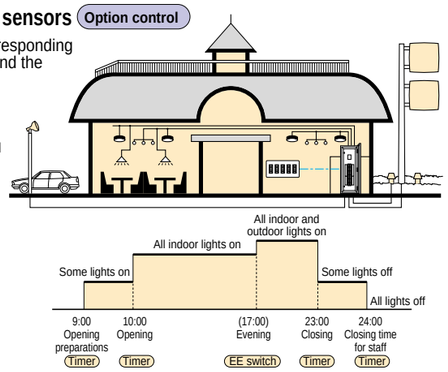
Combined use of timers and sensors — Option control

Energy saving can be achieved by responding to the arrival pattern of customers and the amount of natural light.

Uses
- Inside the restaurant
- On the terrace
- Outside lighting

Effect
- Energy saving
- Reduced labor for control and management

WRT3540K-8
Program Timer Unit
The unit allows scheduled lighting control according to the business hours from opening to closing time.

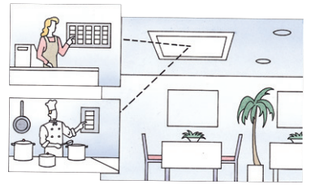


Multiple operation — Basic control

Lighting control from multiple locations is possible from the cashier's area and from the kitchen.

Uses
- Inside the restaurant
- At the cashier
- Kitchen

Effect
- Reduced labor for control and management

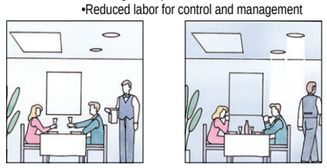


Combined use of pattern and dimmer control — Option control

Creating a bright atmosphere ideal for each store with only a single touch of a switch is possible.

Uses
- Inside the restaurant

Effect
- Creating an effective atmosphere
- Lighting is brightened at lunch time and dimmed slightly for dinner time, creating a romantic evening atmosphere
- Reduced labor for control and management



Passive infrared control — Option control

Passive infrared ceiling unit is used to automatically control lighting in a restroom, allowing customers to forget the light switch.

Uses
- Backyard

Effect
- Energy saving
- Reduced labor for control and management
- Optimum lighting control

Passive Infrared Ceiling Unit
Off-delay time may be set within a range from 10 sec. to 30 min.

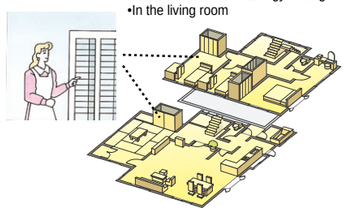
House

Centralized monitoring and control ① — Basic control

Centralized monitoring and control of lights in all rooms from living room and kitchen allow to check the lights left on when not in use.

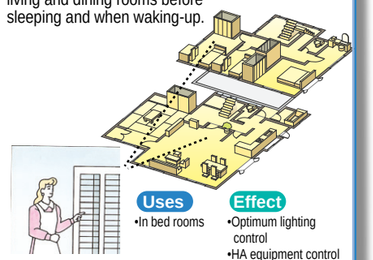
Uses
- In the kitchen
- In the living room

Effect
- Energy saving



Centralized monitoring and control ② — Basic control

Centralized monitoring and control allows a person to control the air-conditioning and lighting in the living and dining rooms before sleeping and when waking-up.



Uses
- In bed rooms

Effect
- Optimum lighting control
- HA equipment control

Pattern control ① — Basic control

Switch installed near the front door to turn off all lights in a house under pattern control is convenient when leaving in a hurry.

Uses
- Front door

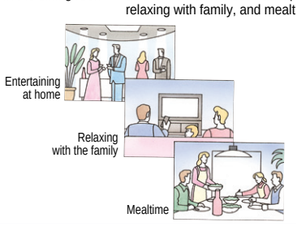
Effect
- Preventing lights being left on
- ※Presetting an "off-delay" function allows the lights to be turned off automatically after you leave.

Pattern control ② — Basic control

The lighting brightness is selectable under pattern control according to different situations, such as home entertaining, relaxing with family and other occasions.

Uses
- In the riving room
- In the dining room

Effect
- Creating an atmosphere ideal for different situations such as a party, relaxing with family, and mealtimes



Wireless control — Option control

Wireless control allows users to control lights of their own rooms from bed.

Uses
- Rooms for the elderly

Effect
- Optimum lighting control

Recommending Renovation to Save Energy and Enhance Comfort

For spaces such as offices and entire buildings

Realize greater energy savings by using a "**Program Timer Unit**" to control fixed-schedule, thinned-out lighting

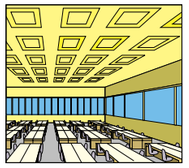
Running cost comparison

■Normal conditions
98 W X 100 fixtures X 12 hours X 250 days ——— Annual amount of power consumption 29,400 kWh

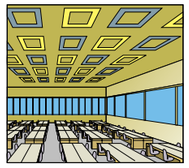
■With program timer unit
(98 W X 100 fixtures X 10 hours + 98 W X 50 fixtures X 2 hours) X 250 days ——— Annual amount of power consumption 26,950 kWh

Energy savings Approximately 8%

Program Timer Unit
WRT3540K-8



Fully lit during work



Thinned-out lighting before start of work and during lunch break

■Estimate conditions
- Usage (work) time band: 12 hours (7:30 to 19:30)
- Time schedule control provides thinned-out lighting before start of work and during lunch break.
  Before start of work: 1 hour (7:30 to 8:30)
  Lunch break: 1 hour (12:00 to 13:00)
  Fully lit: 100 fixtures lit
  Thinned-out lighting: 50 fixtures lit
- Lighting fixtures: Hf fluorescent lamps, 32 W X 2 lamps X 100 fixtures
- Annual operation time: 250 days

For spaces such as restrooms and locker rooms

Realize greater energy savings by combining with a "**Passive Infrared Unit**" to control on/off automatically

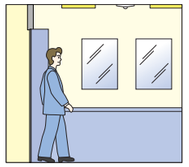
Running cost comparison

■Without a passive infrared unit
(31 W X 5 + 22 W X 1 fixture) X 15.5 hours X 250 days ——— Annual amount of power consumption 685.9 kWh

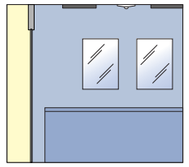
■With a passive infrared unit
(31 W X 5 + 22 W X 1 fixture) X 6 hours X 250 days ——— Annual amount of power consumption 265.5 kWh

Energy savings Approximately 61%

Passive Infrared Unit
WRT3364K-8



Lights automatically turn on when a person enters the room



Lights automatically turn off after everyone has left the room

■Estimate conditions
- Number of users: Approx. 35 persons
- Use time and time band: 15.5 hours (7:00 to 22:30)
- Passive infrared unit off-delay time: Set to 3 min
  (※Lit for 6 hours, switches on/off 44 times)
- Lighting fixtures: Twin 27 W X 5 fixtures
  20 W fluorescent lamp X 1 lamp X 1 fixture
- Annual operation time: 250 days

※Actual measurements by our company

For spaces such as areas near windows, corridors and elevator halls

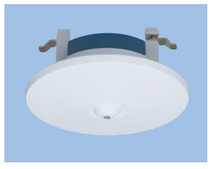
Realize greater energy savings by combining with a "**Daylight Sensor Ceiling Unit**" to control on/off automatically

Running cost comparison

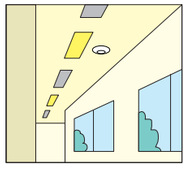
■Normal conditions
98 W X 10 fixtures X 15.5 hours X 250 days ——— Annual amount of power used 3,797.5 kWh

■With daylight sensor ceiling unit
98 W X 10 fixtures X 4.8 hours X 250 days ——— Annual amount of power used 1,176.0 kWh

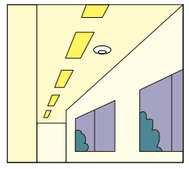
Energy savings Approximately 69%



Daylight Sensor Ceiling Unit
WRT3657-8



Thinned-out lighting when natural light is available from outside



All lights turn on after sunset.

■Estimate conditions
- Corridor near windows in an office building
- Standard illuminance value of office corridor: 200 lx
- Usage time in office corridor:
  15.5 hours (7:00 to 22:30)
- Annual operating time: 250 days

- Times when brightness is forecast to be at least 200 lx (From Chronological Scientific)
  March 21 (Near the vernal equinox): 5:50 to 18:10
  June 21 (Near the summer solstice): 4:35 to 19:15
  September 21 (Near the autumnal equinox): 5:35 to 17:55
  December 21 (Near the winter solstice): 6:50 to 16:55

※Times indicated above are for outdoors; indoor times will be shorter.
(Survey data obtained in corridor at our company: 15 minutes difference)
※Times will also vary depending on floor level and proximity to windows and walls.

- Times when brightness is forecast to be at least 200 lx indoors
  March 21 (Near the vernal equinox): 7:00 to 17:55 ··· Approx. 11 hours
  June 21 (Near the summer solstice): 7:00 to 19:00 ··· Approx. 12 hours
  September 21 (Near the autumnal equinox): 7:00 to 17:40 ··· Approx. 10.5 hours
  December 21 (Near the winter solstice): 7:05 to 16:40 ··· Approx. 9.5 hours

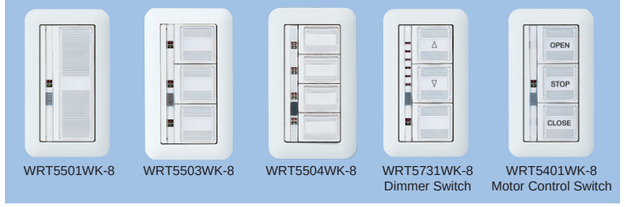
(11 H + 12 H + 10.5 H + 9.5 H) ÷ 4 ÷ 15.5 H = 0.69 (69% is at least 200 lx)

※Time band less than 200 lx where lighting switches on: Approx. 4.8 hours (15.5 hours X 31%)
- Lighting fixtures: Hf fluorescent lamps, 32 W X 2 lamps X 10 fixtures

Operating Switches

WRT9600-8 Wireless Programming Unit
Necessary for address setting of Infrared I/O address setting type devices
(WRT9500K-8 Address setting is available even with Wireless Address Setting Unit.)

1 Switches (Infrared I/O) (COSMO Module)



WRT5501WK-8 WRT5503WK-8 WRT5504WK-8 WRT5731WK-8 Dimmer Switch WRT5401WK-8 Motor Control Switch

•Has a simple design and a wide face offering ease of operation for the elderly.

2 Switches (Infrared I/O) (FULL-COLOR Module)

WRT5551-8 WRT5552-8 WRT5553-8 WRT5554-8 WRT5771-8 Dimmer Switch

•FULL-COLOR Module fits on any plate.

3 Switches (Infrared I/O) (GLACIER Series)

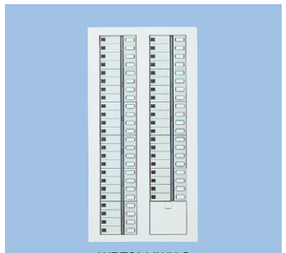
WRV5601S1-8 Silver Gray WRV5602S1-8 Silver Gray WRV5603S1-8 Silver Gray WRV5604S1-8 Silver Gray WRV5831S1-8 Silver Gray Dimmer Switch

•The GLACIER Series has a sophisticated design that's perfect for VIP rooms, lobbies, and reception rooms.
•Color blends in with the surroundings. (Silver Gray)

WRV5601S1-8 GLACIER Switch (1)
WRV5602S1-8 GLACIER Switch (2)
WRV5603S1-8 GLACIER Switch (3)
WRV5604S1-8 GLACIER Switch (4)
WRV5831S1-8 GLACIER Dimmer Switch

Note:
• Name plates are not included.

4 Master Switch (Surface-mount) (Infrared I/O)



WRT6144WK-8

•Surface-mounting installation makes it easy to work on during renovations.
•Because it's Infrared I/O address setting type, you can program individual, group, and pattern control.

WRT6120WK-8 20 circuits
(with Program Setting Unit)
WRT6144WK-8 44 circuits
(with Program Setting Unit)
WRT6168WK-8 68 circuits
(with Program Setting Unit)
WRT6024WK-8 24 circuits
WRT6048WK-8 48 circuits
WRT6072WK-8 72 circuits

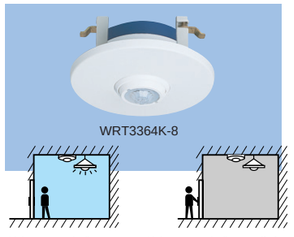
5 Central Control and Programming Unit

WRT9103K-89

•Allows you to carry out pattern/group control settings without the need for individual switches and pattern/group setting switches.
•Allows you to confirm operation of tasks like individual, pattern, and group control.

See page 61 for details.

6 Passive Infrared Ceiling Unit (Infrared I/O)



WRT3364K-8

Lights automatically turn on upon entering a room.

Lights automatically turn off after a set time (between 10 seconds and 30 minutes) after the person leaves the room.

•Automatically turns on and off lights in common areas like restrooms and corridors.
•Can be programmed for individual, group, and pattern control.

See page 52 for details.

7 Card Switch (Dip Switch)

WR3891-8

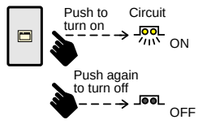
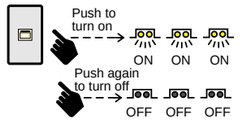
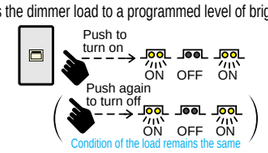
•At the entrance to guest rooms in hotels.
•When used as a card lock system for guest rooms, lights can be set to turn on or off when cards are inserted or removed from the lock, thus saving electricity.

See page 60 for details.

Outline of Control Methods

Basic Control Functions

■**Number of circuits to be controlled by one transmission unit:**
Up to 256 circuits plus 16 dimmer circuits can be centrally monitored and controlled.
■**Multiple location operation:**
Control from multiple locations is possible if you set the same address in the switches.

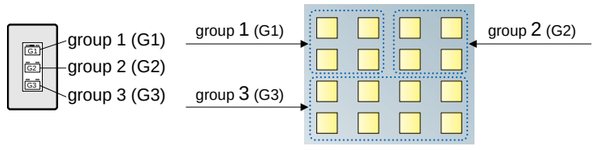
Method	Function	Operation	Number of circuits to be controlled	Max. no. of circuits	Address function
Individual control	•Turns the load of each circuit on and off individually 	(Push to turn on / Push again to turn off)	1 circuit	256 circuits + (16 dimmer circuits (on/off only))	Load (individual) addresses = Load ch. X Load no. (0 ch-1, 0 ch-2, 0 ch-3, 0-ch 4 / 1 ch-1, 1 ch-2, 1 ch-3, 1-ch 4 / ⋮ / 63 ch-1, 63 ch-2, 63 ch-3, 63-ch 4) 256 circuits = 64 ch X 4 + Dimmer addresses 1 - 16 See page 15 for details.
Group control	•Turns multiple circuits on or off within each preset group. •Turns dimmer circuits on or off. 	(Push to turn on / Push again to turn off)	Individual circuits 1 - 256 + (Dimmer circuits 1 - 16) (Total of 8 circuits max. can be programmed in one group for "on-timer and off-delay" control functions)	127 groups	Group addresses G1 - G127 See page 17 for details.
Pattern control	•Turns multiple circuits on/off according to a preset lighting pattern •Changes the dimmer load to a programmed level of brightness 	•Push once to change lighting pattern (Pushing again does not change anything)	Individual circuits 1 - 256 + (Dimmer circuits 1 - 16) (Total of 8 circuits max. can be programmed in one group for "on-timer and off-delay" control functions)	72 patterns	Pattern addresses P1 - P72 See page 18 for details.

■Group control functions

Loads up to 256 circuits (+ 16 dimmer circuits) can be turned on or off all at once. Up to 127 groups can be programmed.

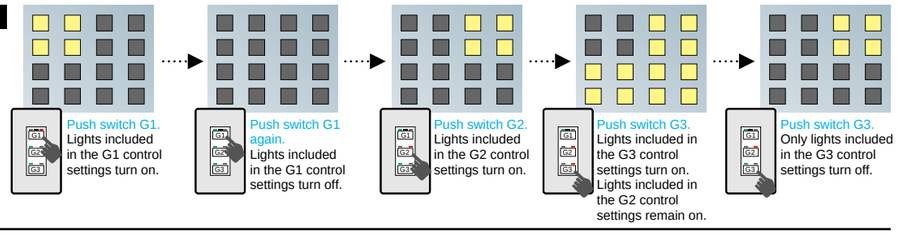
Example of group control settings

Lighting fixture layout. The squares represent the lighting fixtures. (One lighting fixture per one circuit.)



Group control functions

Indicator light on
Indicator light off



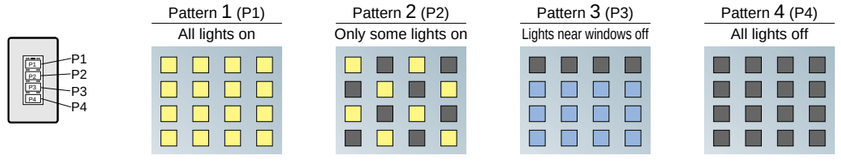
■Pattern control functions

Loads up to 256 circuits (+ 16 dimmer circuits) can be turned on or off according to preset lighting patterns. Up to 72 patterns can be programmed.

Example of pattern control settings

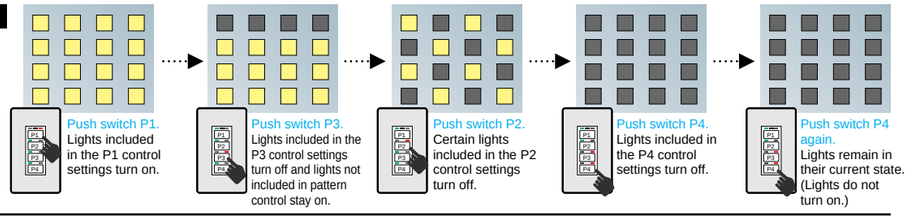
Lighting fixture layout. The squares represent the lighting fixtures. (One lighting fixture per one circuit.)

•Explanation of pattern control setting light symbols
On setting
Off setting
Not included in pattern control



Pattern control functions

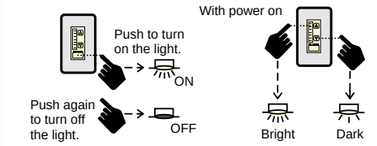
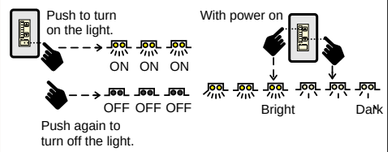
Indicator light on
Indicator light off

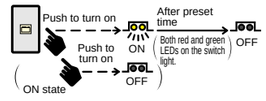
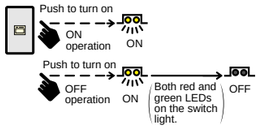


Cautions:
•For a function comparison with the WRT2000 series,WRT2040 series and WRT2050 series Transmission Unit, see page 39.
•Dimmer, group, and fade controls using individual address are not available for the WRT2000-82 Transmission Unit.

Optional Control Functions

•When using dimmer control, dimmer addresses 1-16 are available, however, using individual addresses is recommended because group and fade controls are not available with dimmer addresses 1-16.

Method	Function	Operations	Number of circuits to be controlled	Max. no. of circuits	Address function
Dimmer control (Incandescent lamp)	•Controls the brightness of an incandescent lamp in a single circuit. •Turns the lamp on or off with preset light levels. •Light level indicated on the dimmer switch. 	•ON/OFF control (Push to turn on / Push again to turn off) •Controls brightness with a dimmer switch (Push to make brighter / Push to make darker)	One dimmer circuit	(256 circuits) - (Circuits using individual control)	Load address = load ch. X load no. (0 ch-1, 0 ch-2, 0 ch-3, 0-ch 4 / 1 ch-1, 1 ch-2, 1 ch-3, 1-ch 4 / ⋮ / 63 ch-1, 63 ch-2, 63 ch-3, 63-ch 4) See page 57 for details.
Group dimmer control	•Controls the brightness of each group of preset multiple dimmer loads. •Turns on or off with preset brightness. 	•ON/OFF control (Push to turn on / Push again to turn off) •Controls brightness with a dimmer switch (Push to make brighter / Push to make darker)	Dimmer circuits using individual addresses (256 circuits) - (Circuits using individual control)	(127 groups) - (Number of group control used)	Group addresses G1-G127 See page 57 for details.
Fade control	•Fade control is possible when changing dimmer load to preset brightness with pattern control.	•One push to change the site	Dimmer circuits using individual addresses (256 circuits) - (Circuits using individual control)	72 patterns	•Fade time Fade time may be set to instantaneous, 3 sec., 6 sec. or 1 minute. •Fade function is applicable to pattern control only. •Fade time setting is possible only from a Wireless Programming unit. Fade control is not applicable to turn-off control. See page 50 for details.

Method	Function	Remarks
On-timer control	•Pressing the switch turns on a circuit and turns it off automatically after a preset time. (No OFF operation needed) •Pressing the switch during timer interval turns off the circuit. 	•On-timer may be set at 30 seconds, 1 minute, 5 minutes, 60 minutes or 120 minutes. •On-timer function is applicable for individual, dimmer and group controls.
Off-delay control	•Pressing the switch turns on a circuit and another press of the switch turns it off after a preset time. •Pressing the switch during timer interval does not turn off the circuit. 	•Off-delay timer may be set at 30 seconds, 1 minute or 5 minutes. •On-timer function is applicable for individual, dimmer and group controls.
Control by external devices	•Controls loads automatically with devices like a Timer setting unit	•Applicable for individual, dimmer (ON/OFF), pattern and group controls. On-timer and off-delay controls are not available. See page 51 for details.
	•Dimmer control is possible by connecting signals (non-volt "a" contact point) from dimmer level control terminal to the Contact input T/U for light control. Brightness is varied while the non-volt "a" contact point is ON.	•Applicable for dimmer and group dimmer controls. On-timer and off-delay controls are not available. See page 51 for details.
Electrical equipment control	•Controls electrical equipment such as electric rain shutters	•Individual and pattern controls are used for electrical equipment control. See page 64 for details.

Basic Functions

Caution: The FULL-2WAY remote lighting control system cannot be used in combination with other systems.
Do not use remote control relays or remote control transmission systems from other manufacturers.

Circuit Design for Individual Control

Individual control: Controls up to 256 circuits plus 16 dimmer circuits per system or per one transmission unit.

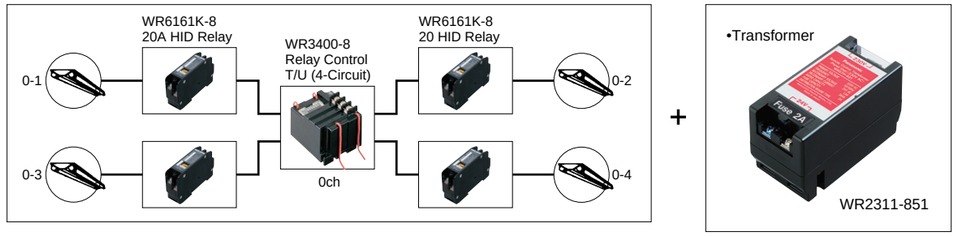
Central monitor and control, and control from multiple locations for up to 256 circuits plus 16 dimmer circuits.

Design Tips for Circuit Divisions

Decide the load to be controlled by the FULL-2WAY remote control.

1 Panel configuration

1. Install one transmission unit per system.
2. Determine a minimum control area and count the number of relays required for circuits. One transmission unit can control up to 256 circuits.
3. Check each load capacity per circuit, and for high power, specify 20A HID relays.
   For low capacity loads (less than 6A), a T/U is available with a 6A relay unit. For details, see page 21.
4. Install a relay control T/U unit for every four (4) 20A HID relays.
   Relay control T/U units (4-Circuit), and T/U with a 6A-relay units (4-Circuit), up to a maximum of 64 can be connected per one transmission unit.
5. Install a transformer in each relay control panel to simplify wiring.



Make sure there is no duplication of Relay Control T/U load addresses.

2 Selector switch configuration

Determine the same number of individual switches as the circuits required for centralized monitoring and control.

3 Local switches

Determine the individual switches required for local operation.

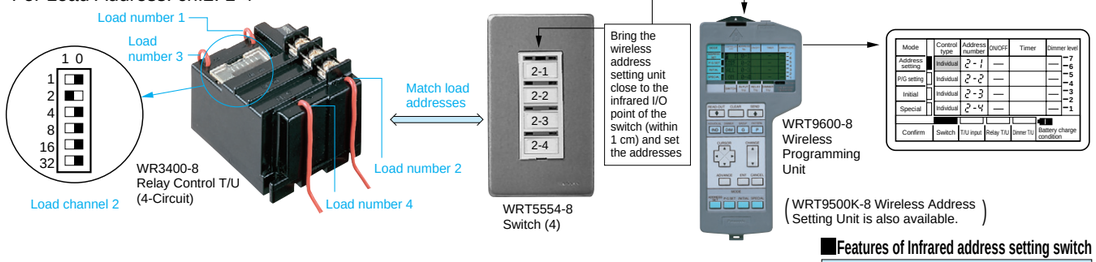
Address setting: Set the addresses on the Relay Control T/U, then set the same address on the switches.

Address setting method for the Relay Control T/U: For details, see page 41.
Address setting method for switches: For details, see page 46.

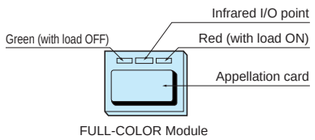
Load address (0ch-1,0ch-2···63ch-3,63ch-4)	=	load channel [ch] (0~63ch)	+	load number (1~4)
Address		Channel		Number

(64ch X 4=256)
Each address comprises a Load channel and a Load number.

• For Load Address: ch.2: 1-4



■LED indication for Individual switches

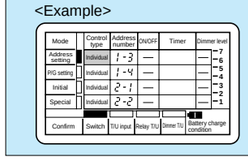


The red LED on an individual switch lights when the relay is ON, and the Green LED lights when the relay is OFF. The following exceptions apply:
1. The Green LED lights if the transformer is not powered.
2. Both LEDs remain off if no Relay Control T/U is connected with a corresponding address.
3. The Green LED (OFF) is lit when no relay is connected to the Relay Control T/U with the corresponding address.

■Features of Infrared address setting switch

Any combination of switch addresses may be set using the wireless address setting

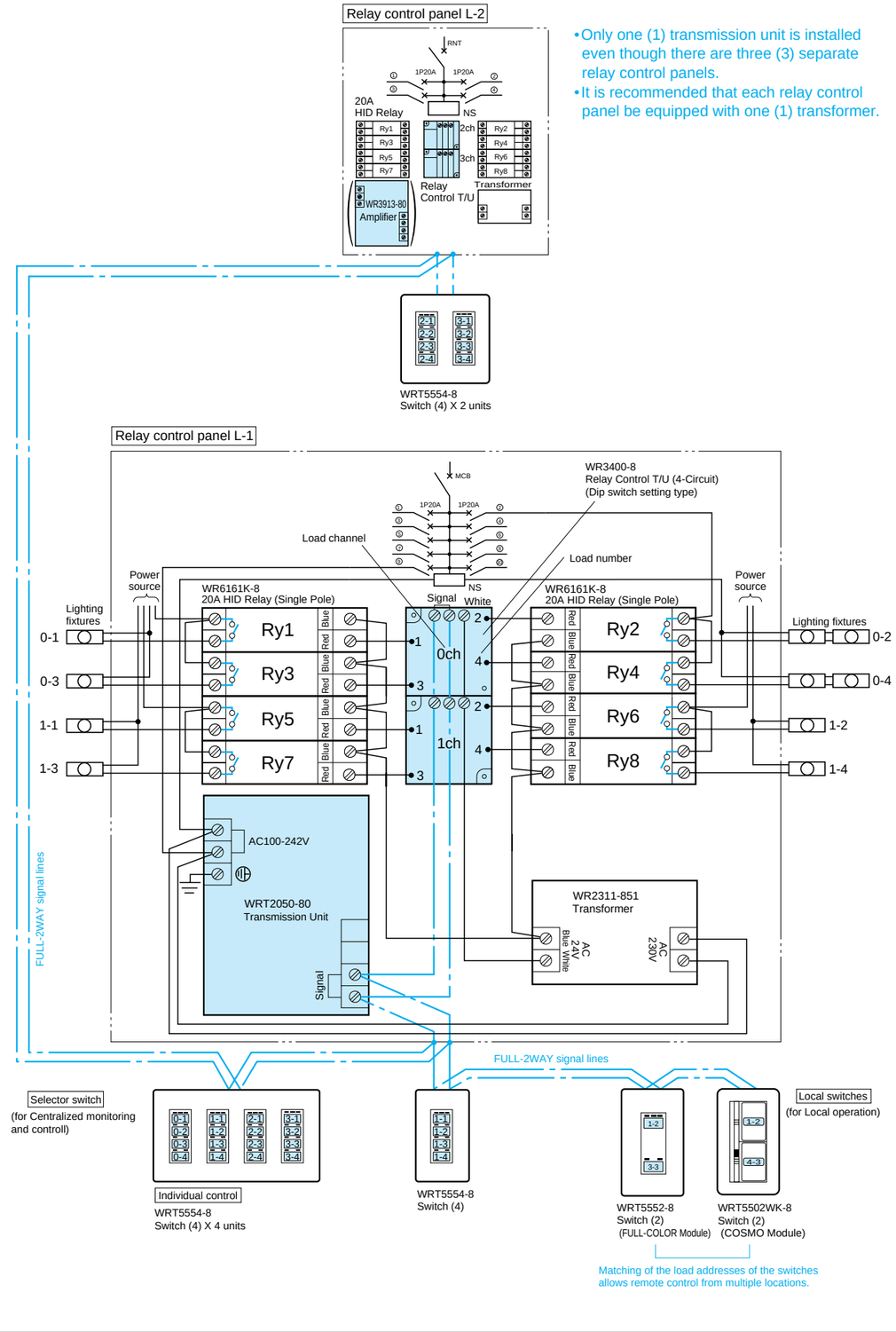
<Example>



Notes on design
- When using dimmer address setting switches, install an amplifier for approximately every 50 circuits. See page 22 for details.
- When using the WRT2050-80 Transmission Unit, use the WR3913-80 Amplifier, when using WRT2040-894, WRT3912-894 is applicable

■Basic wiring diagram for individual control

• For individual control of 16 circuits



- Only one (1) transmission unit is installed even though there are three (3) separate relay control panels.
- It is recommended that each relay control panel be equipped with one (1) transformer.

WRT9600-8
Wireless
Programming Unit

Circuit Design for Group Control

Group control: The basic circuit design is the same as the individual control. Up to 127 groups may be configured per system or per transmission unit

Simply add group switches and a program setting unit to individual control circuits.

- Group control setting can be performed by WRT9600-8. (Recommended for up to 50 circuits)

(Group control is achieved by setting group/pattern programs after wiring.)

Design Tips for Circuit Divisions

1 Panel configuration

The configuration is the same as individual control circuit. (For details, see page 15.)

2 Selector switch configuration: Install Selector switch with Program setting unit in the superintendent room, etc.

1. Install the same number of individual switches as the circuits.
2. For group control setting, add group switches and Program setting unit (WRT5850-8).

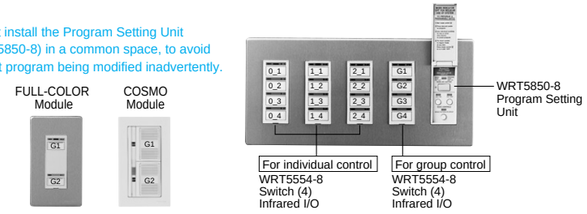
For individual control Switches (0ch-1,0ch-2, ···,63ch-3,63ch-4) — Install according to the number of load circuits or relays

+

For group control Switches (G1,···,G127) — Install according to the number of groups needed

WRT5850-8 Program Setting Unit — At least one unit required

- Do not install the Program Setting Unit (WRT5850-8) in a common space, to avoid the set program being modified inadvertently.



3 Local switches

Install switches for the required number of groups and for the number of multi-location control points.

- Make sure that the pattern address on the local switch matches that of the selector switch to enable control from multiple locations.

Address setting at local switch: Assign the same group address on the local switch to match that of the selector switch.

- Address and pattern settings at selector switch
- Address setting at local switch

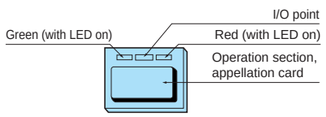
(1) Set the addresses of the individual and group control switches using the Wireless Programming Unit or the Wireless Address Setting Unit.
(For details, see page 43)

(2) Set the group control range.
■Using Selector Switches, or using Wireless Programming Unit.

(For details, see page 47)
(For details, see page 50)

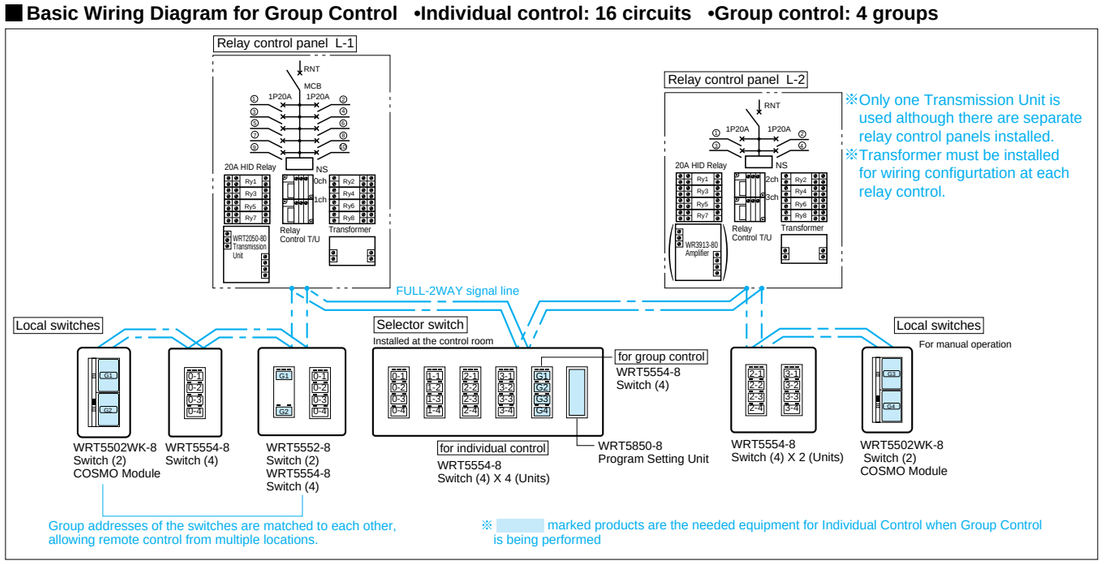
(3) Assign the same group address on the local switch to match that of the group control using Wireless programming unit or Wireless address setting unit.
(For details, see page 43)

■ LED indications for group switch



(1) The Red LED on a group switch lights when all individual switches programmed in the group are turned on.
(2) The Green LED on a group switch lights when all individual switches programmed in the group are turned off.
(3) Turning one individual switch in the group to ON does not change the Red LED state on the group switch.
(4) The load status shall not be monitored from central location by a group switch.

■ Basic Wiring Diagram for Group Control •Individual control: 16 circuits •Group control: 4 groups



- Any of the individual, group or pattern switches may be used to control a given load in an overlapping manner. Priority is given to the switch used most recently for remote lighting control.
- The load remains unchanged even when the same pattern switch is pushed again.

Circuit Design for Pattern Control

Pattern control: The basic circuit design is the same as the individual control.Up to 72 patterns may be configured per system or transmission unit

Simply add pattern switches and a program setting unit to the individual control circuits.

- Pattern control setting can be performed with the (WRT9600-8). (Recommended for up to 50 circuits.)

(Pattern control is achieved by setting pattern group programs after wiring.)

Design Tips for Circuit Divisions

1 Panel configuration

The configuration is the same as individual control circuit. (For details, see page 15.)

2 Selector switch configuration: Install Selector switch with Program Setting Unit in the superintendent room, etc.

1. Install the same number of individual switches as the circuits.
2. For pattern control setting, add pattern switches and Program Setting Unit (WRT5850-8).

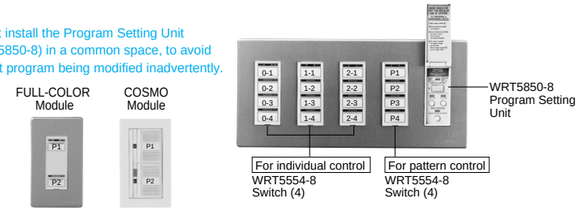
For individual control Switches (0ch-1,0ch-2, ···,63ch-3,63ch-4) — Install according to the number of load circuits or relays

+

For pattern control Switches (P1,···,P27) — Install according to the number of patterns needed

WRT5850-8 Program Setting Unit — At least one unit required

- Do not install the Program Setting Unit (WRT5850-8) in a common space, to avoid the set program being modified inadvertently.



3 Local switches

Install switches for the required number of groups and for the number of multi-location control points.

- Make sure that the pattern address on the local switch matches that of the selector switch to enable control from multiple locations.

Address setting at local switch: Assign the same pattern address on the local switch to match that of the selector switch.

- Address and pattern settings at selector switch
- Address setting at local switch

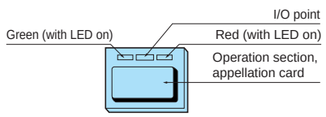
(1) Set the addresses of the individual and pattern control switches using the Wireless Programming Unit or the wireless Address Setting Unit.
(For details, see page 43)

(2) Set the pattern control range.
■Using selector switches, or Using Wireless programming unit

(For details, see page 47)
(For details, see page 50)

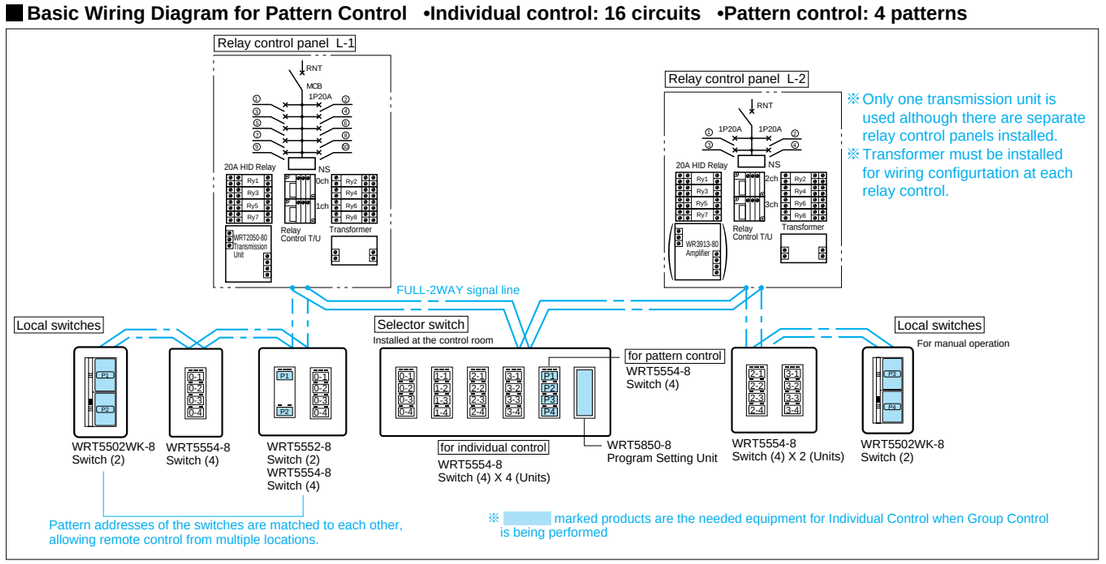
(3) Assign the same pattern address on the local switch to match that of the pattern control using Wireless Programming Unit or Wireless Address Setting Unit.
(For details, see page 43)

■ LED indications for group switch



(1) The Red LED on a pattern switch lights when the state of every individual switch in the pattern matches that of the programmed pattern.
If one individual circuit is turned on at a local switch, the LED on the pattern switch changes to green. Thus load status can be monitored from a central location via the pattern switch.
(2) The Green LED on a pattern switch lights when the state of any of the individual switches in the pattern does not match that of the programmed pattern.
The Red LED on a pattern switch lights when all of the lights are turned off. ("All-off" pattern)

■ Basic Wiring Diagram for Pattern Control •Individual control: 16 circuits •Pattern control: 4 patterns



Relay Selecting Chart by Load Capacity

Remote control relay selection

How to select the relay to be used

• Choose relays based on the capacity of the load.

HID and other large-capacity loads (20A max.)
Multiple loads per circuit
↓
20A HID Relay
+
Relay Control T/U | **Transformer**

or

Small-capacity loads (6A max.)
↓
6A Contact Output T/U

Note: Cannot be used with HID loads.

• Because the 6A Contact Output T/U (4-Circuit) does not require a transformer, relay control panels are compact and equipment costs are lower.

Deciding where to install relays

• Relays are usually installed inside the relay control panel.However, in the following cases, relays can be installed in scattered locations, such as on ceilings and inside lighting fixtures.
(1) When the EPS is small.
(2) When you want to keep the relay control panel compact.
(3) When you want to reduce lighting wiring coming from the relay control panel.

WR6161K-8/WR61613K-8 : Contact Output Specifications

Item	Condition		Performance
Electrical life	OUTPUT contact side : • Resistive load (pf=1) • Inductive load (pf>0.6) • Incandescent lamp load • Fluorescent lamp load with (conventional) ballast with high-pf (conventional) ballast with electronic ballast self-ballasted compact fluorescent lamp fixture • High Intensity Discharged (HID) lamp load AUXILIARY contact side : • Resistive load (pf=1) • Resistive load (pf=1)	20 A 300 V AC 20 A 300 V AC 20 A 250 V AC 20 A 250 V AC 20 A 250 V AC 15 A 250 V AC 15 A 250 V AC 20 A 300 V AC 1 A 125 V AC 0.5 A 250 V AC	30,000 cycles (60,000 operations)
Mechanical life	• Performance frequency : 20 cycles (40 operations)/min		60,000 cycles (120,000 operations)
Dielectric strength	• Between terminals of each OUTPUT (OFF condition) • Between live parts and non-live metal parts • Between terminals of OUTPUT and AUXILIARY		2,000 V AC for 1 min
	• Between terminals of OUTPUT and INPUT		4,000 V ACfor 1 min
	• Between terminals of INPUT and non-live metal parts • Between terminals of each AUXILIARY		600 V ACfor 1 min
Insulation resistance	• Between terminals of each OUTPUT (OFF condition) • Between live parts and non-live metal parts • Between terminals of OUTPUT and AUXILIARY • Between terminals of OUTPUT and INPUT • Between terminals of INPUT and non-live metal parts • Between terminals of each AUXILIARY		10 M Ω (500 V megger)
Temperature rise	• Main contacts		65℃max

※high-pf (power factor) : pf > 0.85

WR6166-8/WR61663-8 : Contact Output Specifications

Item	Condition		Performance
Electrical life	OUTPUT contact side : • Resistive load (pf=1) • Inductive load (pf>0.6) • Incandescent lamp load • Fluorescent lamp load with (conventional) ballast with high-pf (conventional) ballast with electronic ballast self-ballasted compact fluorescent lamp fixture • High Intensity Discharged (HID) lamp load AUXILIARY contact side : • Resistive load (pf=1) • Resistive load (pf=1)	20 A 300 V AC 20 A 300 V AC 20 A 250 V AC 20 A 250 V AC 20 A 250 V AC 15 A 250 V AC 15 A 250 V AC 20 A 300 V AC 1 A 125 V AC 0.5 A 250 V AC	30,000 cycles (60,000 operations)
Mechanical life	• Performance frequency : 20 cycles (40 operations)/min		60,000 cycles (120,000 operations)
Dielectric strength	• Between terminals of different pole OUTPUT • Between terminals of each OUTPUT (OFF condition) • Between live parts and non-live metal parts • Between terminals of OUTPUT and AUXILIARY • Between terminals of OUTPUT and INPUT		2,000 V AC for 1 min
	• Between terminals of INPUT and non-live metal parts • Between terminal of each AUXILIARY		600 V ACfor 1 min
Insulation resistance	• Between terminals of different pole OUTPUT • Between terminals of each OUTPUT (OFF condition) • Between live parts and non-live metal parts • Between terminals of OUTPUT and AUXILIARY • Between terminals of OUTPUT and INPUT • Between terminals of INPUT and non-live metal parts • Between terminals of each AUXILIARY		10 M Ω (500 V megger)
Temperature rise	• Main contacts		65℃max

※high-pf (power factor) : pf > 0.85

WR3416-8/WR3426-8/WR4104-8/WR4101-8/WRT4124-8: 6A Contact Output T/U Specifications

Item	Condition		Performance
Electrical life	• Resistive load (pf=1) • Inductive load (pf>0.6) • Incandescent lamp load • Fluorescent lamp load with (conventional) ballast with high-pf (conventional) ballast with electronic ballast self-ballasted compact fluorescent lamp fixture • High Intensity Discharged (HID) lamp load	6 A 300 V AC 6 A 300 V AC 6 A 250 V AC 6 A 250 V AC do not use 1 A 250 V AC do not use do not use	30,000 cycles (60,000 operations)
Dielectric strength	• Between terminals of different pole OUTPUT • Between live parts and non-live metal parts • Between terminals of OUTPUT and SIGNAL		2,000 V AC for 1 min
Insulation resistance	• Between terminals of different pole OUTPUT • Between live parts and non-live metal parts • Between terminals of OUTPUT and SIGNAL		10 M Ω (500 V megger)
Temperature rise	• Main contacts		65℃max

※high-pf (power factor) : pf > 0.85

WR6161K-84/WR61613K-84 : Contact Output Specifications

Item	Condition		Performance
<UL-rating> Electrical life	OUTPUT contact side : • General use • Tungsten • (Standard) Ballast • Moter starting , single phase • Moter starting , single phase AUXILIARY contact side : • General use	20 A 300 Vac 2400 W 120 Vac 20 A 300 Vac 1/2 HP 110-125 Vac 1-1/2 HP 220-277 Vac 1 A 125 Vac	30,000 cycles (60,000 operations)
	• Short circuit rating	14,000 A 277 Vac	—
<CSA-rating> Electrical life	OUTPUT contact side : • General use • Tungsten • (Standard) Ballast • Motor starting , single phase • Motor starting , single phase	20 A 347 Vac 2400 W 120 Vac 20 A 300 Vac 1/2 HP 110-125 Vac 1-1/2 HP 220-250 Vac	30,000 cycles (60,000 operations)
Mechanical life	• Performance frequency : 20 cycles (40 operations)/min		60,000 cycles (120,000 operations)
Dielectric strength	• Between terminals of each OUTPUT (OFF condition) • Between live parts and non-live metal parts • Between terminals of OUTPUT and AUXILIARY		1,694 V AC for 1 min
	• Between terminals of OUTPUT and INPUT		2,500 V AC for 1 min
	• Between terminals of INPUT and non-live metal parts • Between terminals of each AUXILIARY		600 V AC for 1 min
Insulation resistance	• Between terminals of each OUTPUT (OFF condition) • Between terminals of OUTPUT and INPUT		10 M Ω (500 V megger)
Temperature rise	• Main contacts		65℃max

WR6166-84/WR61663-84 : Contact Output Specifications

Item	Condition		Performance
<UL-rating> Electrical life	OUTPUT contact side : • General use • Tungsten • (Standard) Ballast • Moter Starting , single phase • Moter Starting , single phase AUXILIARY contact side : • General use	20 A 300 Vac 2400 W 120 Vac 20 A 300 Vac 1/2 HP 110-125 Vac 1-1/2 HP 220-277 Vac 1 A 125 Vac	30,000 cycles (60,000 operations)
	• Short circuit rating	5,000 A 277 Vac	—
<CSA-rating> Electrical life	OUTPUT contact side : • General use • Tungsten • (Standard) Ballast • Moter starting , single phase • Moter starting , single phase	20 A 347 Vac 2400 W 120 Vac 20 A 347 Vac 1/2 HP 110-125 Vac 1-1/2 HP 220-250 Vac	30,000 cycles (60,000 operations)
Mechanical life	• Performance frequency : 20 cycles (40 operations)/min		60,000 cycles (120,000 operations)
Dielectric strength	• Between terminals of different pole OUTPUT • Between terminals of each OUTPUT (OFF condition) • Between live parts and non-live metal parts • Between terminals of OUTPUT and AUXILIARY		1,694 V AC for 1 min
	• Between terminals of OUTPUT and INPUT		2,500 V AC for 1 min
	• Between terminals of INPUT and non-live metal parts • Between terminals of each AUXILIARY		600 V AC for 1 min
Insulation resistance	• Between terminals of each OUTPUT (OFF condition) • Between terminals of OUTPUT and INPUT		10 M Ω (500 V megger)
Temperature rise	• Main contacts		65℃max

WR6172-84/WR61723-84 : Contact Output Specifications

Item	Condition		Performance
<UL-rating> Electrical life	OUTPUT contact side : • General use • Tungsten • (Standard) Ballast • Moter starting , single phase • Moter starting , single phase AUXILIARY contact side : • General use	20 A 480 Vac 2400 W 120 Vac 20 A 480 Vac 1/2 HP 110-125 Vac 1-1/2 HP 220-277 Vac 1 A 125 Vac	30,000 cycles (60,000 operations)
	• Short circuit rating	5,000 A 277 Vac	—
<CSA-rating> Electrical life	OUTPUT contact side : • General use • Tungsten • (Standard) Ballast • Moter starting , single phase • Moter starting , single phase	20 A 347 Vac 2400 W 120 Vac 20 A 347 Vac 1/2 HP 110-125 Vac 1-1/2 HP 220-250 Vac	30,000 cycles (60,000 operations)
Mechanical life	• Performance frequency : 20 cycles (40 operations)/min		60,000 cycles (120,000 operations)
Dielectric strength	• Between terminals of different pole OUTPUT • Between terminals of each OUTPUT (OFF condition) • Between live parts and non-live metal parts • Between terminals of OUTPUT and AUXILIARY		1,960 V AC for 1 min
	• Between terminals of OUTPUT and INPUT		2,500 V AC for 1 min
	• Between terminals of INPUT and non-live metal parts • Between terminals of each AUXILIARY		600 V AC for 1 min
Insulation resistance	• Between terminals of each OUTPUT (OFF condition) • Between terminals of OUTPUT and INPUT		10 M Ω (500 V megger)
Temperature rise	• Main contacts		65℃max

WR3416-84/WR3426-84/WRT4124-84: 6A Contact Output T/U <UL/c-UL marking> Specifications

Item	Condition		Performance
<UL-rating> <CSA-rating> Electrical life	• General use • Tungsten • (Standard) Ballast • Motor starting , single phase • Motor starting , single phase	6 A 300 Vac 6 A 120 Vac 6 A 300 Vac 1/4 HP 125 Vac 1/4 HP 250 Vac	30,000 cycles (60,000 operations)
Dielectric strength	• Between terminals of different pole OUTPUT • Between live parts and non-live metal parts • Between terminals of OUTPUT and SIGNAL		1,600V AC for 1 min
Insulation resistance	• Between live parts and non-live metal parts		10 M Ω (500 V megger)
Temperature rise	• Main contacts		65℃max

※high-pf (power factor) : pf > 0.85

Not applicable to U.S.A market. See page 38 for selecting appropriate items.

Caution:
The FULL-2WAY remote lighting control system cannot be used in combination with other systems.
Do not use remote control relays or remote control transmission systems from other manufactures.

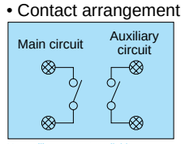
Load capacity	20A max.	6A max. (not for use with HID loads)
Configuration	Relay Control T/U + 20A HID Relay + Transformer	6A Contact Output T/U (no transformer needed)
Installation	Relay control panel	Wall Mount

Recommended relays by number of poles (Single pole relays)

JIS approved dimensions (1)

WR6161K-8

• Contact arrangement

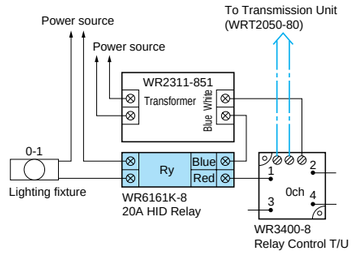


No auxiliary contact available for WR6161K-8

• WR6161K-8 / WR6161K-84(UL-Approved)
• WR61613K-8 / WR61613K-84 (UL Approved)

20A HID Relay (Single Pole)
20A HID Relay (Single Pole) (with Auxiliary Contact)

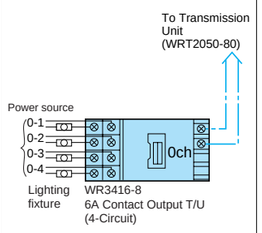
Wiring Diagram



WR3416-8

• WR3416-8/WR3416-84(UL-Approval) 6A Contact Output T/U (4-Circuit)
• WR3426-8/WR3426-84(UL-Approval) 6A Contact Output T/U (1-Circuit)

Wiring Diagram



WRT4104-8 WRT4101-8

• WR4104-8 6A Contact Output T/U (Single Pole) (Wall Mount) (4-Circuit) (Infrared I/O)
• WR4101-8 6A Contact Output T/U (Single Pole) (Wall Mount) (1-Circuit) (Infrared I/O)

WRT9600-8
Wireless Programming Unit

WRT9500K-8
(Wireless Address Setting Unit can be used for address setting)

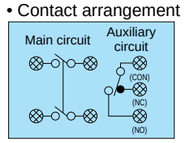
Needed for the address setting for the 6A Contact Output T/U.

Recommended relays by number of poles (Double-pole relays)

20A HID Relay with JIS approved dimensions (1) designed for a more compact relay control panel

WR6166-8

• Contact arrangement

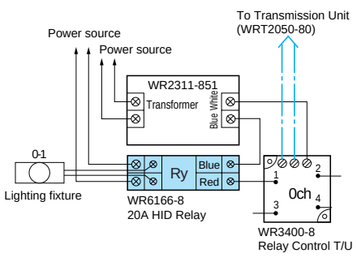


No auxiliary contact available for WR6166-8

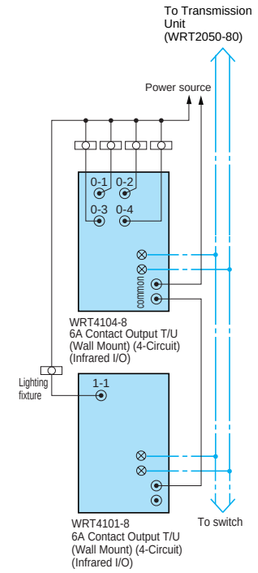
• WR6166-8 / WR6166-84(UL Approved)
• WR61663-8 / WR61663-84 (UL Approved)
• WR6172-84 (UL Approved) / WR61723-84 (UL Approved)

20A HID Relay (Double Pole) (JIS approved dimensions (1))
20A HID Relay (Double Pole) (JIS approved dimensions (1)) (with Auxiliary Contact)

Wiring Diagram



Wiring Diagram



Circuit Design for 6A Contact Output T/U (Dip Switch)

WR3416-8/WR3416-84
6A Contact Output T/U
(Single Pole) (4-Circuit)

For Small-capacity Load (6A max.) per Circuit

Note: Do NOT use with HID loads.
Use 20A HID Relay.

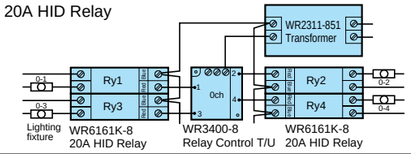
■Features

6A Contact Output Terminal Units do not require a transformer, thus allowing more compact relay control panels.

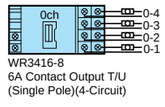
Mounting space can be reduced to half.

- The use of 6A Contact Output T/Us does not require a transformer. T/U relay itself is one unit, thus reduction of space and cost can be achieved.

• 20A HID Relay



• 6A Contact Output T/U

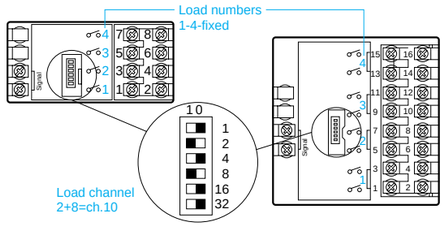


WR3416-8
6A Contact Output T/U
(Single Pole)(4-Circuit)

Address Setting for 6A Contact Output T/U (4-Circuit)

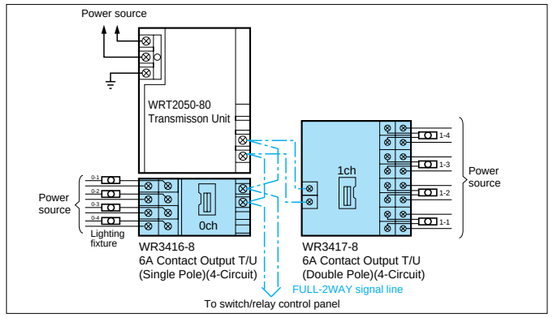
Set addresses using the dip switches on the T/U. (Set address may be visually confirmed.) (For address settings, see page 41.)

• 6A Contact Output T/U (Single Pole) (WR3416-8)



• 6A Contact Output T/U (Double Pole) (WR3417-8)

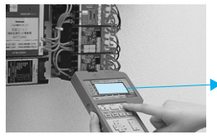
■Wiring Diagram



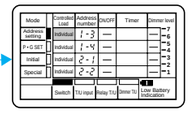
■Circuit Design for Relay Control T/U (Infrared I/O) and 6A Contact Output T/U (Infrared I/O)

• Features
Different load channel can be set to a Single Relay Control T/U (or a Single 6A Contact Output T/U)

For the address setting method, see page 46.



WRT9600-8 LCD Panel



WRT4124-8/
WRT4124-84
6A Contact Output T/U
(Single Pole) (4-Circuit)(Infrared I/O)

WRT4014-8
Relay Control T/U
(4-Circuit) (Infrared I/O)

Circuit Design for 6A Contact Output T/U (Wall Mount) (Infrared I/O)

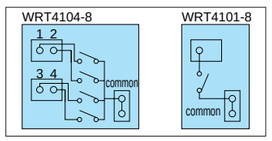
WRT4104-8
6A Contact Output T/U
(Wall Mount)
(Single Pole)
(4-Circuit)
(Infrared I/O)
(White)

WRT4101-8
6A Contact Output T/U
(Wall Mount)
(Single Pole)
(1-Circuit)
(Infrared I/O)
(White)

■Features

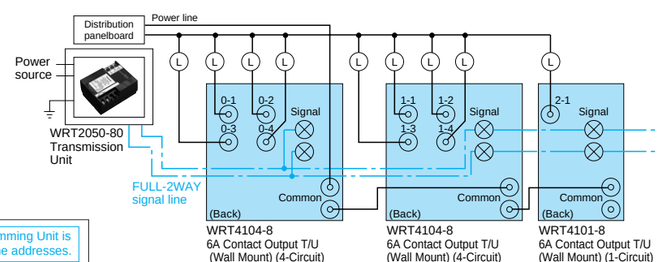
(1) Allows a space-saving relay control panel and direct jumper wiring of power supply from circuit breakers.
(2) Infrared I/O provides address settting in different load channels.

For address settings, see page 46.



Use applicable COSMO plates.

■Wiring Diagram



Wireless Programming Unit is required to set the addresses.

WRT9600-8
Wireless Programming Unit
(WRT9500K-8 is also available for address setting)

Amplifier

(1) Calculation method for FULL-2WAY signal current

※It is recommended, when using infrared I/O Switches, to install one Amplifier per approx 50 relay circuits.

Ex. 50 circuits		(signal current consumption)
Relay control T/U	WR3400-8	1.2mA X 13
Selector switch section		
Individual switches	WRT5554-8	12mA X 13
Pattern switch	WRT5554-8	12mA X 1
Program setting unit	WRT5850-8	5mA X 1
Local switches	WRT5551-8	6mA X 50
	Total signal current consumption	489mA

- Output signal current from a Transmission Unit is 500mA. Be sure to use an Amplifier when the total signal current of components, such as Switches and Relay Control T/Us, exceeds 500mA.
(For signal current of Switches and Terminal Units, see their respective ratings in the "Products" section.)
- A 500mA signal current is supplied per Amplifier.
- A signal current of 3000mA can be supplied when the maximum of five Amplifiers are installed in a system.

Example Under Wiring Method (1)

- Transmission Unit ~Amplifier Ⓐ1 +Transmission Unit ~Amplifier Ⓑ1 <500mA
- Amplifier Ⓐ1 ~Amplifier Ⓐ2 <500mA
- Transmission Unit ~Amplifier Ⓐ5 <3000mA

(2) Calculation method for FULL-2WAY signal wire length

■Electric wire diameter and wiring length

Type of electric wire	Maximum wiring length (Max. distance from a Transmission Unit to components, e.g. switch or T/U)
ϕ1.6– ϕ1.2 (2.0mm²–1.25mm²)	500m
ϕ1.0 (1.0mm²)	300m
ϕ0.9 (0.75mm²)	250m
ϕ0.65 (0.5mm²)	100m

The total wiring length should be a maximum of three times of the length of the longest wire.

※It is recommended that communication cable (CPEV) be used for signal lines to differentiate them from power lines and prevent their miswiring, though general-purpose electric wires can be used for signal line.

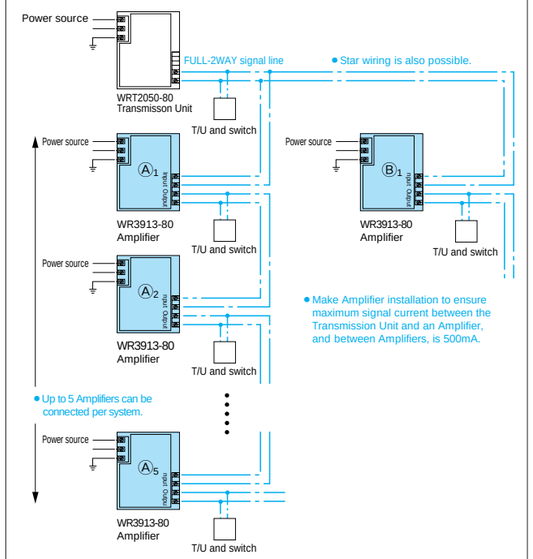
■Signal wires: ϕ1.2mm diameter, 1.25mm² or more
- Maximum wiring length: Wiring length of Ⓐ + Ⓑ + Ⓒ or Ⓐ + Ⓑ + Ⓓ + Ⓔ is 500m max.
- Total wiring length: Total wiring length of Ⓐ + Ⓑ + Ⓒ + Ⓓ + Ⓔ is 1,500m max.

■Installation of an Amplifier can extend 500m for the max wiring length and 1,500m total length.

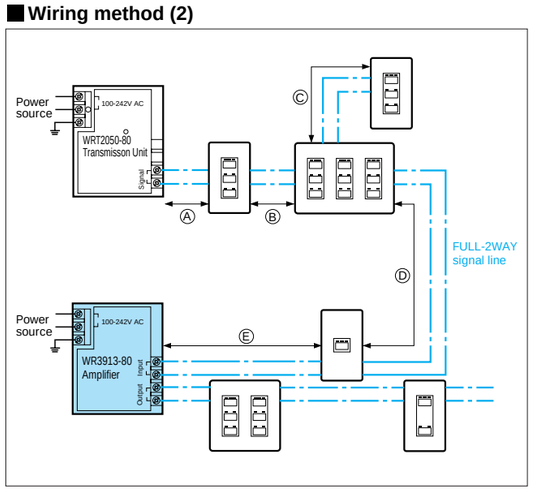
■When a maximum number of five Amplifiers are used in a system, wiring can be extended to 3,000m for the max wiring length and 9,000m total.

WR3913-80(WR3912-894)
Amplifier

■Wiring method (2)



■Wiring method (2)



FULL-2WAY System Components

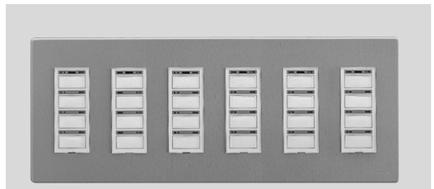
Distribution Panel Board
and Relay Control Panel

Central Control and
Programming Unit

WRT9103K-89

RS

Selector Switch



R

Passive Infrared
Ceiling Unit

WRT3364K-8

S
R

Daylight Sensor
Ceiling Unit

WRT3657-8

S
R

Card Operation Switch

WR3891-8

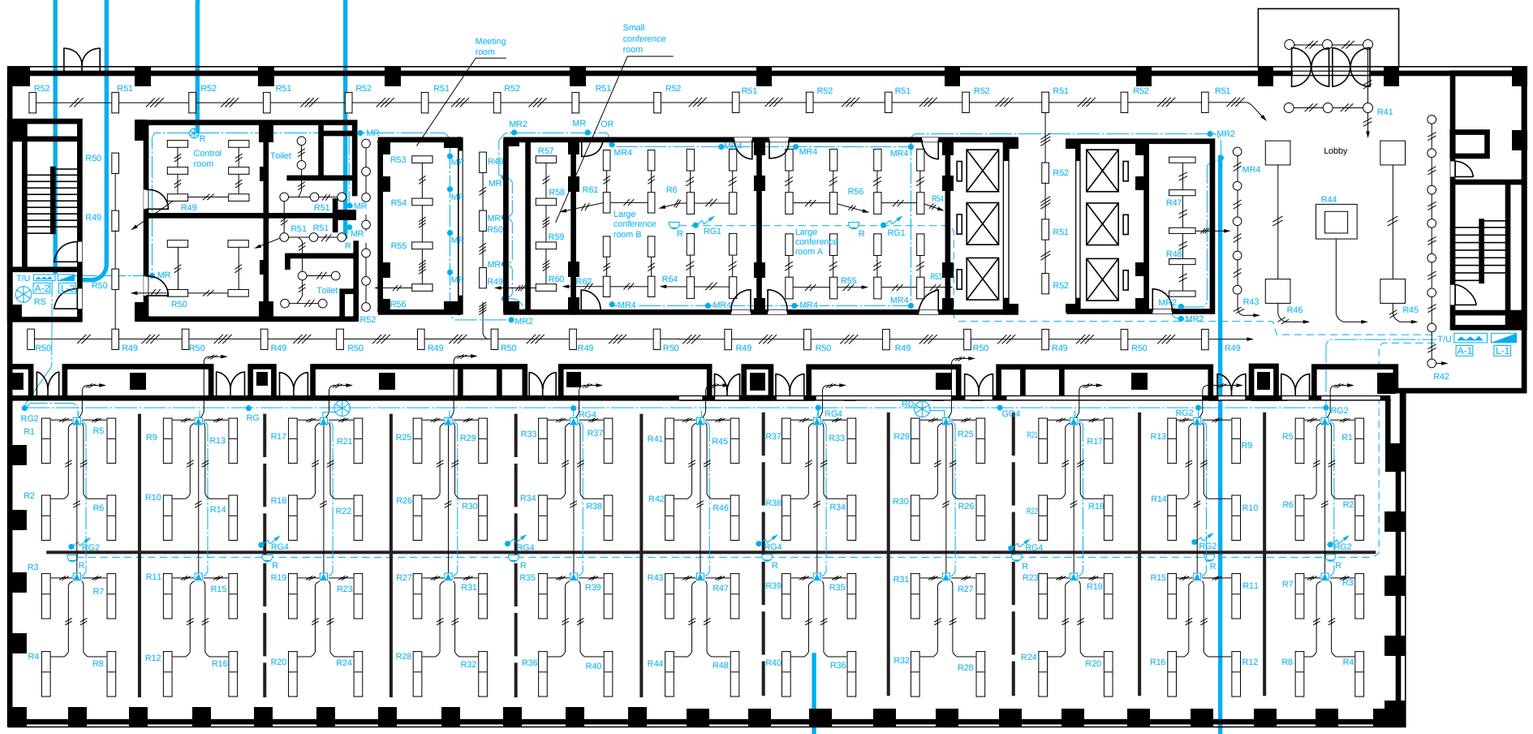
RC

Wireless Address Setting Unit

WRT9500K-8

Wireless Programming Unit

WRT9600-8



Inside Relay Control Panel

Transmisstion Unit

WRT2050-80(WRT2040-894)

C P U

Relay Control T/U

WR3400-8

Ry–T/U 4

Transformer

WR2311-851

R–Tr

20A HID Relay

WR6161K-8

R–Ry

Amplifier

WR3913-80(WR3912-894)

AMP

■Legend:

FULL-2WAY
Signal line (2 wires)

Wireless
Signal line (2 wires)

Power line

Contact Input T/U

WRT3224-8

Input T/U 4

Dimmer Control T/U
(500W)(230V)

WRT4345-82

LC
500

Timer Setting Unit

WRT3540K-8

TM R

6A Contact Output T/U

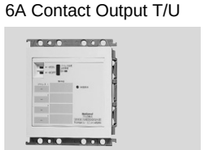
WR3416-8/WR3416-84

Switches

WRT5551-8 WRT5552-8 WRT5553-8 WRT5554-8 WRT5771-8

R1 R2 R3 R4 MR

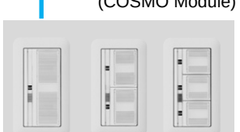
6A Contact Output T/U



WRT4104-8

4

Switches
(COSMO Module)



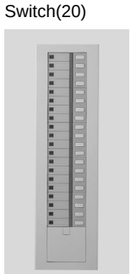
WRT5501WK-8 WRT5502WK-8 WRT5503WK-8

R1 R2 R3

WRT5504WK-8 WRT5731WK-8

R4 MR

Master
Switch(20)



WRT6120WK-8

Also
Available
44 Circuit
(WRT6144WK-8)
68 Circuit
(WRT6168WK-8)

R20

Products

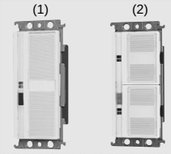
Notice: Our remote control system products are not compatible with those of other manufacturers and should not be used in combination with any such products. Always use Matsushita Electric Co. Ltd. remote control relays, breakers and transformers.
Always use WRT**** series Transmission Unit when using infrared I/O address type components.

Switches

• Signal current: Rated input signal current (Name displayed on units)

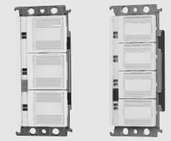
Switches (COSMO Module) ··· For applicable plates, see page 35.

(1) (2)



WRT5501WK-8 WRT5502WK-8

(3) (4)



WRT5503WK-8 WRT5504WK-8

WRT5731WK-8

Model No.	Description	Rating	Symbol in diagram	Remarks
WRT5501WK-8	Switch (1) (Infrared I/O) (COSMO Module) (White)	Signal current 6 mA	●R	Applicable to COSMO Module 1-Gang switch plates (Non volatile memory used)
WRT5502WK-8	Switch (2) (Infrared I/O) (COSMO Module) (White)	Signal current 8 mA	●R2	
WRT5503WK-8	Switch (3) (Infrared I/O) (COSMO Module) (White)	Signal current 10 mA	●R3	
WRT5504WK-8	Switch (4) (Infrared I/O) (COSMO Module) (White)	Signal current 12 mA	●R4	
WRT5731WK-8	Dimmer Switch (Infrared I/O Type) (COSMO Module) (White)	Signal current 10 mA	●MR	Applicable to COSMO Module switch plates (1-Gang) (Non-volatile memory used)

Switches (FULL-COLOR Module) ··· For applicable plates, see page 36.

(1) (2)

WRT5551-8

WRT5552-8

(3) (4)

WRT5553-8

WRT5554-8

WRT5771-8

Model No.	Description	Rating	Symbol in diagram	Remarks
WRT5551-8	Switch (1) (Infrared I/O) (FULL-COLOR Module)	Signal current 6 mA	●R	Applicable to FULL-COLOR plates(1) (Non-volatile memory used)
WRT5552-8	Switch (2) (Infrared I/O) (FULL-COLOR Module)	Signal current 8 mA	●R2	Applicable to FULL-COLOR plates (3) (Non-volatile memory used)
WRT5553-8	Switch (3) (Infrared I/O) (FULL-COLOR Module)	Signal current 10 mA	●R3	
WRT5554-8	Switch (4) (Infrared I/O) (FULL-COLOR Module)	Signal current 12 mA	●R4	
WRT5771-8	Dimmer Switch (Infrared I/O Type) (FULL-COLOR Module)	Signal current 10 mA	●MR	

Switches (GLACIER Series) ··· For details of plates to use, see page 35.

(1) (2)

WRV5601S1-8

WRV5602S1-8

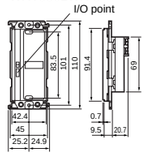
(4)

WRV5604S1-8

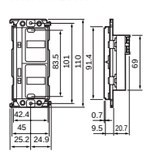
Model No.	Description	Rating	Symbol in diagram	Remarks
WRV5601S1-8	Switch (1) (Infrared I/O) (GLACIER Series) (Silver Gray)	Signal current: 6 mA	●R	Applicable to GLACIER Series Plates (1-Gang) (Non-volatile memory used) Appellation card cannot be mounted.
WRV5602S1-8	Switch (2) (Infrared I/O) (GLACIER Series) (Silver Gray)	Signal current: 8 mA	●R2	
WRV5603S1-8	Switch (3) (Infrared I/O) (GLACIER Series) (Silver Gray)	Signal current: 10 mA	●R3	
WRV5604S1-8	Switch (4) (Infrared I/O) (GLACIER Series) (Silver Gray)	Signal current: 12 mA	●R4	
WRV5831S1-8	Dimmer Switch (Infrared I/O) (GLACIER Series) (Silver Gray)	Signal current: 10 mA Dimmer address used	●MR	

•Dimensions (units: mm)

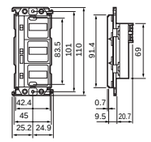
WRT5501WK-8



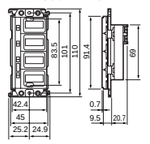
WRT5502WK-8



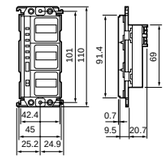
WRT5503WK-8



WRT5504WK-8

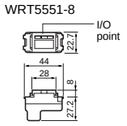


WRT5731WK-8

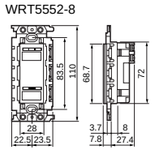


COSMO Module appellation card size (solid color)

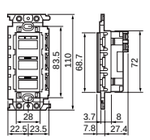
WRT5551-8



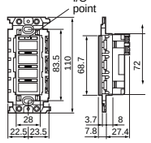
WRT5552-8



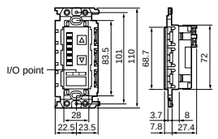
WRT5553-8



WRT5554-8

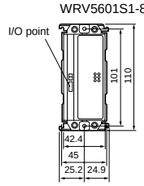


WRT5771-8

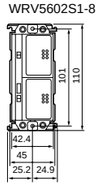


FULL-COLOR appellation card size (solid color)

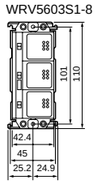
WRV5601S1-8



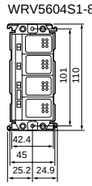
WRV5602S1-8



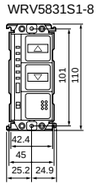
WRV5603S1-8



WRV5604S1-8



WRV5831S1-8



Switches, Setting Devices

• Signal current: Rated input signal current (Name displayed on units)

Master Switches (Surface Mount)

(20 circuits)

WRT6120WK-8

(44 circuits)

WRT6144WK-8

(24 circuits)

WRT6024WK-8

Model No.	Description	Rating	Symbol in diagram	Remarks
WRT6120WK-8	Master Switch (20) (Infrared I/O) (with Program Setting Unit)	Signal current 65 mA	R20 RS	Surface-mount type (Non-volatile memory used)
WRT6144WK-8	Master Switch (44) (Infrared I/O) (with Program Setting Unit)	Signal current 137 mA	R44 RS	
WRT6168WK-8	Master Switch (68) (Infrared I/O) (with Program Setting Unit)	Signal current 209 mA	R68 RS	
WRT6024WK-8	Master Switch (24) (Infrared I/O)	Signal current 72 mA	R24	
WRT6048WK-8	Master Switch (48) (Infrared I/O)	Signal current 144 mA	R48	
WRT6072WK-8	Master Switch (72) (Infrared I/O)	Signal current 216 mA	R72	

Program Setting Unit··· For setting details, please see pages 47 & 48

WRT5850-8

Model No.	Description	Rating	Symbol in diagram	Remarks
WRT5850-8	Program Setting Unit (FULL-COLOR Module)	Signal current 5 mA	●RS	Use Transmission Unit WRT2050-80 serise Applicable to FULL-COLOR plates (3)

This device should be installed in a location where it will not be unnecessarily tampered with

Wireless Programming Unit ··· For details, see page 43.

WRT9600-8

Model No.	Description	Rating	Symbol in diagram	Remarks
WRT9600-8	Wireless Programming Unit (With Address Setting Function)	Rated Voltage 6V DC (4 X AA size batteries) Signal current 50 mA	—	Batteries not supplied Battery service life is approximately 500 operations

Wireless Address Seting Unit ··· For details, see page 44.

WRT9500K-8

Model No.	Description	Rating	Symbol in diagram	Remarks
WRT9500K-8	Wireless Address Setting Unit	Rated voltage 6V DC (4 X AA size batteries)	—	Batteries not supplied Battery service life is approximately 500 operations

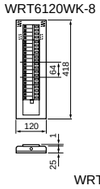
Central Control and Programming Unit

WRT9103K-89

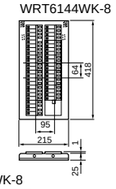
Model No.	Description	Rating	Symbol in diagram	Remarks
WRT9103K-89	Central Control and Programming Unit (24V AC)	Rated Voltage 24V AC Rated current consumption 600 mA Signal current 15 mA	RS	Applicable for a flush-mount box ⓂWR7002 (2 row/6 gang) For details, see page 61.

•Dimensions (units: mm)

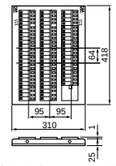
WRT6120WK-8



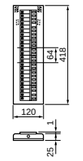
WRT6144WK-8



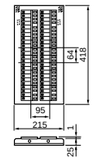
WRT6168WK-8



WRT6024WK-8



WRT6048WK-8



WRT6072WK-8

WRT5850-8

WRT9600-8

WRT9500K-8

WRT5501WK-8

WRT5502WK-8

WRT9103K-89

Mounting hole dimensions

Transmission Unit, Amplifire, Transformer

• Signal current: Rated input signal current (Name displayed on units)

Transmission Unit ··· For details, see page 5.

	Model No.	Description	Rating	Symbol in diagram	Remarks
 WRT2050-80 One unit per system is required as a CPU.	WRT2050-80 Not for USA	Transmission Unit (Panel Use) (100~242V AC)	Rated voltage: 100~242V AC Power consumption : 30W Signal current:500mA	CPU W	JIS-approved dimensions (5-Unit) (with power failure warranty) (Flash memory used;
 WRT2040-894	WRT2040-894	Transmission Unit TO BE REPLACED WITH WRT2050-894 Soon in 2007	Rated Input Voltage 24V AC Rated Frequency 50/60Hz Rated Power Consumption 30W Rated Power Consumption 5W	CPU W	

Amplifier

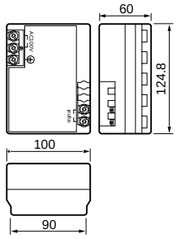
	Model No.	Description	Rating	Symbol in diagram	Remarks
 WR3913-80 Use an Amplifier when current consumption exceeds 500mA, or when signal wire length exceeds 500 m.	WR3913-80 Not for USA	Amplifier (Panel Use) (100~242V AC)	Rated voltage: 100~242V AC Power consumption : 25W Signal current:15mA Signal output current : 500mA	AMP W	JIS-approved dimensions (5-Unit)
 WR3912-894	WR3912-894	Amplifier	Rated voltage 24V AC Power consumption 25W Signal current ; 15mA Signal output current 500mA	AMP W	JIS-approved dimensions (5-Unit)

Transformer No applicable model to UL are available

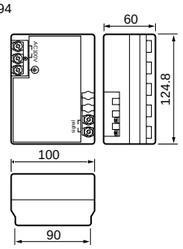
	Model No.	Description	Rating	Symbol in diagram	Remarks
 WR2301-811	WR2301-811 Not for USA	Transformer (Panel Use) (115V AC)	Primary side 115V AC, Secondary side 24V AC, 1.5 A, 36 VA	R-Tr	JIS-approved dimensions (2)
	WR2311-851 Not for USA	Transformer (Panel Use) (220V AC) (Output 24V Type)	Primary side 220V AC, Secondary side 22V AC, 1.5 A, 33 VA	R-Tr	JIS-approved dimensions (2)

•Dimensions (units: mm)

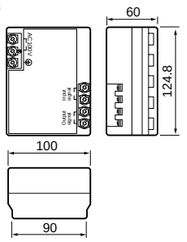
WRT2050-80



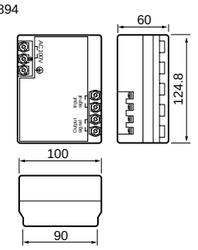
WRT2040-894



WR3913-80



WR3912-894



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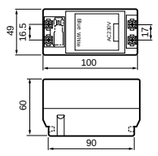
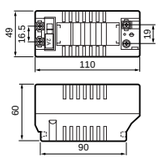


WR2311-851



Products

Not applicable to U.S.A market. See page 38 for selecting appropriate items.

Relay Control T/Us

• Signal current: Rated input signal current (Name displayed on units)

Relay Control T/Us (Panel Use)(DIP Switch)

	Model No.	Description	Rating	Symbol in diagram	Remarks
Lead wire type  WR3400-8	WR3400-8	Relay Control T/U (4-Circuit)	Signal current 1.2 mA	Ry-T/U 4	Includes signal line jumper For details, see page 15.
Terminal type  WR3440-8	WR3440-8	Relay Control T/U (4-Circuit)	Signal current 1.2 mA	Ry-T/U 4	JIS-approved dimensions (1) Includes signal line jumper
 WR3430-8	WR3430-8	Relay Control T/U (1-Circuit)	Signal current 1.5 mA	Ry-T/U	JIS-approved dimensions (1)

Relay Control T/Us (Panel Use)(Infrared I/O) ··· For details, see page 21.

	Model No.	Description	Rating	Symbol in diagram	Remarks
 WRT4014-8	WRT4014-8	Relay Control T/U (4-Circuit) (Infrared I/O) (Panel Use)	Signal current 2.3 mA	Ry-T/U 4	JIS-approved dimensions (1) Includes signal line jumper (Non-volatile memory used)

Wireless Control ··· For details, see page 56.

Wireless signal: 24V DC

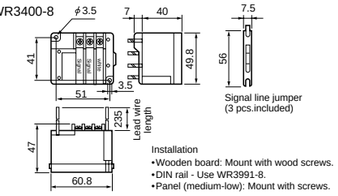
	Model No.	Description	Rating	Symbol in diagram	Remarks
Wireless Receivers  WRT1320-8	WRT1320-8	Wireless Receiver (Ceiling and Flush Mount)	Signal current 15mA	R	Operating ambient illumination not exceeding 5000Lx
 WRT1514K-8 (Battery Type)	WRT1511K-8	Battery Type Wireless Switch (1) (Infrared I/O)	Rated voltage DC3V (2 X AAA batteries in use)	R	Batteries not included Battery service life about one year (10 operations/day) Non-volatile memory used
	WRT1514K-8	Battery Type Wireless Switch (4) (Infrared I/O)		R4	
	WRT1561K-8	Battery Type Wireless Dimmer Switch (Infrared I/O)	DC3V (2 X AAA batterries in use)		

Master Wireless Control

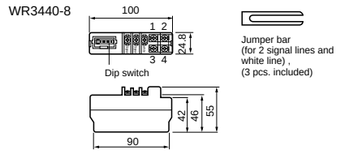
	Model No.	Description	Rating	Symbol in diagram	Remarks
 WRT13906-8	WRT13906-8	Master Wireless Switch Receiver (Infrared I/O) (Ceiling and Flush Mount)	20mA ± 24V		Operating ambient illumination not exceeding 5000Lx
 WRT15919-8 (Battery Type)	WRT15919-8	Master Wireless Switch	DC3V (2 X AAA batterries in use)		

•Dimensions (units: mm)

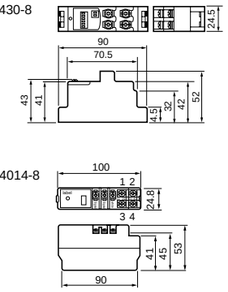
WR3400-8



WR3440-8

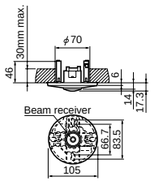


WR3430-8

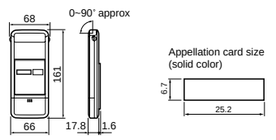


WRT4014-8

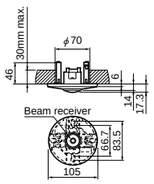
WRT1320-8



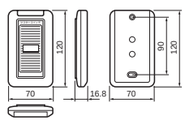
WRT1511K-8
WRT1514K-8



WRT13906-8



WRT15919-8



Products

20A HID Relays, Contact Output T/Us

• Signal current: Rated input signal current (Name displayed on units)

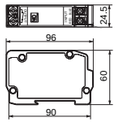
20A HID Relays

	Model No.	Description	Rating	Symbol in diagram	Remarks
(Single pole)  WR6161K-8	WR6161K-8 Not for USA	20A HID Relay (Single Pole) (Panel Use)	Output side: 20 A 300V AC Input side: 0.35 A 24V AC	▲ R-Ry	JIS-approved dimensions (1)
 WR6161K-84	WR6161K-84 UL	20A HID Relay (Single Pole)(Panel Use)	Output Contact 20A 277V/300V ac Input 350mA 24V dc reversible polarity	▲ R-Ry	JIS-approved dimensions (1)
	WR61613K-8 Not for USA	DIN Type 20A HID Relay (Single Pole) (Panel Use)	Output side: 20 A 300V AC Input side: 0.35 A 24V AC Auxiliary contact side: 1A 125V AC	▲ R-Ry	JIS-approved dimensions (1)
	WR61613K-84 UL	DIN Type 20A HID Relay (Single Pole) (Panel Use)	Output Contact 20A 277V/300V ac Input 350mA 24V dc reversible polarity Auxiliary Contact 1A 125V ac	▲ R-Ry	JIS-approved dimensions (1)
(Double pole)  WR6166-8	WR6166-8 Not for USA	20A HID Relay (Double Pole) (JIS-Approved Dimensions (1), Panel Use)	Output side: 20 A 300V AC Input side: 0.35 A 24V AC	▲ D R-Ry D	JIS-approved dimensions (1)
 WR6166-84	WR6166-84 UL	20A HID Relay (Double Pole)(Panel Use)	Output Contacts 20A 277V/347V ac Input 350mA 24V dc reversible polarity	▲ D R-Ry D	JIS-approved dimensions (1)
	WR61663-8 Not for USA	DIN Type 20A HID Relay (Double Pole) (Panel Use)	Output side: 300V AC, 20 A Input side: 24V AC, 0.35 A Auxiliary contact side: 125V AC, 1 A	▲ D R-Ry D	JIS-approved dimensions (1)
	WR61663-84 UL	DIN Type 20A HID Relay (Double Pole) (Panel Use)	Output Contacts 20A 277V/347V ac Input 350mA 24V dc reversible polarity Auxiliary Contact 1A 125V ac	▲ D R-Ry D	JIS-approved dimensions (1)
	WR6172-84 UL	480V 20A HID Relay (Double Pole) (Panel Use)	Output Contacts 20A 347V/480V ac Input 350mA 24V dc reversible polarity	▲ D R-Ry D	JIS-approved dimensions (2)
	WR61723-84 UL	480V DIN Type 20A HID Relay (Double Pole) (Panel Use)	Output Contacts 20A 347V/480V ac Input 350mA 24V dc reversible polarity Auxiliary Contact 1A 125V ac	▲ D R-Ry D	JIS-approved dimensions (2)

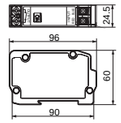
JIS-approved dimensions (1)

•Dimensions (units: mm)

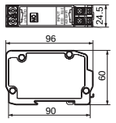
WR6161K-8



WR6161K-84



WR61613K-8



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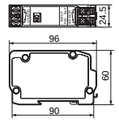
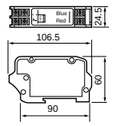
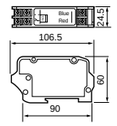


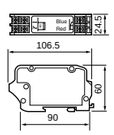
WR6166-8



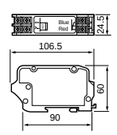
WR6166-84



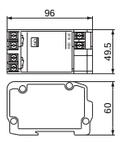
WR61663-8



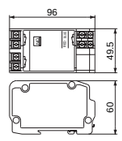
WR61663-84



WR6172-84



WR61723-84



UL Approved by UL. Not applicable to U.S.A market. See page 38 for selecting appropriate items.

Note:
6A Contact Output T/Us cannot be used for HID loads. Use 20A HID Remote Control Relay.

Contact Output T/Us

• Signal current: Rated input signal current (Name displayed on units)

6A Contact Output T/Us(Panel Use)(DIP switch) ··· See page 21 for details.

	Model No.	Description	Rating	Symbol in diagram	Remarks
(Single pole)  WR3416-8	WR3416-8 Not for USA	6A Contact Output T/U (Single Pole) (4-Circuit) (Panel Use)	Signal current 1.2 mA Output side: 6A 300V AC	▲4 T/U-6A4	JIS approved dimensions (2) Includes Load jumper
 WR3416-84	WR3416-84 UL	6A Contact Output T/U (4-Circuit) (Panel Use)	Signal current 1.2 mA Output side: 6A 300V AC	▲4 T/U-6A4	JIS approved dimensions (2) Includes Load jumper
 WR3426-8	WR3426-8 Not for USA	6A Contact Output T/U (Single Pole) (1-Circuit) (Panel Use)	Signal current 1.5 mA Output side: 6A 300V AC	▲ T/U-6A	JIS approved dimensions (1)
 WR3426-84	WR3426-84 UL	6A Contact Output T/U (1-Circuit) (Panel Use)	Signal current 1.5 mA Output side: 6A 300V AC	▲ T/U-6A	JIS approved dimensions (1)

6A Contact Output T/Us(Panel Use)(Infrared I/O) ··· See page 21 for details.

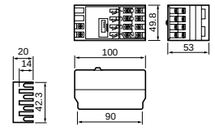
 WRT4124-8	WRT4124-8 Not for USA	6A Contact Output T/U (Single Pole) (4-Circuit) (Infrared I/O Type) (Panel Use)	Signal current 2.3 mA Output side: 6A 300V AC	▲4 T/U-6A4	JIS approved dimensions (2) Includes signal line jumper (Uses non-volatile memory)
 WRT4124-84	WRT4124-84 UL	6A Contact Output T/U (Infrared I/O) (4-Circuit) (Panel Use)	Signal current 2.3 mA Output side: 6A 300V AC	▲4 T/U-6A4	JIS approved dimensions (2) Includes signal line jumper (Uses non-volatile memory)

6A Contact Output T/Us(Wall Mount)(Infrared I/O) ··· See page 21 for details.

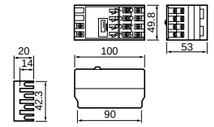
 WRT4104-8	WRT4101-8 Not for USA	6A Contact Output T/U (Wall Mount) (Single Pole) (1-Circuit) (Infrared I/O)	Signal current 2.3 mA Output side: 6A 300V AC	▲4	Applicable to 1-Gang COSMO Module plates (Non-volatile memory used)
	WRT4104-8 Not for USA	6A Contact Output T/U (Wall Mount) (Single Pole) (4-Circuit) (Infrared I/O)	Signal current 2.3 mA Output side: 6A 300V AC	▲	Applicable to 2 Gang outlet COSMO Module plates (Non-volatile memory used)

•Dimensions (units: mm)

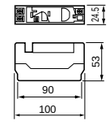
WR3416-8



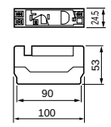
WR3416-84



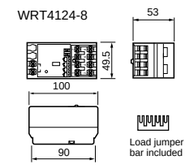
WR3426-8



WR3426-84



WRT4124-8



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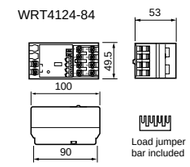
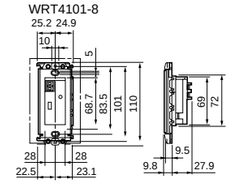
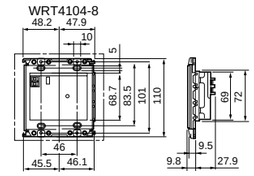


WRT4101-8



WRT4104-8



UL Approved by UL. Not applicable to U.S.A market. See page 38 for selecting appropriate items.

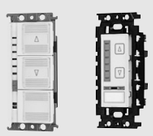
Dimmer Control

• Signal current: Rated input signal current (Name displayed on units)

Dimmer Units

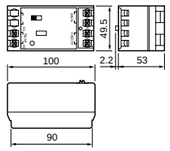
	Model No.	Description	Rating	Symbol in diagram	Remarks
(for 500W)  WRT4345-81	WRT4345-81 Not for USA WRT4345-82 Not for USA	Dimmer Unit for 500W Incandescent Lamp (Infrared I/O) (Panel Use)	Signal current 8 mA Voltage WRT4345-81(115V AC) WRT4345-82(230V AC) Applicable loads 40-500W	LC 500 T/U-LC 500	JIS approved dimensions (2) for incandescent lamp only (Non-volatile memory used)
	WRT4348-81 Not for USA WRT4348-82 Not for USA	Dimmer Unit for 800W Incandescent Lamp (Infrared I/O) (Panel Use)	Signal current 8 mA Voltage WRT4348-81(115V AC) WRT4348-82(230V AC) Applicable loads 40-800W	LC 800 T/U-LC 800	JIS approved dimensions (3) for incandescent lamp only (Non-volatile memory used)
	WRT4348K-814 UL	Dimmer Unit for 800W Incandescent Lamp (Infrared I/O) (Panel Use) (120V AC)	Signal Current ; 8mA Voltage 120V AC Applicable Loads 40-800W	LC 500 T/U-LC 500	JIS approved dimensions (3) for incandescent lamp only (Non-volatile memory used)
(for 1500W)  WRT43415-81	WRT43415-81 Not for USA WRT43415-82 Not for USA	Dimmer Unit for 1500W Incandescent Lamp (Infrared I/O) (Panel Use)	Signal current 8 mA Voltage WRT43415-81(115V AC) WRT43415-82(230V AC) Applicable loads 40-1500W	LC 1500 T/U-LC 1500	For incandescent lamp only (Non-volatile memory used)
 WRT43415K-814	WRT43415K-814 UL	Dimmer Unit for 1500W Incandescent Lamp (Infrared I/O)(Panel Use) (120V AC)	Signal Current ; 8mA Voltage 120V AC Applicable Loads 40-1500W	LC 800 T/U-LC 800	For incandescent lamp only (Non-volatile memory used)
 WRT4244-8	WRT4244-8	Dimmer Unit (Controllable Ballast, 0-10V DC)	Signal current 7 mA Dimmer signal 0-10V DC100mA ※(Rated voltage 24V AC Rated current 300 mA)	LC-T/U CON	See page 58 for details.
 WRT3241-8	WRT3241-8	Dimmer Contact Input T/U (1-Input) (Infrared I/O) (Panel Use)	Signal current 2.3 mA ※(Rated voltage 24V AC Rated current 30 mA)	LC input T/U	JIS approved dimensions (2) Input wiring distance not exceeding 100 m (Non-volatile memory used) See page 58 for details. Transformer required.

Dimmer Switch ··· See page 57 for details.

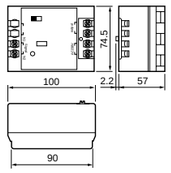
	Model No.	Description	Rating	Symbol in diagram	Remarks
 WRT5731WK-8 WRT5771-8	WRT5731WK-8	Dimmer Switch (Infrared I/O Type) (COSMO Module) (White)	Signal current 10 mA	MR	Applicable to COSMO Module switch plates (1-Gang) (Non-volatile memory used)
	WRT5771-8	Dimmer Switch (Infrared I/O Type) (FULL-COLOR Module)	Signal current 10 mA	MR	Applicable to FULL-COLOR plates (3) (Non-volatile memory used)

•Dimensions (units: mm)

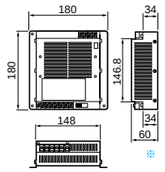
WRT4345-81
WRT4345-82



WRT4348-81
WRT4348-82
WRT4348K-814

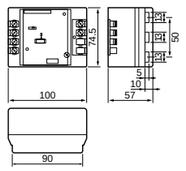


WRT43415-81
WRT43415-82
WRT43415K-814

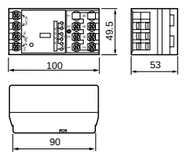


Install the unit with output terminals downward.

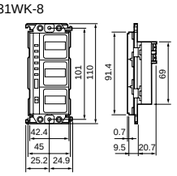
WRT4244-8



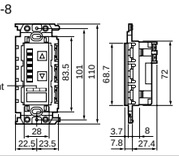
WRT3241-8



WRT5731WK-8



WRT5771-8



UL Approved by UL. Not applicable to U.S.A market. See page 38 for selecting appropriate items.

Motor-Drive Control, Relay Status Control, Contact Input T/U

• Signal current: Rated input signal current (Name displayed on units)

Motor-Drive Control ··· For details, see page 64.

	Model No.	Description	Rating	Symbol in diagram	Remarks
(Motor Drive T/U)  WRT4421-8	WRT4421-8 Not for USA	Motor Drive T/U (1 Pulse Output, Stop Terminal N.O. Type) (Infrared I/O) (Panel Use)	Signal current: 2.3 mA Rated voltage: 24V AC Rated current: 10 mA (Monitor) Output: 300V AC, 6 A	RM-T/U	JIS approved dimensions (2) (Non-volatile memory used)
 WRT4421-84	WRT4421-84 UL	Motor Drive Terminal Unit (Infrared I/O) (Stop Terminal N.O. Type) (Panel Use)	Signal Current 2.3mA Rated Voltage 24V AC Rated Current 10mA Output 6A 300V AC	RM-T/U	JIS approved dimensions (2) (Non-volatile memory used)
	WRT4422-8 Not for USA	Motor Drive T/U (1 Pulse Output, Stop Terminal N.C. Type) (Infrared I/O) (Panel Use)	Signal current: 2.3 mA Rated voltage: 24V AC Rated current: 10 mA (Monitor) Output: 300V AC, 6 A	RM-T/U	JIS approved dimensions (2) (Non-volatile memory used)
(Motor Control Switch)  WRT5401WK-8	WRT4422-84 UL	Motor Drive Terminal Unit (Infrared I/O) (Stop Terminal N.C. Type) (Panel Use)	Signal Current 2.3mA Rated Voltage 24V AC Rated Current 10mA Output 6A 300V AC	RM-T/U	JIS approved dimensions (2) (Non-volatile memory used)
	WRT5401WK-8	Motor Control Switch (with Indicator Lamp) (Infrared I/O) (COSMO Module) (White)	Signal current: 4.5 mA	●RM	Applicable to 1-Gang COSMO Plate (Non-volatile memory used)

Relay Status T/U ··· For details, see page 63.

	Model No.	Description	Rating	Symbol in diagram	Remarks
 WRT4621-8	WRT4621-8 Not for USA	Relay Status T/U (Normally OFF Contacts) (4-Output) (Infrared I/O) (Panel Use)	Signal current: 2.3 mA Output side: 6A 300V AC	RS-T/U NO4	JIS-approved dimensions (2) (Non-volatile memory used)
	WRT4622-8 Not for USA	Relay Status T/U (Normally ON Contacts) (4-Output) (Infrared I/O) (Panel Use)	Signal current: 2.3 mA Output side: 6A 300V AC	RS-T/U NO4	
	WRT4622-84 UL	Relay Status T/U (Normally ON Contacts) (4-Output) (Infrared I/O) (Panel Use)	Signal current: 2.3 mA Output side: 6A 300V AC	RS-T/U NO4	

Contact Input T/Us (infrared I/O type) ··· See page 51 for details.

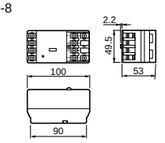
	Model No.	Description	Rating	Symbol in diagram	Remarks
 WRT3224-8	WRT3224-8	Contact Input T/U (4-Input) (Infrared I/O) (Panel Use)	Signal current 2.3 mA ※(Rated voltage 24V AC Rated current 40 mA)	Input T/U 4	JIS approved dimensions (2) input wiring distance not exceeding 100 m Non-volatile memory used Power supply by Transformer required.
 WRT3211-8	WRT3211-8	Contact Input T/U (1-Input) (Infrared I/O) (Panel Use)	Signal current 5 mA	Input T/U 1	JIS approved dimensions (1) input wiring distance not exceeding 100 m Non-volatile memory used

Signal Line Monitoring Unit

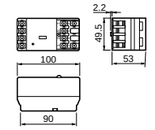
	Model No.	Description	Rating	Symbol in diagram	Remarks
 WR39319-8	WR39319-8	Signal Line Monitoring Unit (Panel Use)	Input Signal 24V AC Input Signal Current normal 15mA Current Consumption During Indication 50mA		

•Dimensions (units: mm)

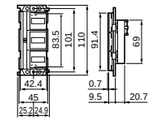
WRT4421-8
WRT4422-8



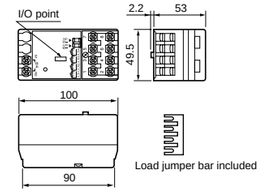
WRT4421-84
WRT4422-84



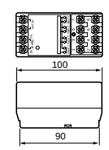
WRT5401WK-8



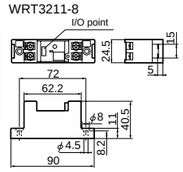
WRT4621-8
WRT4622-8
WRT4622-84



WRT3224-8

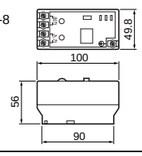


WRT3211-8



Terminal numbers 2, 4, 6, and 8 are the same in polarity.

WR39319-8



UL Approved by UL. Not applicable to U.S.A market. See page 38 for selecting appropriate items.

Products

Sensors, Timer

• Signal current: Rated input signal current (Name displayed on units)

Passive Infrared Ceiling Units & Daylight Sensor ··· See pages 52 and 53 for details.

	Model No.	Description	Rating	Symbol in diagram	Remarks
 WRT3374K-8	WRT3374K-8 Not for USA	Passive Infrared Ceiling Unit (Infrared I/O) (with Photosensor)	Signal current 20 mA	SR	
 WRT3364K-8	WRT3364K-8	Passive Infrared Ceiling Unit (Infrared I/O) (with Photosensor) (Wide Detection Area Type)	Signal current 20 mA	SR	
	WRT3311-8 Not for USA	Passive Infrared Ceiling Unit (Infrared I/O) (Lighting Control Use) (Outlet Box Use)	Signal current 20 mA	SR	
 WRT3394-8	WRT3394-8 Not for USA	Passive Infrared Sensor Switch (Infrared I/O) (Wall Mount) (with Photosensor)	Signal current 20 mA	SR	
	WRT3375-8 Not for USA	Auxiliary Passive Infrared Ceiling Unit (Flush Mount)	DC 12V	S	
	WRT3365-8	Auxiliary Passive Infrared Ceiling Unit (Wide Detection Area Type)	DC 12V	S	
 WRT3395-8	WRT3315-8 Not for USA	Auxiliary Passive Infrared Ceiling Unit (Outlet Box Use)	DC 12V	S	
	WRT3395-8 Not for USA	Auxiliary Passive Infrared Sensor Switch (Wall Mount)	DC 12V	S	
	WRT3367-8	Auxiliary Passive Infrared Ceiling Unit (Wide Detection Area Type) (with Amplifier)	Signal current 20 mA DC 12V	S	

Daylight Sensor Ceiling Unit

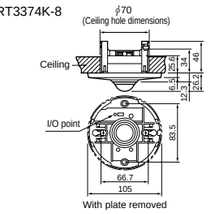
 WRT3657-8	WRT3657-8	Daylight Sensor Ceiling Unit	Signal current 15 mA	SSR	See page 54 for details.

Program Timer Unit

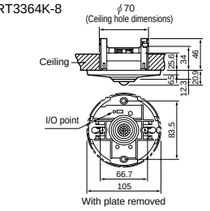
 WRT3540K-8	WRT3540K-8	Program Timer Unit (Astronomical Clock Type, 24V AC)	Signal current 15 mA ※Rated voltage 24V AC Rated current 350 mA	TMR	JIS approved dimensions (4) See page 65 for details. Transformer required.

•Dimensions (units: mm)

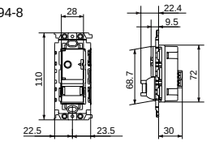
WRT3374K-8



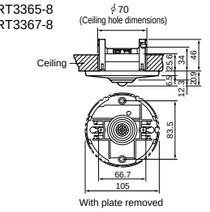
WRT3364K-8



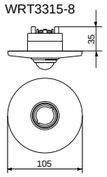
WRT3394-8



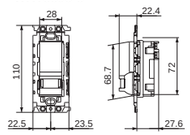
WRT3365-8
WRT3367-8



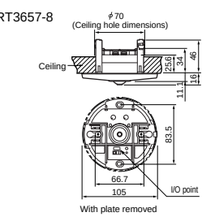
WRT3315-8



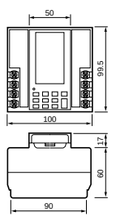
WRT3395-8



WRT3657-8



WRT3540K-8



Not applicable to U.S.A market. See page 38 for selecting appropriate items.

Note
Passive Infrared Ceiling Unit is only available for lighting control. Do not use to control non-lighting loads such as electrical equipment, air conditioning equipment, and alarm systems. Doing so may cause malfunctions and lead to accident or injury.

Other devices, Accessories

• Signal current: Rated input signal current (Name displayed on units)

Card Operation Switch

	Model No.	Description	Rating	Symbol in diagram	Remarks
 WR3891-8	WR3891-8	Card Operation Switch (for Individual and Group Control)	Signal current 7 mA	●RC	See page 60 for details.

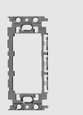
Computer Interface Units

 WR3381K-82	WR3381K-81 Not for USA	Computer Interface Unit	Rated voltage: 115V AC Power consumption: 4 W Signal current: 15 mA	C-IFU	JIS rack mount type Required to prepare programming software. and applicable power cord
	WR3381K-82 Not for USA	Computer Interface Unit	Rated voltage: 230V AC Power consumption: 4 W Signal current: 15 mA	C-IFU	

Appellation Indication Units (Dip Switch) ··· For details, see page 60.

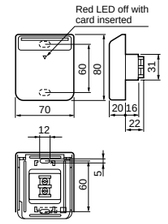
 WR3900R-8	WR3900R-8	Appellation Indication Unit (Relay Status Indication Type) (Red)	Signal current: 10 mA	○R	Applicable to FULL-COLOR Plates (1)
	WR3901R-8	Appellation Indication Unit with T/U Function (Switch/Individual Contact Input T/U-linked Type) (Red)	Signal current: 10 mA	○T/U	Applicable to FULL-COLOR Plates (1)

Accessories

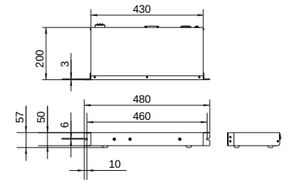
 WR3990-8	WR3990-8	DIN Rail Mounter (Panel Use for Relay)	——	——	JIS-approved dimensions (1)
 WR3991-8	WR3991-8	DIN Rail Mounter (for Relay Control T/U)	——	——	——
 WR9910-8	WR9910-8	Mounting Strap (Panel Use for 10 Relays)	——	——	JIS-approved dimensions (10)
	WN3710-8	Insulated Mounting Strap	——	——	——
 WN3710-8	WN3020-8	Blank Chip	——	——	——
 WN9803-8	WR9803-8	Terminal Cover for 20A HID Relay	——	——	for WR6161K-8 & WR6161K-84 only

•Dimensions (units: mm)

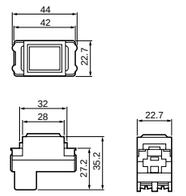
WR3891-8



WR3381K-82

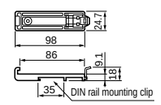


WR3900R-8
WR3901R-8



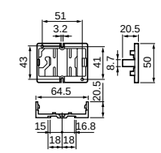
•Appellation plate and sheet are included to display the load names.
•The lamp is an LED.

WR3990-8

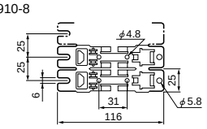


DIN Standard rail
(Conforms to DIN4627 Blatt3, width 35 mm)

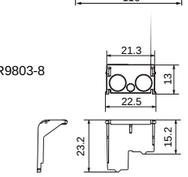
WR3991-8



WR9910-8



WR9803-8



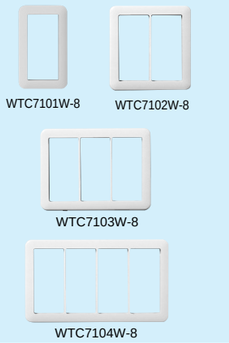
Not applicable to U.S.A market. See page 38 for selecting appropriate items.

Products

Plates and Flush Mount Boxes

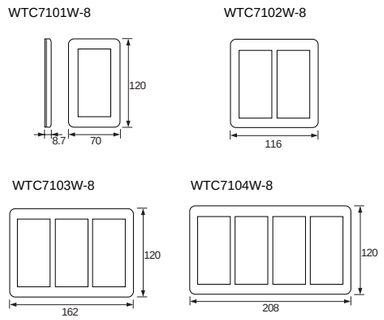
COSMO Module Plates, GLACIER Series Plates

COSMO Module Plates Applicable to Switches (White)

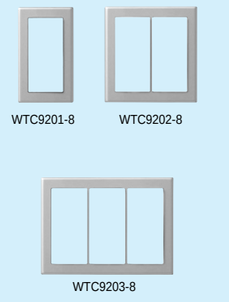


No. of rows	No.of gangs	No. of circuits	Model No.
1	1	1-4	WTC7101W-8
1	2	2-8	WTC7102W-8
1	3	3-12	WTC7103W-8
1	4	4-16	WTC7104W-8
1	2	2-8	WTC7122W-8

Dimensions (units: mm)

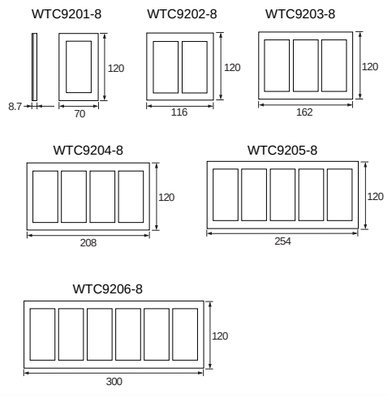


COSMO Module Plates Applicable to Switches (Aluminum)



No. of rows	No.of gangs	No. of circuits	Model No.
1	1	1-4	WTC9201-8
1	2	2-8	WTC9202-8
1	3	3-12	WTC9203-8
1	4	4-16	WTC9204-8
1	5	5-20	WTC9205-8
1	6	6-24	WTC9206-8

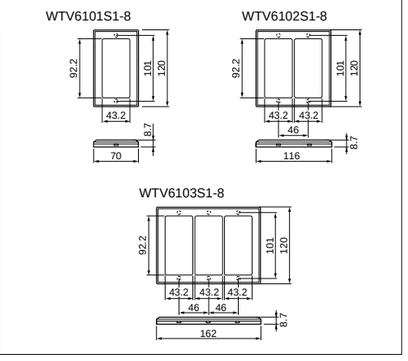
Dimensions (units: mm)



GLACIER Series Plates applicable to Switches (GLACIER Type)

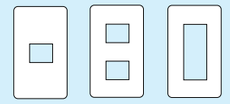
No. of rows	No.of gangs	No. of circuits	Model No.
1	1	1-4	WTV6101S1-8
1	2	2-8	WTV6102S1-8
1	3	3-12	WTV6103S1-8

Dimensions (units: mm)



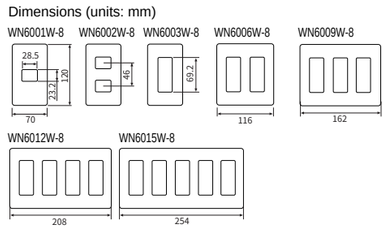
FULL-COLOR Module Plates

FULL-COLOR Module Plates Applicable to Switches (White)

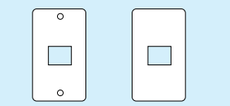


No. of rows	No.of gangs	No. of circuits	Model No.
1	1	1	WN6001W-8
1	1	2	WN6002W-8
1	1	4(3)	WN6003W-8
1	2	8(6)	WN6006W-8
1	3	12(9)	WN6009W-8
1	4	16(12)	WN6012W-8
1	5	20(15)	WN6015W-8

Dimensions (units: mm)

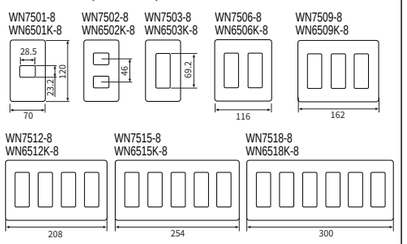


FULL-COLOR Module Plates Applicable to Switches (Aluminum)

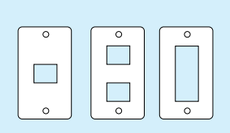


No. of rows	No.of gangs	No. of circuits	Model No.	
			Type I	Type II (Screw Invisible)
1	1	1	WN7501-8	WN6501K-8
1	1	2	WN7502-8	WN6502K-8
1	1	4 (3)	WN7503-8	WN6503K-8
1	2	8 (6)	WN7506-8	WN6506K-8
1	3	12 (9)	WN7509-8	WN6509K-8
1	4	16 (12)	WN7512-8	WN6512K-8
1	5	20 (15)	WN7515-8	WN6515K-8
1	6	24 (18)	WN7518-8	WN6518K-8

Dimensions (units: mm)

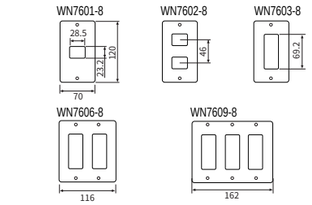


FULL-COLOR Module Plates Applicable to Switches (Stainless Steel)



No. of rows	No.of gangs	No. of circuits	Model No.
1	1	1	WN7601-8
1	1	2	WN7602-8
1	1	4(3)	WN7603-8
1	2	8(6)	WN7606-8
1	3	12(9)	WN7609-8

Dimensions (units: mm)



Special Plates

Special Plates Applicable to Switches (Aluminum)

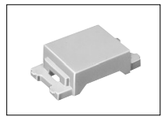
No. of rows	No. of gangs	No. of circuits	Model No.	Holesize No.
1	7	28 (21)	WR3510281-8	❶
2	4	32 (24)	WR3520321-8	❷
2	5	40 (30)	WR3520401-8	❸
2	6	48 (36)	WR35481-8	❹
2	7	56 (42)	WR3520561-8	❺
2	8	64 (48)	WR3520641-8	❻
3	5	60 (45)	WR3530601-8	❼
3	6	72 (54)	WR35721-8	❽
3	7	84 (63)	WR3530841-8	❾
4	6	96 (72)	WR3540961-8	❿
4	7	112 (84)	WR3541121-8	⓫
4	8	128 (96)	WR3541281-8	⓬
5	6	120 (90)	WR3551201-8	⓭
5	7	140 (105)	WR3551401-8	⓮
5	8	160 (120)	WR3551601-8	⓯
6	6	144 (108)	WR3561441-8	⓰
6	7	168 (126)	WR3561681-8	⓱
6	8	192 (144)	WR3561921-8	⓲
7	7	196 (147)	WR3571961-8	⓳
7	8	224 (168)	WR3572241-8	⓴
8	8	256 (192)	WR3582561-8	㉑

▲For hole size No. see page 37.

Products

Special Switch Plates

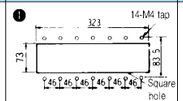
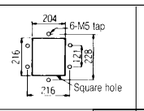
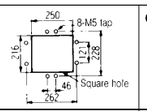
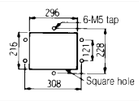
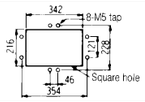
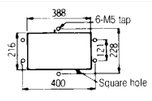
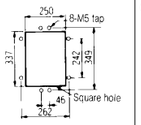
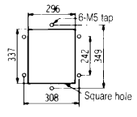
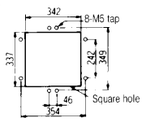
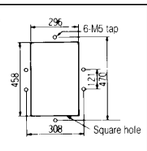
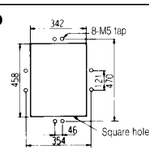
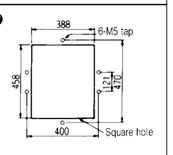
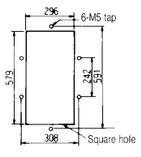
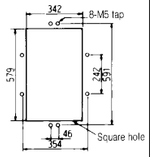
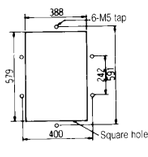
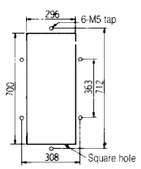
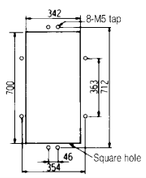
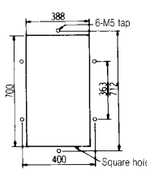
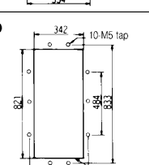
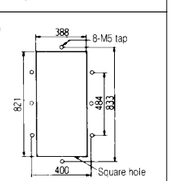
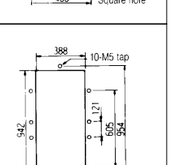
Each extra space on a plate can be covered and more circuits can be added in the future



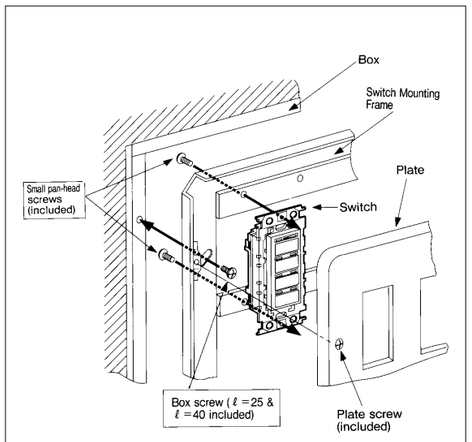
WN3020-8
Blank Chip

■ Special Switches Plates

Switch mounting hole dimensions for Special Switches Plates
(In case a flush mount box is not used.)

	1-3 Gangs	4 Gangs	5 Gangs	6 Gangs	7 Gangs	8 Gangs
1-row	1-6 gangs applicable to the standard flush mount boxes				❶ 	
2-row		❷ 	❸ 	❹ 	❺ 	❻ 
3-row			❼ 	❽ 	❾ 	
4-row				❿ 	⓫ 	⓬ 
5-row				⓭ 	⓮ 	⓯ 
6-row				⓰ 	⓱ 	⓲ 
7-row					⓳ 	⓴ 
8-row						㉑ 

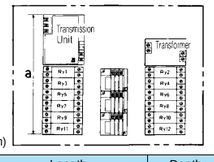
■ Mounting method



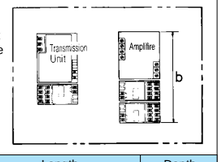
①Mount Switch on Switch Mounting Frame from the rear using the screws.
②Connect signal wires to Switches.
③Mount Switch Mounting Frame on Box using Box screws.
④Mount Plate using Plate screws.

•Calculating Outside Dimension of Applicable Box to Relay Panel (Box (with Wood Board) Surface and Flush Mount)

(1)When 20A HID Relays used (2-line layout)



(1)When 6A Contact Output T/U used (2-line layout)



Outside dimensions (mm)

Width	Length	Depth	Width	Length	Depth
450	Dimension a+※Wiring space	125	400	Dimension a +※Wiring space	125

Note: This applicable box is selected for a layout with no space for a terminal socket. Therefore, select an applicable box by taking into account a space for a terminal socket if installed.

※Wiring space:

	24 circuits max.
Single pole	225mm min.
Double pole	275mm min.

SELECTING CHART of AVAILABLE PRODUCTS for EACH MARKET

Product Name	Model Number	Available item for U.S.A.	Available item for ASIA	Remark
Switches (COSMO Module)	WRT5501WK-8	✓	✓	
	WRT5502WK-8	✓	✓	
	WRT5503WK-8	✓	✓	
	WRT5504WK-8	✓	✓	
	WRT5731WK-8	✓	✓	
Switches (FULL-COLOR Module)	WRT5551-8	✓	✓	
	WRT5552-8	✓	✓	
	WRT5553-8	✓	✓	
	WRT5554-8	✓	✓	
	WRT5771-8	✓	✓	
Switches (GLACIER Type)	WRV5601S1-8	✓	✓	
	WRV5602S1-8	✓	✓	
	WRV5603S1-8	✓	✓	
	WRV5604S1-8	✓	✓	
	WRV5831S1-8	✓	✓	
Master Switches (Surface Mount)	WRT6120WK-8	✓	✓	
	WRT6144WK-8	✓	✓	
	WRT6168WK-8	✓	✓	
	WRT6024WK-8	✓	✓	
	WRT6048WK-8	✓	✓	
	WRT6072WK-8	✓	✓	
Program Setting Unit	WRT5850-8	✓	✓	
Wireless Programming Unit	WRT9600-8	✓	✓	
Wireless Address Seting Unit	WRT9500K-8	✓	✓	
Central Control and Programming Unit	WRT9103K-89	✓	✓	
Transmission Unit	WRT2050-80		✓	Non-UL
	WRT2040-894	✓	✻	24V AC
Amplifier	WR3913-80		✓	Non-UL
	WR3912-894	✓	✻	24V AC
Transformer	WR2301-811		✓	Non-UL
	WR2311-851		✓	Non-UL
20A HID Relays	WR6161K-8		✓	Non-UL
	WR61613K-8		✓	Non-UL
	WR6166-8		✓	Non-UL
	WR61663-8		✓	Non-UL
	WR6161K-84	✓	✻	UL-Approved
	WR61613K-84	✓	✻	UL-Approved
	WR6166-84	✓	✻	UL-Approved
	WR61663-84	✓	✻	UL-Approved
	WR6172-84	✓	✓	UL-Approved
	WR61723-84	✓	✓	UL-Approved
6A Contact Output T/Us (Panel Use)(DIP switch)	WR3416-8		✓	Non-UL
	WR3426-8		✓	Non-UL
	WR3416-84	✓	✻	UL-Approved
	WR3426-84	✓	✻	UL-Approved
6A Contact Output T/Us (Panel Use)(Infrared I/O)	WRT4124-8		✓	Non-UL
	WRT4124-84	✓	✻	UL-Approved
6A Contact Output T/Us (Wall Mount)(Infrared I/O)	WRT4101-8		✓	Non-UL
	WRT4104-8		✓	Non-UL

Product Name	Model Number	Available item for U.S.A.	Available item for ASIA	Remark
Relay Control T/Us (Panel Use)(DIP Switch)	WR3400-8	✓	✓	
	WR3440-8	✓	✓	
	WR3430-8	✓	✓	
Relay Control T/Us (Panel Use)(Infrared I/O)	WRT4014-8	✓	✓	
Wireless Control	WRT1320-8	✓	✓	
	WRT1511K-8	✓	✓	
	WRT1514K-8	✓	✓	
	WRT1561-8	✓	✓	
	WRT13906-8	✓	✓	
	WRT15919-8	✓	✓	
Dimmer Units	WRT4345-81		✓	Non-UL
	WRT4345-82		✓	Non-UL
	WRT4348-81		✓	Non-UL
	WRT4348-82		✓	Non-UL
	WRT43415-81		✓	Non-UL
	WRT43415-82		✓	Non-UL
	WRT4348K-814	✓	✻	UL-Approved
	WRT43415K-814	✓	✻	UL-Approved
	WRT4244-8	✓	✓	
	WRT3241-8	✓	✓	
	WRT5731WK-8	✓	✓	
	WRT5771-8	✓	✓	
Motor-Drive Control	WRT4421-8		✓	Non-UL
	WRT4422-8		✓	Non-UL
	WRT4421-84	✓	✻	UL-Approved
	WRT4422-84	✓	✻	UL-Approved
	WRT5401WK-8	✓	✓	
Passive Infrared Ceiling Units	WRT3374K-8		✓	
	WRT3364K-8	✓	✓	
	WRT3375-8		✓	
	WRT3365-8	✓	✓	
	WRT3367-8	✓	✓	
	WRT3311-8		✓	
	WRT3315-8		✓	
	WRT3394-8		✓	
	WRT3395-8		✓	
Datylight Sensor	WRT3657-8	✓	✓	
Program Timer Unit	WRT3540K-8	✓	✓	
Contact Input T/Us	WRT3224-8	✓	✓	
	WRT3211-8	✓	✓	
Relay Status Units	WRT4621-8		✓	Non-UL
	WRT4622-8		✓	Non-UL
	WRT4622-84	✓	✻	UL-Approved
Signal Line Monitoring Unit	WR39319-8	✓	✓	
Card Operation Switch	WR3891-8	✓	✓	
Computer Interface Units	WR3381K-81		✓	Non-UL
	WR3381K-82		✓	Non-UL
Appellation Indication Units	WR3900R-8	✓	✓	
	WR3901R-8	✓	✓	

✓ : Available
UL-Approved : Approved by UL.
✻ : Not recommended but available. Please contact our sales companies for details.
Non-UL : UL approval required , but NOT Approved. It CANNOT be available for sale in USA.

Functional Comparison for each Transmission Unit

※It is recommended to use a dimmer control with an individual address when using the WRT2050-80.

Control method	Function	No. of applicable circuits	Transmission Units: WRT2000 Series (Discontinued)	Transmission Units: WRT2040 Series (Discontinued)	Transmission Units: WRT2050-80 / WRT2040-894 (Now Available)
Individual control	•Turns the load for each circuit on and off individually	256 circuits ✙ (16 dimmer circuits (On or off only))	○	○ (Using individual addresses for dimmer control decrease the number of addresses that can be used.)	○ (Using individual addresses for dimmer control decrease the number of addresses that can be used.)
Dimmer control – Incandescent lamp	•Controls the brightness of an incandescent lamp in a single circuit •Turns the lamp on or off with preset light levels	Using individual addresses (256 circuits) – (Circuits used for individual control)	×	○	○
		Using dimmer address 16 dimmer circuits	(○)	○	○
Dimmer control – Controllable Ballast	•Controls the brightness of a controllable ballast in a single circuit. •Turns dimmer circuits on or off	Using individual addresses (256 circuits) – (Circuits used for individual control)	×	○	○
		Using dimmer address 16 dimmer circuits	○	○	○
Group control	•Turns multiple circuits on or off within each preset group •Turns dimmer circuits on or off	256 circuits ✙ 16 dimmer circuits	○ 127 groups	○ 127 groups	○ 127 groups
Group dimmer control	•Controls the brightness of each group of preset multiple dimmer loads •Turns on or off with preset brightness	Dimmer circuits using individual addresses (256 circuits) – (Circuits used for individual control)	×	○ (127 groups) – (No. used for group control)	○
Pattern control	•Turns on/off each circuit according to a preset lighting •Changes light level according to preset brightness	256 circuits ✙ 16 dimmer circuits	○ 72 patterns	○ 72 patterns	○ 72 patterns
Fade control	•Fade control is possible when changing dimmer load to preset brightness with pattern control	Dimmer circuits using individual addresses (256 circuits) – (Circuits used for individual control)	×	○ 72 patterns (Time for fade can be programmed using the wireless Programming Unit)	○
Control by external devices	•Automatically controls loads by linking with other systems	Individual, dimmer (on/off) Pattern, group control	○	○	○
		Dimmer, group dimmer	×	○ (Using individual or group addresses)	○
On-timer control/Off-delay control, Wireless control Powered-equipment control, Fan motor control, Volume control			○	○	○
Linkage with WEB			×	○	○

Basic Specifications of FULL-2WAY Remote Control

■**Using the WRT2050-80 Transmission Unit**

Basic specifications	**Transmission method**	Cyclic time sharing multiplex transmission with bit division and cut-in signal method
	Signal wires	Two wires with no polarity CPEV φ1.2-1P (※1)
	Signal voltage	±24V(※2)
	Transmission speed	Approx. 15 msec / terminal unit (10 kbit/sec)
	Relay activation time	0.2 sec max.
	Output current	500 mA
	Max. number of circuits	(256 circuits (64 ch (T/U) X 4) + 16 dimmer circuits) / system
	Signal transmission distance	Maximum signal wiring length 500 m; 1,500 m for total signal wire length (with 1.2 mm dia. wire of at least 1.25 mm²) (Using transmission unit and 5 amplifiers, signal wire distance is 3,000 m max. and total signal wire length is 9,000 m.)
	Ambient temperature range	-10℃ to 5 ℃
	Power failure backup	Infrared I/O address setting: Recorded in non-volatile EEPROM memory of switches and T/U. Group and pattern control settings; Recorded in transmission unit. WRT2050 series uses flash memory; WRT2000K series uses non-volatile EEPROM.
	Switch operation	Overlapping control
Basic control functions	**Individual control**	1 circuit (1 remote control relay) on/off Switch operation: Push to turn on, push to turn off Switch display: On is red, off is green Maximum possible: 256 circuits (+16 dimmer circuits) (on/off only)
	Group control	Programmed multiple circuit units on/off Switch operation: Push to turn on, push to turn off Switch display: On is red, off is green (However, if overlapping control of individual units within groups is performed, the display shows the direction of the next control) Maximum possible: 127 groups No. of circuits to be controlled per group: 256 circuits (+16 dimmer circuits)
	Pattern control	Optional control performed by combination setting of, for each circuit, on setting, off setting, and circuits not controlled Switch operation: Push once to change to the preset lighting pattern. Switch display: Red when patterns in effect, green when not in effect Maximum possible: 72 patterns No. of circuits to be controlled per pattern: 256 circuits (+16 dimmer circuits)
Additional control functions	**Dimmer control (inverter fluorescent lamp)**	Continuous dimming of contorollable ballast (0-10V dimmer signal type) Switch operation: Push to turn on, push to turn off (load on/off) Continuous dimming by pushing up or down Switch display: Red is on, green is off Maximum possible: 256 circuits including circuits using individual control and incandescent lamp dimming Switch LED displays the dimming level (continuous dimming) In addition to dimmer switch, requires separate dimmer signal on/off switch
	Dimmer control (incandescent lamp)	Incandescent lamp continuous dimming (500W, 800W, 1500W) Switch operation: Push to turn on, push to turn off (load on/off) Continuous dimming by pushing up or down Switch display: Red is on, green is off Maximum possible: 256 circuits including circuits using individual control and inverter fluorescent lamp dimmer control Switch LED displays the dimming level (continuous dimming)
	Group dimmer control	Continuous dimming of the programmed multiple dimmer circuits Switch operation: Push to turn on, push to turn off (multiple circuits on/off) Push up, push down (multiple circuits) Switch display: Red is on, green is off (However, if overlapping control of individual units within groups is performed, the display shows the direction of the next control.) Maximum possible: 127 groups including number of group control used No. of circuits to be controlled per group: With dimmer circuits using individual addresses, 256 in combination with individual control

※ 1: Recommended signal wire.
※ 2: Due to pulse signal duty cycle, the tester does not give an accurate display.

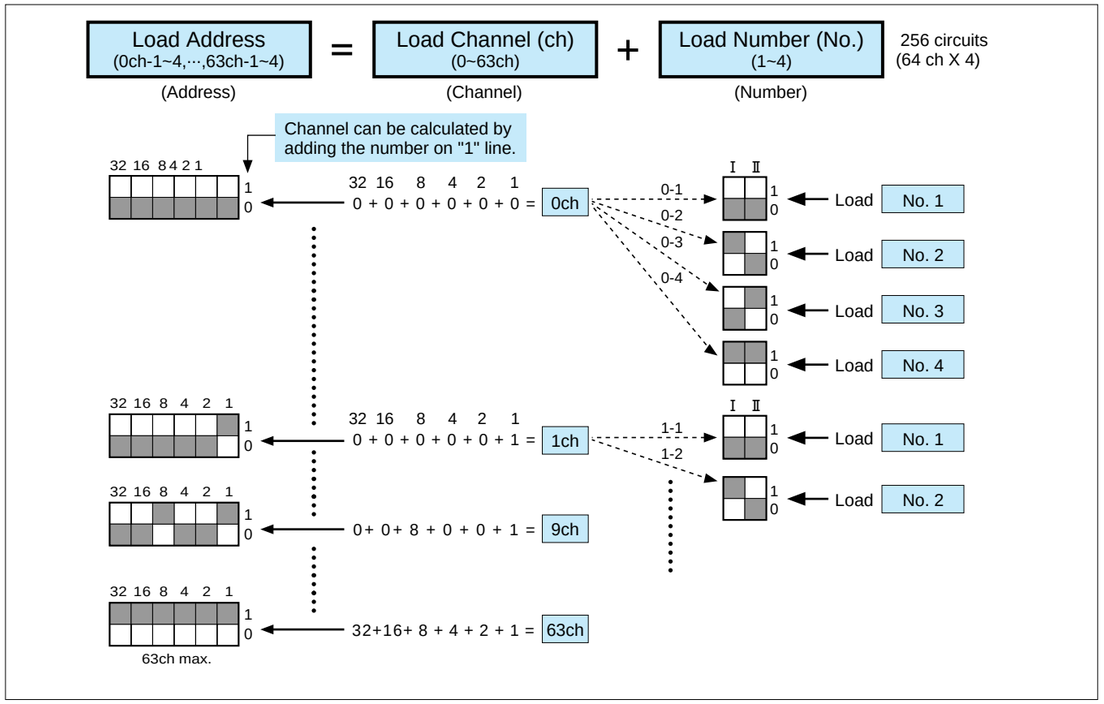
■**Electric wire diameter and length**

See page 22 for details.

Wire type	Maximum length of wiring (Max. distance from a transmission unit to switch or T/U unit)
φ 1.2 ~ φ 1.6 (1.25 mm²~2.0 mm²)	500 m
φ1.0 (1.0mm²)	300 m
φ0.9 (0.75mm²)	250 m
φ 0.65 (0.5mm²)	100 m

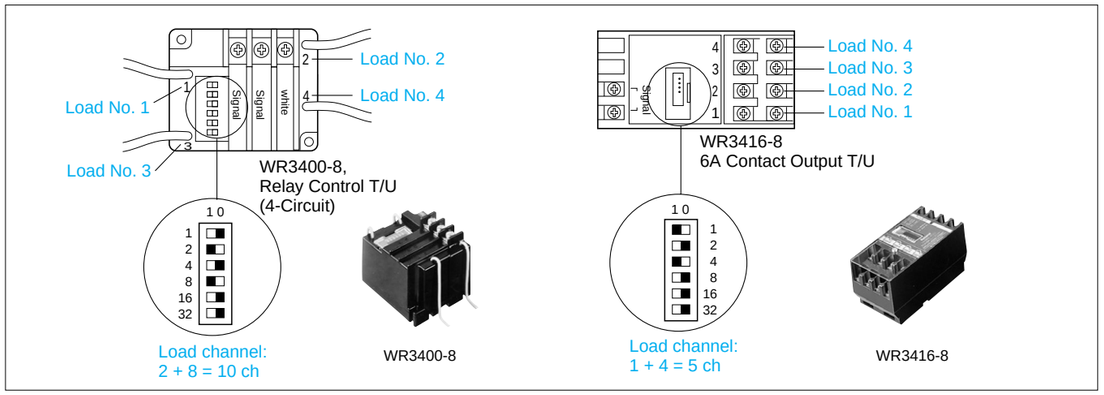
Total signal wire length should be less than 3 times the max. signal wire length.

Address Setting Method for Dip Switch T/Us



■Relay Control T/U and 6A Contact Output T/U (4-Circuit)

···Load numbers 1, 2, 3 and 4 are fixed.

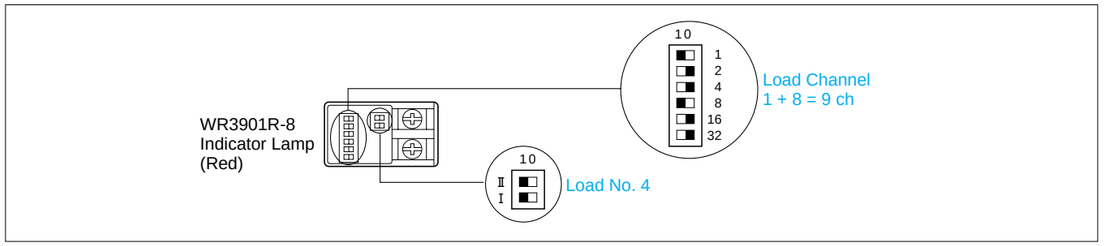


Note: The same load address cannot be used for Relay Control T/Us and 6A Contact Output T/Us.

■Appellation Indication Unit with T/U, Contact Input T/U for Individual Control (1-Input)

When using Relay Control T/U and 6A Contact Output T/Us (1-Circuit)

···setting <load channels + load No.> is required.



■Dip Switch Setting Reference Chart

Load Channel (ch)

0ch	10ch	20ch	30ch	40ch	50ch	60ch
1ch	11ch	21ch	31ch	41ch	51ch	61ch
2ch	12ch	22ch	32ch	42ch	52ch	62ch
3ch	13ch	23ch	33ch	43ch	53ch	63ch
4ch	14ch	24ch	34ch	44ch	54ch	
5ch	15ch	25ch	35ch	45ch	55ch	
6ch	16ch	26ch	36ch	46ch	56ch	
7ch	17ch	27ch	37ch	47ch	57ch	
8ch	18ch	28ch	38ch	48ch	58ch	
9ch	19ch	29ch	39ch	49ch	59ch	

Load Number (Applicable to Devices for 1 unit and 1 circuit)

1	2	3	4
I II	I II	I II	I II

Specifications of Address Setting Unit

Specifications of Wireless Programming Unit (WRT9600-8) ·····With wireless address setting function.

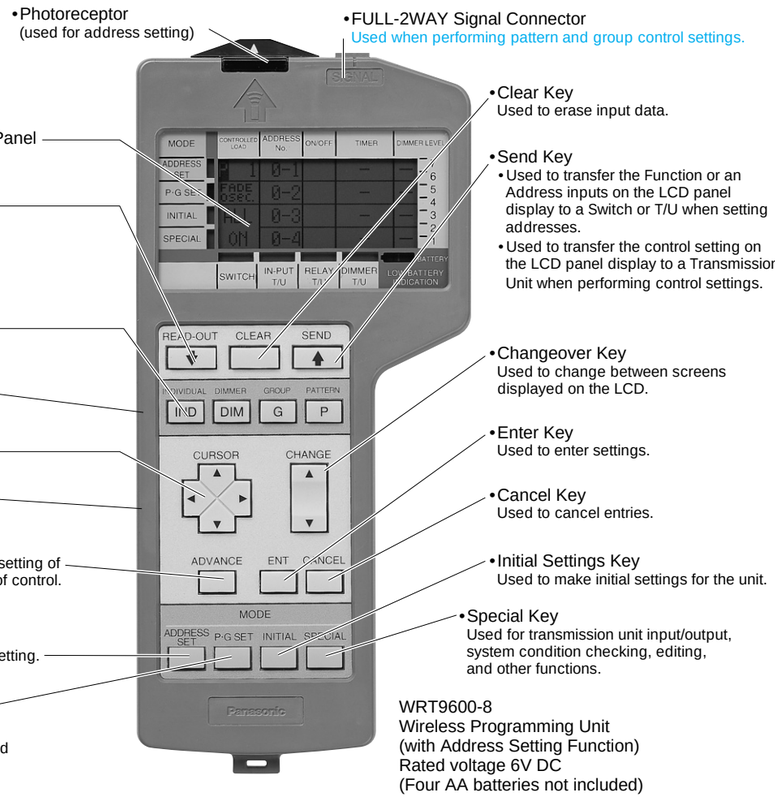
■Features

(1) One Wireless programming unit allows address setting and pattern/group control setting.
(2) You can perform pattern/group settings and changes at your desk, then later at a FULL-2 WAY signal line, transfer the settings and changes to the transmission unit.
You can also input the control settings recorded in the transmission unit into Wireless Programming Unit and store it there.
(3) When setting pattern control, you can set the dimmer level for individual addresses.
(4) When setting pattern control, you can set dimmer fade time.
(5) You can confirm operation of individual, group, pattern, and dimmer controls, as well as the condition of the system.

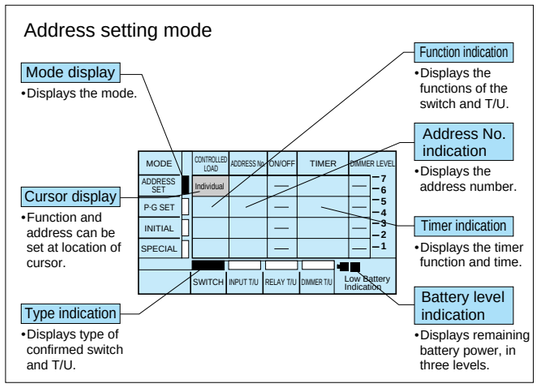
■Note

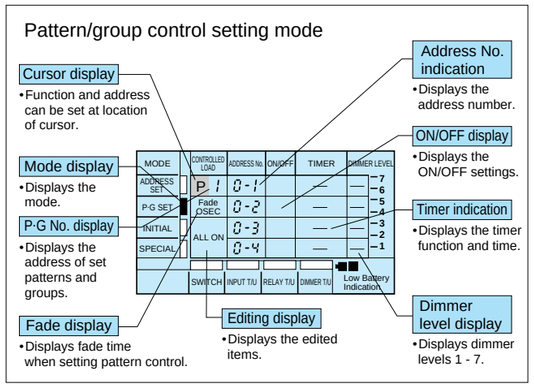
As the LCD panel displays 4 addresses maximum, for pattern/group control setting of many circuits (in excess of 50) we recommend you use a Program Setting Unit (WRT5850-8), or Central Control and Programming Unit (WRT9103K-89) to perform settings.

■Description and Functions



■LCD panel displays

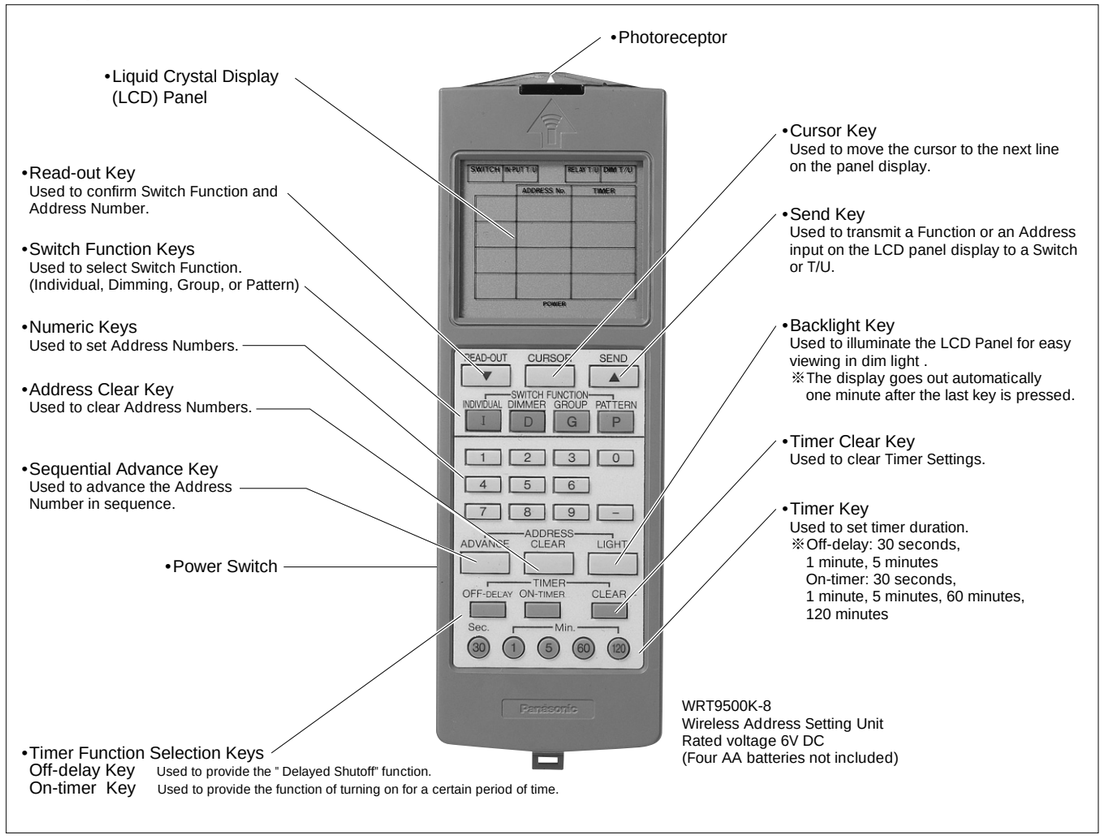




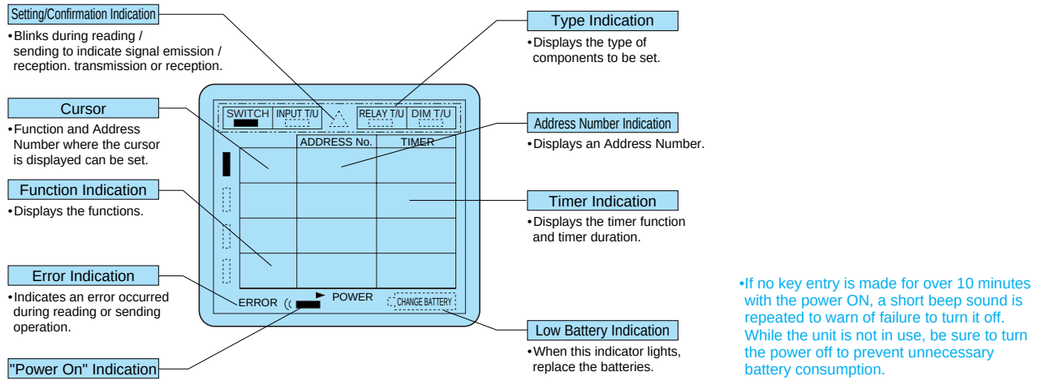
Specifications of Wireless Address Setting Unit (WRT9500K-8)

Note
•No program of pattern control or group control range can be set with this Wireless Address Setting Unit.
※These programs can be set up by a Program Setting Unit (WRT5850-8) on the Master Switch.

■Description and Functions

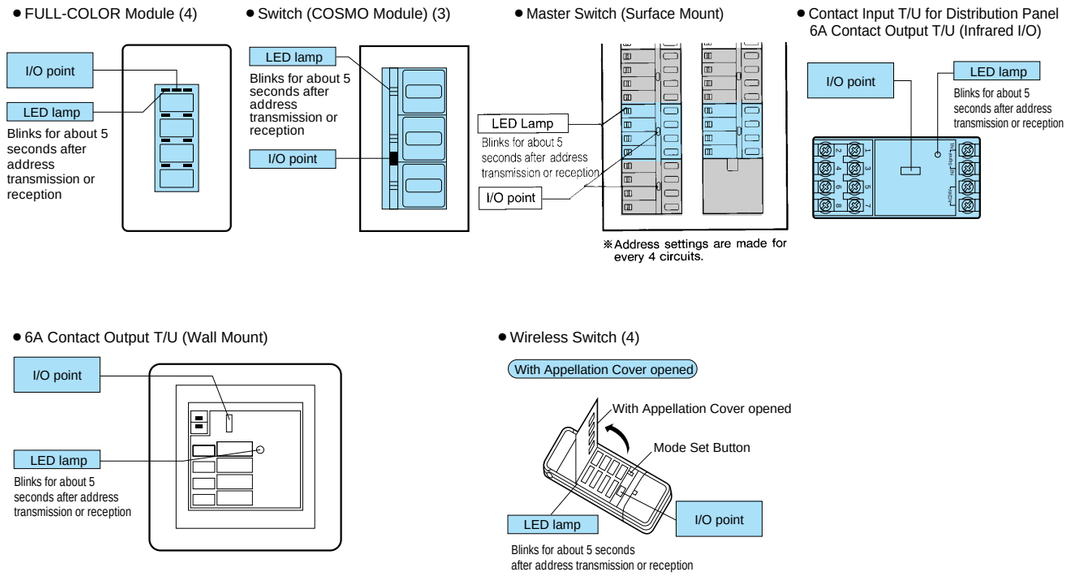


■LCD Panel



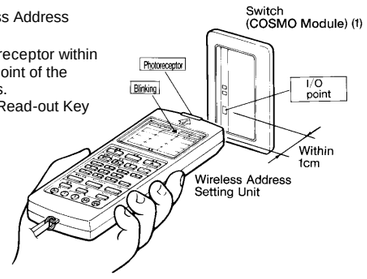
Address Setting

■I/O point Switch or T/U (Infrared I/O)



■Precautions for using the Wireless Address Setting Unit

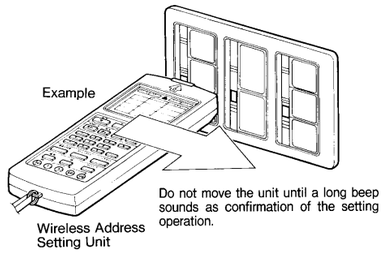
1 Turn on the Wireless Address Setting Unit.
- ① Keep the photoreceptor within 1cm of the I/O point of the switches or T/Us.
- ▼ Then press the Read-out Key
- ▲ or Send Key.



② While "▲" on the LCD panel display is blinking (within 5 seconds), do not move the Wireless Address Setting Unit. (Upon completion of the setting and confirmation, a long beep sounds.)

2 No address setting can be made for switch or T/U (infrared I/O) unless it is connected to a FULL-2WAY signal.

3 Shifting the unit to any other switch before the long beep sounds after the Send or Read-out Key has been pressed as shown below, may cause problems. Therefore, do not move the unit until the beep sounds.



■Address number and timer duration setting by type of switches or T/Us (Infrared I/O)

Product No.	Type of switch or T/U	Function	Address No.	Timer duration	
				Off-delay	On-timer
WRT5551-8, WRT5501WK-8, WRT1511K-8, WRT6120WK-8, WRT6024WK-8 WRT5552-8, WRT5502WK-8, WRT1514K-8, WRT6144WK-8, WRT6048WK-8 WRT5553-8, WRT5503WK-8, WRT6168WK-8, WRT6072WK-8 WRT5554-8, WRT5504WK-8 WRT5401WK-8	Switch	Individual Control	0-1 ~ 63-4	30 sec. 1 min. 5 min.	30 sec. 1 min. 5 min. 60 min. 120 min.
		G: Group Control	1 ~ 127	30 sec. 1 min. 5 min.	30 sec. 1 min. 5 min. 60 min. 120 min.
		P: Pattern Control	1 ~ 72	———	———
		D: Dimmer (ON/OFF) Control	1 ~ 16	30 sec. 1 min. 5 min.	30 sec. 1 min. 5 min. 60 min. 120 min.
WRT3224-8	Input T/U	Individual Control	0-1 ~ 63-4	———	———
		G: Group Control	1 ~ 127	———	———
		P: Pattern Control	1 ~ 72	———	———
		D: Dimmer (ON/OFF) Control	1 ~ 16	———	———
WRT4014-8,WRT4124-8,WRT4101-8,WRT4104-8 WRT4421-8,WRT4422-8	Relay T/U	Individual Control	0-1 ~ 63-4	———	———
WRT4345-81,WRT4345-82,WRT4348-81, WRT4348-82,WRT43415-81,WRT43415-82,	Dimmer T/U	Dimmer Control	1 ~ 16	———	———

Note: ● No setting can be made for a range marked with —.
● Only Individual Control can be performed with a Motor Control Switch (WRT5401WK-8).
● Only Dimmer Control is made possible with a Dimmer Switch (WRT5771-8, WRT5731WK-8).

Address Setting Method for Infrared I/O Switches and T/Us

Address setting cannot be performed unless the infrared address setting switch and T/U are connected to the FULL-2WAY signal line from the transmission unit.

- Address setting ····· Perform steps 1, 2, and 3
- Address confirmation ····· Perform step 1, and then turn the Wireless programming unit OFF
- Address change ····· Perform steps 1 and 2 (Press the cursor key to go to the address you want to change, and change it.), and then step 3

Address setting using the Wireless Programming Unit WRT9600-8

Example: Switch unit (3 switches), FULL-COLOR Model

Step 1

Address confirmation

① 

Turn the WRT9600-8 ON and press "Address setting".

② 

Hold the WRT9600-8 steady, with the photoreceptor of the unit within 1 cm of the I/O point on the switch.

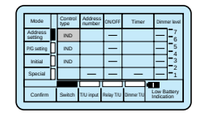
※In case of an error, there will be a repeating beep and the message "Address confirmation unsuccessful" will appear on the LCD screen.
Press the Cancel key on the WRT9600-8 and repeat operations ② and ③ above.

③ 

Press the Read-out key.
※ (Hold the unit steady (for about 1 to 4 seconds) until it emits a long beep.)
↓
Address confirmation is complete.

Display upon initial setting of WRT9600-8

■Switch (3)



※No address can be set on the line with "–"

Step 2

Address input to WRT9600-8

① 

- Keep the WRT9600-8 away from the Switch.
  To enter "Individual 2-1" in the first space:
- Press "Individual".
- Press "Cursor ▶" then "Changeover ▲", and select address no. 2-1.

② 

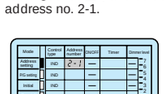
- To enter "P1" in the second space:
- Press "Cursor ◀ ▼ " to move the cursor to the second function column.
- Press "P".
- Press "Cursor ▶" then "Changeover ▲", and select address no. 1.

③ 

- To enter "G3" in the third space:
- Press "Cursor ◀ ▼ " to move the cursor to the third function column.
- Press "G"
- Press "Cursor ▶" then "Changeover ▲", and select address no. 3.

④ 

- To enter "off-delay 5 min." in the third space:
- Press "Cursor ▶" to move the cursor to the third function column.
- Press "Changeover ▲" and select "Off-delay 5 min.".



※ Timer setting not possible under pattern control.

Step 3

Address setting

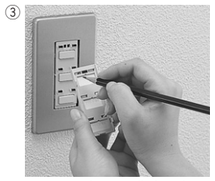
① 

Hold the WRT9600-8 steady, with the photoreceptor of the unit within 1 cm of the I/O point on the switch.

② 

Press the Send key.
※ (Hold the unit steady (for about 1 to 4 seconds) until it emits a long beep.)
↓
Address confirmation is complete.

※ In case of an error, there will be a repeating beep and the message "Address setting unsuccessful" will appear on the LCD screen.
Press the Cancel key on the WRT9600-8 and repeat operations ① and ② above.

③ 

- Remove the appellation sheet from the switch and write the address on the back of the sheet.
- Turn the WRT9600-8 OFF.

Address setting using the Wireless Address Setting Unit WRT9500K-8

Step 1

Address confirmation
(Same as the WRT9600-8 above)

Step 2 — Address input into the Wireless Address Setting Unit

①To enter "Individual 2-1" in the first space:
- Press "Individual".
- Press the "2", "-", and "1" keys.

②To enter "P1" in the second space:
- Move the cursor to the second space.
- Press "P".
- Press "1".

③To enter "G3 Off-delay 5 min." in the third space.
- Move the cursor to the third space.
- Press the "G" and "1" keys.
- Press the "Off-delay" and "5 min." keys.

Step 3

Address setting
(Same as the WRT9600-8 above)

※In case of an error, there will be a repeating beep and the message "Error" will appear on the LCD screen.

Group and Pattern Control Program Setting Method 1

Setting with the Selector Switch (with Program Setting Unit)

Group Control Program Setting Method (initial setting)

- Group control program setting: Perform steps ❶ to ❼
- Group control program confirmation:
  Perform steps ❶ to ❸, ❻, and ❼
- Group control program change:
  Perform steps ❶ to ❸, and ❺ to ❼

Prior to group and pattern setting:
(1) Complete the address plan table.
(2) Finish the T/U, switch, and selector switch address settings.

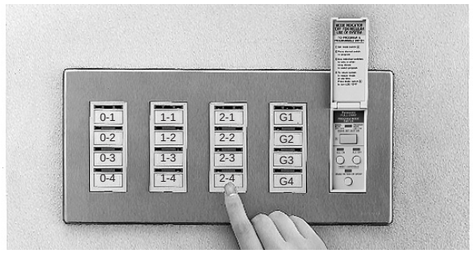
Notes:
No loads can be controlled during group and pattern setting.

❶ Open the cover of the Program Setting Unit (WRT5850-8).

❷ Press the mode set button to change the system into the setting mode.
(The Red LED lights.)

❸ Press the group switch that you want to set.
(The LED above the switch changes from Green to Red.)

❹ Press the reset control button before performing initial settings.
(The Red LED lights.)
Note: Do not perform this step ❹ if you are confirming or performing changes.



❺ Press individual switches to include the loads for group control.
(LED (Red) ON ····· Load included in group
Both LEDs (Red, Green) OFF ··· Load not included in group)
Repeat steps ❸, ❹, and ❺ for any other group control program settings.
※For timer duration settings, refer to the following.

❻ When group setting is complete, press the mode set button to change the system back to normal mode.
(The Red LED will extinguish.)

❼ Close the cover of the unit.

■Timer Duration (OFF-delay, ON-timer) Setting Method

(1) Before setting group control, complete timer duration settings (OFF-delay, ON-timer) for the individual switches to which you want to give timer functions using the Wireless Address Setting Unit (WRT9500K-8).
(2) In step ❺, operate the individual switches for which a timer duration (OFF-delay, ON-time) was programmed. This will illuminate both LEDs (Red and Green).

※A maximum of 8 ON-timer and OFF-delay circuits can be programmed for 1 group.
※Dimmer brightness level control (setting) is not possible under group control.

Notes:
- If the Relay Control T/U has a vacant terminal (no relay connected), whose address is set on a switch, exclude that address from the group control range when setting Group Control.
- Do not operate the wireless switches during group program setting.

Pattern Control Program Setting Method (initial setting)

- Pattern control program setting: Perform steps ❶ to ❽
- Pattern control program confirmation:
  Perform steps ❶ to ❸, and ❻ to ❽
- Pattern control program change:
  Perform steps ❶ to ❸, and ❺ to ❽

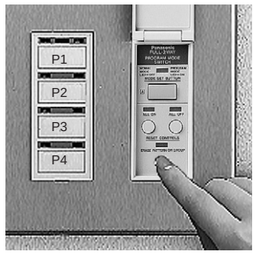
After pattern setting step ❹:

- Many ON settings:
  Press the All-ON button, and use the individual switches to change the loads other than those to be ON-programmed to the setting you want.
- Many OFF programs:
  Press the All-OFF button, and use the individual switches to change the loads other than those to be OFF-programmed to the setting you want.

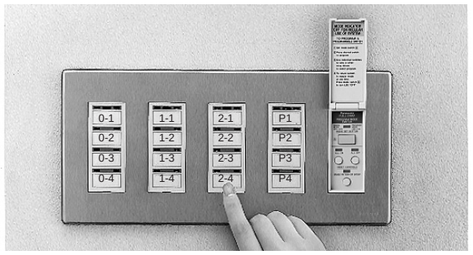
❶ Open the cover of the Program Setting Unit (WRT5850-8).

❷ Press the mode set button to change the system into the setting mode.
(The Red LED lights.)

❸ Press the pattern switch that you want to set.
(The LED above the switch changes from Green to Red.)

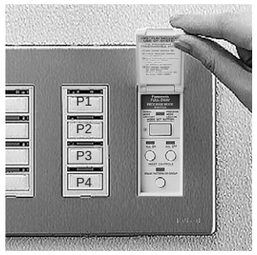


❹ Press the reset control button before performing initial settings.
(The Red LED lights.)
Note: Do not perform this step ❹ if you are confirming or performing changes.



❺ Press individual switches to include the loads for pattern control.
(LED (Red) ON ····· ON
LED (Green) ON ····· OFF
Both LEDs (Red, Green) OFF ···· Override)
Repeat steps ❸, ❹, and ❺ for any other pattern control program settings.
※For dimmer level and timer duration settings, refer to the following.

❻ When pattern setting is complete, press the mode set button to change the system back to normal mode.
(The Red LED goes off.)

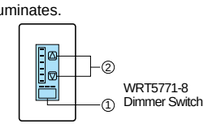


❼ Close the cover of the unit.

■Dimmer Level Program Setting Method

(1) In step ❺, press the dimmer switch ON/OFF switch and ensure the Red LED illuminates.
(2) Set the brightness level with the UP and DOWN buttons.
UP: Brightnes level goes up DOWN: Brightnes level goes down
(Use the six LEDs as a measure to adjust the level of brightness.)

※Only the dimmer switch can be used to set the level of brightness.
(Only ON/OFF dimmer control can be performed without the dimmer switch.)



WRT5771-8
Dimmer Switch

■Timer Duration (OFF-delay, ON-timer) Setting Method

(1) Before setting pattern control, complete timer duration settings (OFF-delay, ON-timer) for the individual switches to which you want to give timer functions using the Wireless Address Setting Unit (WRT9500K-8).
(2) In step ❺, operate the individual switches for which a timer duration (OFF-delay, ON-time) was programmed. This will illuminate both LEDs (Red and Green).

※A maximum of 8 ON-timer and OFF-delay circuits can be programmed for 1 pattern.

Notes:
- If the Relay Control T/U has a vacant terminal (no relay connected), whose address is set on a switch, exclude that address from the group control range when setting group control.
- Do not operate the wireless switches during program setting.

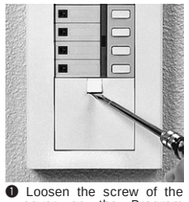
Group and Pattern Control Program Setting Method 2 (Surface Mount Master Switches)

Group Control Program Setting Method

- Group Control Program Setting : Steps ❶~❽.
- Group Control Program Confirmation : Steps ❶~❸, ❻ and ❽.
- Group Control Program Change : Steps ❶~❸ and❺~❽.

Prior to group and pattern program settings:
① Complete program setting plans.
② Complete address settings for Switches, Master Switches and T/Us.

Master Switches with a Program Setting Unit (WRT6120WK-8, WRT6144WK-8, WRT6168WK-8) are essentially required for program setting of the pattern and group controls.



❶ Loosen the screw of the cover on the Program Setting Unit to open it.

❷ Press the Mode Set Button to change the system into the setting mode.(The Red LED lights.)

❸ Press the Group Switch you wish to set.
(The LED changes from Green to Red.)

❹ At the initial setting, be sure to press the Reset Controls Button.
(The Red LED lights.)

❺ Push the Individua l Switches to identify loads to be Group-controlled.
LED (Red) on: Switches controlled by Group Program
LEDs (Red and Green) off: Switch excluded from the Group Control

❻ To set Group Control Program for the other Switches, repeat steps ❸ ~ ❺.

❼ Upon completing the Group Control Program Setting , press the Mode Set Button to change the system into the Normal mode again.
(The Red LED goes off.)

❽ Close the cover of the unit and fasten its screw.

■Timer Duration (Off-delay or On-timer) Setting Method

❶ Before Setting Group Control Program, complete timer duration settings (Off-delay and On-timer) for the Individual Switches you wish them to have timer duration by using the Wireless Address Setting Unit (WRT9500K-8).
❷ In Step 5 both LEDs (Red and Green) lights for the Individual Switches for which a timer duration (Off-delay or On-timer) was programmed.

Notes:
- Up to eight On-timer and Off-delay of Individual addresses can be included per group.
- No level of dimmer illumination can be controlled (set) under group control.
- If the Relay Control T/U has a vacant terminal (no relay connected), whose address is set on a switch, exclude that address from the group control range when setting group control.
- Do not operate the Wireless Switches during group program setting.

Pattern Control Program Setting Method

- Pattern Control Program : Steps ❶~❽.
- Pattern Control Program Confirmation : Steps ❶~❸, ❻ and ❽.
- Pattern Control Program Change : Steps ❶~❸ and❺~❽.

❶ Loosen the screw of the cover on the Program Setting Unit to open it.

❷ Press the Mode Set Button to change the system into the setting mode (The Red LED lights)

❸ Press the Pattern Switch you wish to set. (The LED changes from Green to Red.)

❹ At the initial setting, be sure to press the Reset Controls Button.(The Red LED comes on.)

❺ Set Pattern Control Program with Individual Switches according to the purpose.
LED (Red) on : ON
LED (Green) on : OFF
Both LEDs (Red and Green) off : Override

❻ To Set Pattern Control Program for the other Switches, repeat Steps ❸ ~ ❺.

❼ Upon completing the Pattern Control Program, press the Mode Set Button to change the system into the Normal mode again.
(The Red LED goes off.)

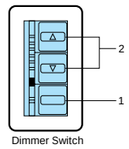
❽ Close the cover of the unit and fasten its screw.

Note:
No loads can be controlled during groupe program setting.

■Dimmer Level Program Setting Method.

In step ❺ set a Dimmer Switch as follows.
① Press the Dimmer Switch (1) and make sure the Red LED lights.
② Set a level of illumination using the Switch (2) ▽△ (Push△to increase brightness and ▽to decrease it.)
(Use the six LEDs as a scale to adjust the level of illumination.)

- No level of illumination can be programmed under pattern control, without a Dimmer Switch. (Only ON/OFF Dimmer Control is possible without a Dimmer Switch.)



Dimmer Switch

■Timer Duration Setting (Off-delay and On-timer)

① Before the pattern control program setting method, complete timer duration settings (Off-delay and On-timer) for the Individual Switches you wish to have time duration by using the Wireless Address Setting Unit.
② In step ❺ both LEDs (Red and Green) lights for the Individual Switches for which a timer duration (Off-delay or On-timer) was programmed.
- Up to eight On-timer and Off-delay of Individual addresses can be programmed per pattern.

Note:
- If the Relay Control T/U has a vacant terminal (no relay connected) whose Addresses is set on a switch, exclude that addresses from the pattern control program.
- Do not operate the Wireless Switches during pattern program setting.

Group and Pattern Control Program Setting Method 3

Note : Be sure to perform pattern and group control program setting before attempting pattern and group control.

Setting with the Wireless Programming Unit (WRT9600-8)

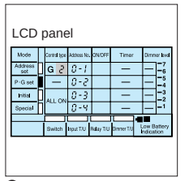
Group Control Program Setting Method (initial setting)

- Pattern/group control program setting:
  Perform steps ❶, ❷, and ❹ to ❽.
- Pattern/group control program confirmation:
  Perform steps ❶ to ❸, and ❽.
- Pattern/group control program changes:
  Perform steps ❶ to ❸, and ❺ to ❽.

Before pattern/group control program setting:
(1) Complete the address plan table.
(2) Finish the T/U, switch, and selector switch address settings.
(3) Connect the WRT9600-8 to the FULL-2WAY signal line.

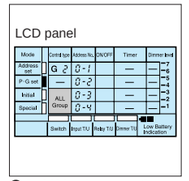
Note:
Do not input control settings into load addresses that you will not be using.

❶ •Connect the Wireless Programming Unit to the FULL-2WAY signal line.
•Turn the Wireless Programming Unit ON.
•Press the function setting key "G".

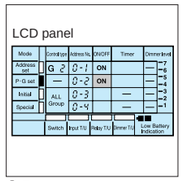


❷ To set "G2" control range of "0-1, 0-2, 1-1, 1-2":
•Press "Cursor" then "Changeover", and select "2" for the group address.

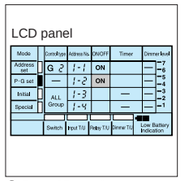
❸ Press and hold "Confirm" for more than 2 seconds to input the "G2" control data from the transmission unit. Press "Cursor" then confirm while pressing "Changeover".
Note: It is not necessary to perform this step ❸ if confirmation is not required.



❹ For initial settings, press "Cursor" then "Changeover", select "Exclude all" on the edit display, and press the execution key.
Note: Do not perform this step ❹ in case of confirming or performing changes.



❺ Decide the loads to be used for group control.
•Press "Cursor" and select the address numbers you want to use for the groups.
•Press "Cursor", then at the "0-1" ON/OFF display press "Changeover", and select "ON". Press "Cursor", then at the "0-2" ON/OFF display press "Changeover", and select "ON".



❻ Press "Cursor" then "Changeover", and select "ON" for "1-1" and "1-2" as in step ❺.

ON/OFF display "ON": Load included in group
No display: Load not included in group

❼ Press and hold "Setting" for more than 2 seconds to transfer the "G2" control range into the transmission unit.
To set the control ranges for other groups, repeat steps ❷ to ❼.

❽ When group setting is complete, turn the setting unit power OFF and detach it from the FULL-2 WAY signal line.

■Timer Duration (OFF-delay, ON-timer) Setting Method

While performing step ❺ on the left after selecting "ON" for the address number of which you want to give a timer function, press "Cursor" then "Changeover" to select the timer function that you want to set in the timer display.

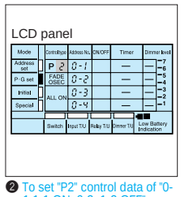
Timer function
- ON-timer
  30 sec., 1 min., 5 min., 60 min., 120 min.
- OFF-delay
  30 sec., 1 min., 5 min.

※A maximum of 8 ON-timer and OFF-delay circuits can be programmed for 1 group.
※Setting of dimmer brightness level is not possible under group control.

Note:
- If the Relay Control T/U has a vacant terminal (no relay connected), whose address is set on a switch, exclude that address from the group control range when setting group control.

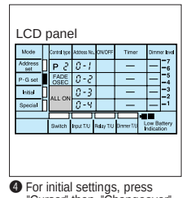
Pattern Control Program Setting Method (initial setting)

❶ •Connect the Wireless Programming Unit to the FULL-2WAY signal line.
•Turn the power of the pattern/group setting unit ON.
•Press the function setting key "P".

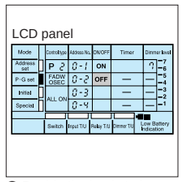


❷ To set "P2" control data of "0-1,1-1 ON, 0-2, 1-2 OFF":
•Press "Cursor" then "Changeover", and select pattern address "2".

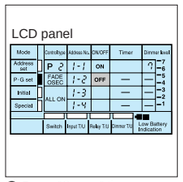
❸ Press and hold "Confirm" for more than 2 seconds to input the "P2" control data from the transmission unit. Press "Cursor" then confirm while pressing "Changeover".
Note: It is not necessary to perform this step ❸ if confirmation is not required.



❹ For initial settings, press "Cursor" then "Changeover", select "All clear" on the edit display, and press the "execution key".
Note: Do not perform this step ❹ in case of confirming or performing changes.



❺ Decide the loads to be used for pattern control.
•Press "Cursor" and select the address numbers you want to be used for the pattern.
•Press "Cursor", then at the "0-1" ON/OFF display press "Changeover" , and select "ON".
Press "Cursor", then at the "0-2" ON/OFF display press "Changeover", and select "OFF".



❻ Press "Cursor" then "Changeover", and select "ON" for "1-1" and "OFF" for "1-2" as in step ❺.

ON/OFF display "ON": ON setting
"OFF": OFF setting
No display: Load not included in pattern

❼ Press and hold "Setting" for more than 2 seconds to transfer the "P2" control data into the transmission unit.
To set the control data for other patterns, repeat steps ❷ to ❼.

❽ When group setting is complete, turn the setting unit power OFF and detach it from the FULL-2 WAY signal line.

■Dimmer Levels Program Setting Method

While performing step ❺ on the left after selecting "ON" for the address number of which you want to set a dimmer level, press "Cursor" then "Changeover" to select the dimmer level 1 to 7 (Dark to Bright) that you want to set in the dimmer level display.

Note:
- For dimmer control using individual addresses , be sure to use the WRT2050-80 transmission unit.

■Timer Duration (OFF-delay, ON-timer)

While performing step ❺ on the left after selecting "ON" for the address number of which you want to give a timer function, press "Cursor" then "Changeover" to select the timer function that you want to set in the timer display.

Timer function
- ON-timer
  30 sec., 1 min., 5 min., 60 min., 120 min.
- OFF-delay
  30 sec., 1 min., 5 min.

※A maximum of 8 ON-timer and OFF-delay circuits can be programmed for 1 pattern.

■Fade time Setting Method

While performing step ❺ on the left press "Cursor" then "Changeover" to select the fade time that you want to set in the fade display.
(Fade time: None, 3 sec., 6 sec., 1 min.)

Note:
For fade time setting, be sure to use the WRT2050-80 Transmission Unit.

Note:
- If the Relay Control T/U has a vacant terminal (no relay connected), whose address is set on a switch, exclude that address from the group control range when setting group control.

Contact Input T/Us

See page 57 and 58 for details of the Dimmer Contact Input T/U.

Circuit Design for Control Using External Devices (Timers or Sensors)

WRT3224-8
Contact Input T/U
(4-Input)
(Infrared I/O)
(Panel Use)

WRT3211-8
Contact Input T/U
(1 Input)
(Infrared I/O)
(Panel Use)

■Features

The Contact Input T/U receives a signal (normally open dry contact input) from external devices, enabling individual, group, and pattern control.

Control method	Individual/Group control	Pattern control
Input signal	Continuous closure of 1 sec. or more	Continuous closure of 0.2 sec or more
Operation	• ON with contact close • OFF with contact open	•Contact close: Changes between set patterns •Contact open: Indicator light condition does not change
Control Method	• Turning same loads ON and OFF with 1 input signal	•A load to be only turned ON by one dry contact closure and turned OFF by another dry contact closure •The conditions for turning loads ON are different from those for turning them OFF.
Application example	•ON/OFF operation with a timer •ON/OFF operation with a Photoelectric EE switch	•Turning loads either only ON or only OFF by a timer

■Individual control

Set the address of the contact Input T/U to match that of the Relay Control T/U or the T/U with 6A relay to be controlled.

■Group control

Set the address of the contact input T/U to match that of the group switch. This will provide the same control as that of the group switch.

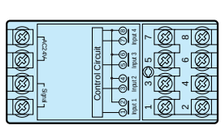
■Pattern control

Set the address of the contact Input T/U to match that of the pattern switch. This will provide the same control as that of the pattern switch.

※The Contact Input T/U operates upon detecting changes in the ON/OFF status of the contact. It only operates when it detects the contact going ON or OFF in individual and group control, or when it detects the contact going ON in pattern control.

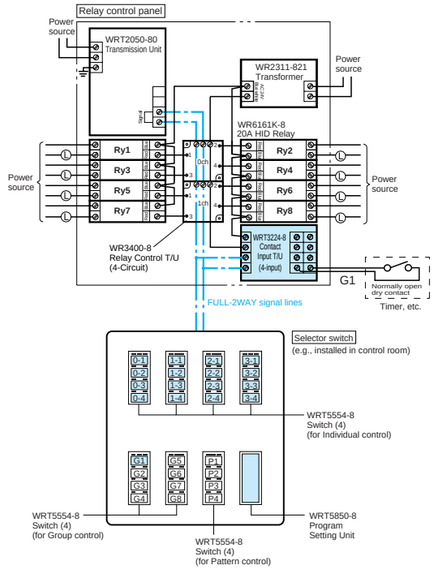
※When the contact goes ON or OFF, it is possible to manually control ON/OFF with the override/manual switch.

■Contact Input T/U (4-Input) terminal arrangement

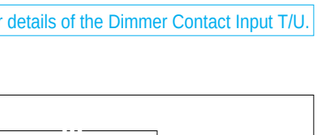


• Terminal numbers 2, 4, 6, and 8 are connected internally. Do not use terminal numbers 1, 3, 5, and 7 as common terminals.

■Wiring diagram



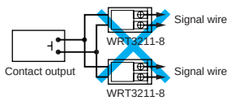
Notes:
To set pattern or group controls using a contact input T/U, be sure to set the pattern or group with the setting unit in the selector switch. (Pattern and group controls cannot be set using only a contact input T/U.)
See pages 47, 48, 50 for details.



WRT9600-8

■Notes

(1) When using the WRT3211-8 (Contact Input T/U (1-input)):
• Do not connect multiple contact input T/Us in parallel for 1-input signal.



(2) When connecting to external devices items like Timer Setting Unit, install a circuit that disables operation when not required; for example on weekends and holidays.

Passive Infrared Unit Control

Circuit Design for Passive Infrared Ceiling Unit (Infrared I/O)

Can be used to automatically turn lights ON or OFF, or dim lights, upon detection of movement by people.

WRT3374K-8
Passive Infrared Ceiling Unit
(Infrared I/O)(with Photosensor)
Use at a distance of at least 40 cm from incandescent lighting fixtures.

WRT3364K-8
Passive Infrared Ceiling Unit
(Infrared I/O) (with Photosensor)
(Wide Detection Area Type)
Use at a distance of at least 40 cm from incandescent lighting fixtures.

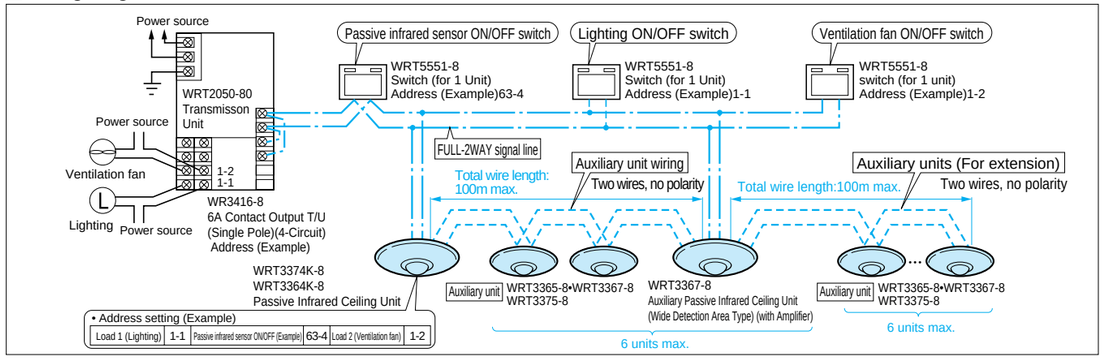
Not applicable to U.S.A market.
See page 38 for selecting appropriate items.

Necessary for address setting.
WRT9600-8
Wireless Programming Unit
WRT9500K-8
Wireless Address Setting Unit can be used for address setting.

■Features

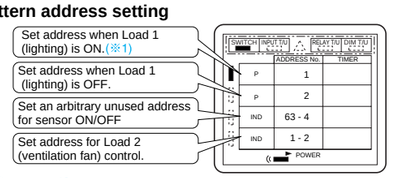
(1) Controls lighting by detecting changes in temperature when people move.
(2) Equipped with a brightness sensor to enable lighting only when it becomes dark and people are present.
(3) The detection range can be expanded by using auxiliary units.
(4) Can also be operated from a wall switch in combination.
(5) Sensor operation can also be disabled.
(6) Has two addresses, enabling the handling of two loads, such as lighting and ventilation.
(7) Lineup includes wide-angle detection types.

■Wiring diagram

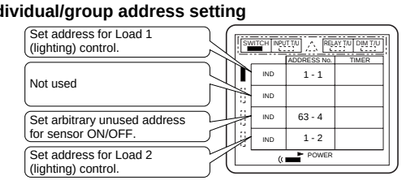


■Address setting (Example)

• Pattern address setting



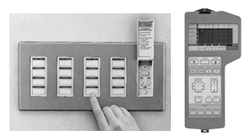
• Individual/group address setting



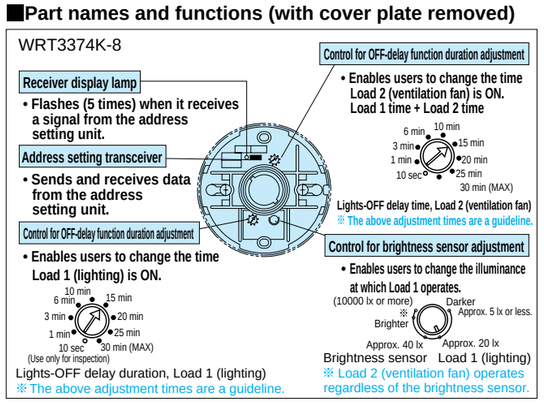
■Precautions

(1) Enters detection state approx. 50 seconds after system startup (FULL-2WAY signals are supplied), and operation can be checked. Address setting can be done during the approx. 50 sec period.
(2) Perform address setting by using the WRT9500K-8 Address Setting Unit (Sold separately), or the WRT9600-8 Wireless Programming Unit (Sold Separately).
(3) Timer settings cannot be made.
(4) For individual/group address setting, set the address for the first unit only (※1).
(5) If sensor ON/OFF is not used, clear the address.
(6) When using pattern/group control, be sure to set the control content separately.

When performing pattern and group control, be sure to set the pattern/group control content beforehand.
For details, see P.47,48,50.



■Part names and functions (with cover plate removed)



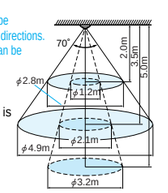
■Specifications of WRT3374K-8 and WRT3364K-8

Rating		Input signal at ±24 V Signal current consumption 20 mA	Applicable box	Medium square outlet box with round-holed cover
Address setting method		Infrared I/O	Lights-OFF delay time	Adjustable from 10 sec to 30 min approx.
Sensor	Detection method	Detection of changes in the passive infrared level	Mounting method	Box installation, ceiling installation by clamps (30 mm max.)
	Detection speed	Walking speed: 0.3 to 1 m/sec	Applicable wire: FULL-2WAY signal line	Diameter of 0.65-1.6 mm; 0.75-2.0 mm²
	Sensor ON/OFF function	Provided	Applicable wire: Auxiliary passive infrared ceiling unit	Diameter of 0.5-1.0 mm; 0.5-0.75 mm²

■Detection area

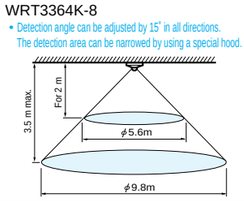
※Adjust the detection area to 70 cm from the floor to enable detection of hand movement.

WRT3374K-8
• Detection angle can be adjusted by 15° in all directions. The detection area can be narrowed by using a special hood.



Max. ceiling height is 5m when using the hood.

WRT3364K-8
• Detection angle can be adjusted by 15° in all directions. The detection area can be narrowed by using a special hood.



⚠ Caution:	The passive Infrared Ceiling Unit is only available for lighting control. Do not use to control non-lighting loads such as electrical equipment, air conditioning equipment, or alarm systems. Doing so may cause malfunction and lead to accident or injury.

Passive Infrared Ceiling Unit (Auxiliary Unit)

WRT3365-8
Auxiliary Passive Infrared Ceiling Unit
(Wide Detection Area Type)

Use at a distance of at least 40 cm from incandescent lighting fixtures.

WRT3367-8
Auxiliary Passive Infrared Ceiling Unit
(Wide Detection Area Type)
(with Amplifier)

Use at a distance of at least 40 cm from incandescent lighting fixtures.

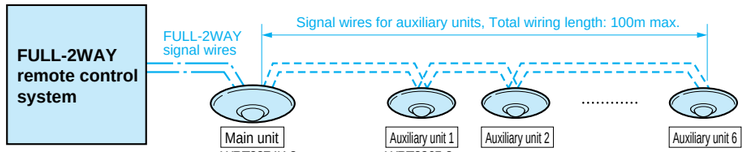
■Features

(1) Line-up includes wide-angle detection types.
(2) Seven or more auxiliary units can be set up by using the auxiliary extension type. This is suitable for use in spaces such as long corridors.

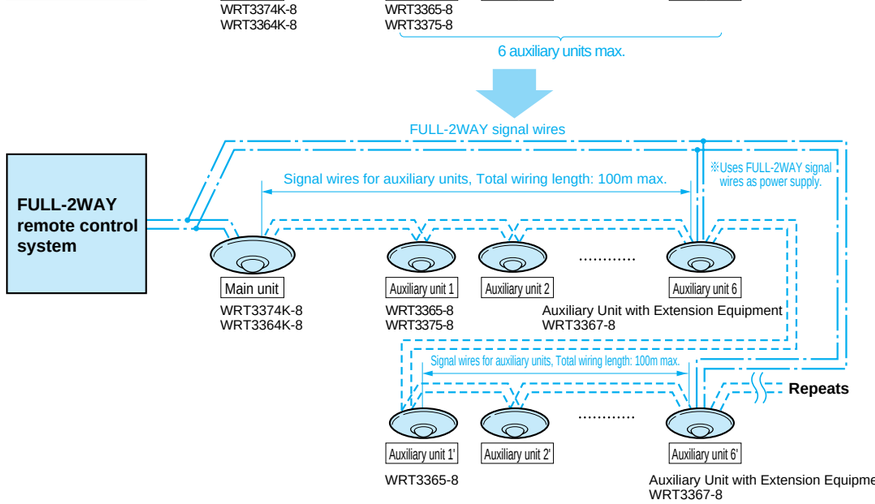
Not applicable to U.S.A market. See page 38 for selecting appropriate items.

■Wiring diagram

• When not using auxiliary unit with extension function (WRT3367-8)



• When using auxiliary unit with extension function (WRT3367-8)

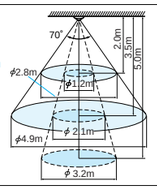


■Detection area ※Adjust the detection area to 70 cm from the floor to enable detection of hand movement

WRT3375-8

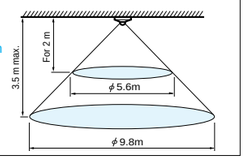
- Detection angle can be adjusted by 15˚ in all directions. The detection area can be narrowed by using a special hood.

Max. ceiling height is 5 m when using the hood.



WRT3365-8 • WRT3367-8

- Detection angle can be adjusted by 15˚ in all directions. The detection area can be narrowed by using a special hood.



■Notes (WRT3374K-8, WRT3364K-8, WRT3311-8, WRT3394-8)

(1) The unit detects the change in temperature (approx. 3˚C or more) due to the movement of a person and turns the load ON automatically. A certain amount of time after the final detection of movement of people, the unit automatically turns the lights OFF.
If the difference in temperature between a person and the surrounding air is less than 3˚C, the unit may fail to make a detection.
Fluorescent lamps or bulb-type fluorescent lamps that are excessively turned ON and OFF will have a shorter service life. When using the unit in an area with such frequent turning ON and OFF of lights, fit incandescent lights or set the lights-OFF delay function to a longer time setting. The life of the ON/OFF remote control relays should also be considered. See P. 19.
(2) WRT3374K-8 and WRT3364K-8 do not receive signals from the passive infrared ceiling units for approximately 50 seconds after FULL-2WAY signal connection. Address setting also cannot be done. Addresses for passive infrared unit ON/OFF cannot overlap the addresses of other devices such as the T/U for relay control, and 6A relay units with T/U.
(3) Do not install the unit in places subject to severe temperature changes, such as in direct sunlight or in proximity to light fixtures that give off excessive heat.
(4) The passive infrared ceiling unit (WRT3374K-8 and WRT3364K-8) has a signal power consumption of 20mA, so install an amplifier if signal power consumption exceeds 500mA.

■Note (WRT3375-8, WRT3365-8, WRT3367-8, WRT3315-8, WRT3395-8)

Do not connect the FULL-2WAY signal wires and transformer power supply 24V AC wires to the auxiliary unit terminals of the auxiliary unit
The internal circuits of the auxiliary unit may cause a malfunction and fail to detect correctly.

Daylight Sensor Control

Circuit Design for Daylight Sensor Ceiling Unit

⚠ Safety Precaution	Daylight Sensor Ceiling Units should only be used for lighting control. Do not use to control non-lighting loads such as electrical equipment, air conditioning equipment, or alarm systems. Doing so may cause malfunction and lead to accident or injury.

Enables automatic ON/OFF switching of lights by detecting brightness near windows.

WRT3657-8
Daylight Sensor Ceiling Unit

Necessary for address setting.

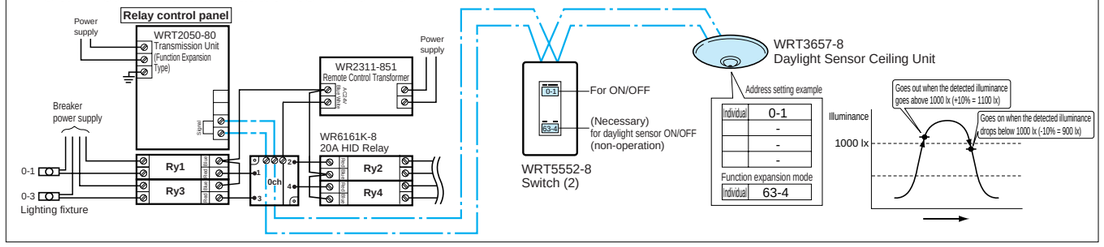
WRT9600-8
Wireless Programming Unit
(WRT9500K-8
Wireless Address Setting Unit can be used for address setting.)

■Features

(1) Controls lighting by detecting brightness of natural light from outdoors. (Detected illuminance guideline: 100 lx to 2000 lx)
(2) Connects directly to FULL-2WAY signal wires.
(3) Daylight sensor can be disabled to enable overriding of ON/OFF switching.
(4) Can control loads in two ranges, with different illuminances.
(5) Enables individual, pattern, group control.
(6) Enables control based on illuminance at desk top surface. (Stores correlation ratio of ceiling and desktop illuminance) High cost performance, and eliminates the need for contact input T/U.

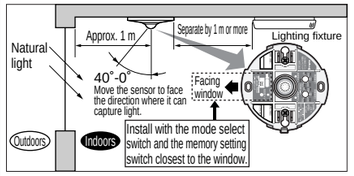
■Wiring diagram

• To turn load 0-1 ON/OFF at a threshold of 1000 lx



■Installation points

- The sensor unit performs ON/OFF control of lighting fixtures by detecting the brightness of natural light coming in from outdoors. Install in a position where natural light can be captured, as indicated in the diagram.
- Be sure to install the sensor section so that it faces a window. (Installation at a facing-north window is recommended.)



■Part names and function (with covering plate removed)

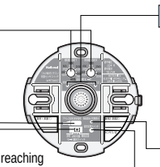
Illuminance setting section

Infrared I/OD address setting transceiver

- Sends and receives data from address setting unit

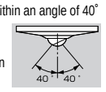
Mode select switch

- Normal: To turn ON/OFF 5 minutes after reaching the set illuminance value (110% or 90%).
- Inspect: To turn ON/OFF 1 second after reaching the ON illuminance value (110% or 90%).
- Initial: To store correlation in memory.
- Function expansion: To perform sensor ON/OFF (non-operating) address setting



Sensor section

- Detects illuminance
  Can be adjusted within an angle of 40˚ in all directions.
  Move the sensor to face the direction of incoming light.



Flashes (5 times) when an I/R signal is received from the address setting controller.
○ (Unlit): Initial setting is finished
● (Lit): Ceiling surface illuminance is standard

Stores illuminance correlation in memory.
To reset, hold down for more than 2 seconds.

■Address and operation

※Address setting requires the WRT9600-8 or WRT9500K-8 setting unit.

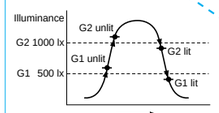
When performing pattern and group control, be sure to set the pattern/group control content beforehand.
For details, see P. 47.48.50

WRT9600-8

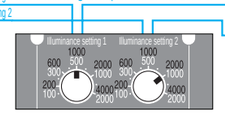
• Individual/Group control

	Address no.	Timer
G	1	
G	2	

Corresponds with illuminance setting 1
Corresponds with illuminance setting 2

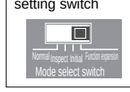


Illuminance setting section
Illuminance is indicated with white letters.
In the following example: 500 lx and 1000 lx



• (Necessary) for sensor ON/OFF (non-operation) address setting

Set address after setting switch



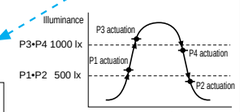
Arbitrary unused individual address

	Address no.	Timer
Individual	63-4	

• Pattern control

	Address no.	Timer
P	1	
P	2	
P	3	
P	4	

Corresponds with illuminance setting 1
Corresponds with illuminance setting 2



■Notes:

The illuminance detector in this product is directional. Due to the angle of incidence of incoming light, there may be a difference between the detected illuminance and the value actually measured with a illuminance meter. Furthermore, it is designed to detect sunlight, so the detected illuminance will change if it is affected by fluorescent or incandescent lights. To determine the illuminance at which detection actually occurs, adjust the illuminance setting control of the product and check at the point where the ON/OFF LED switches on.

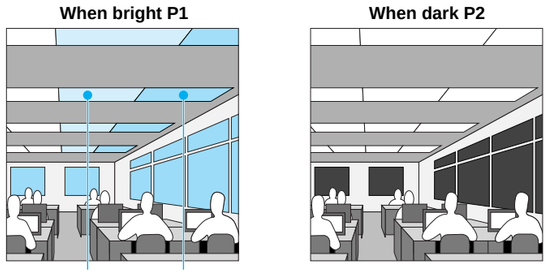
To control using the desktop surface as the standard···

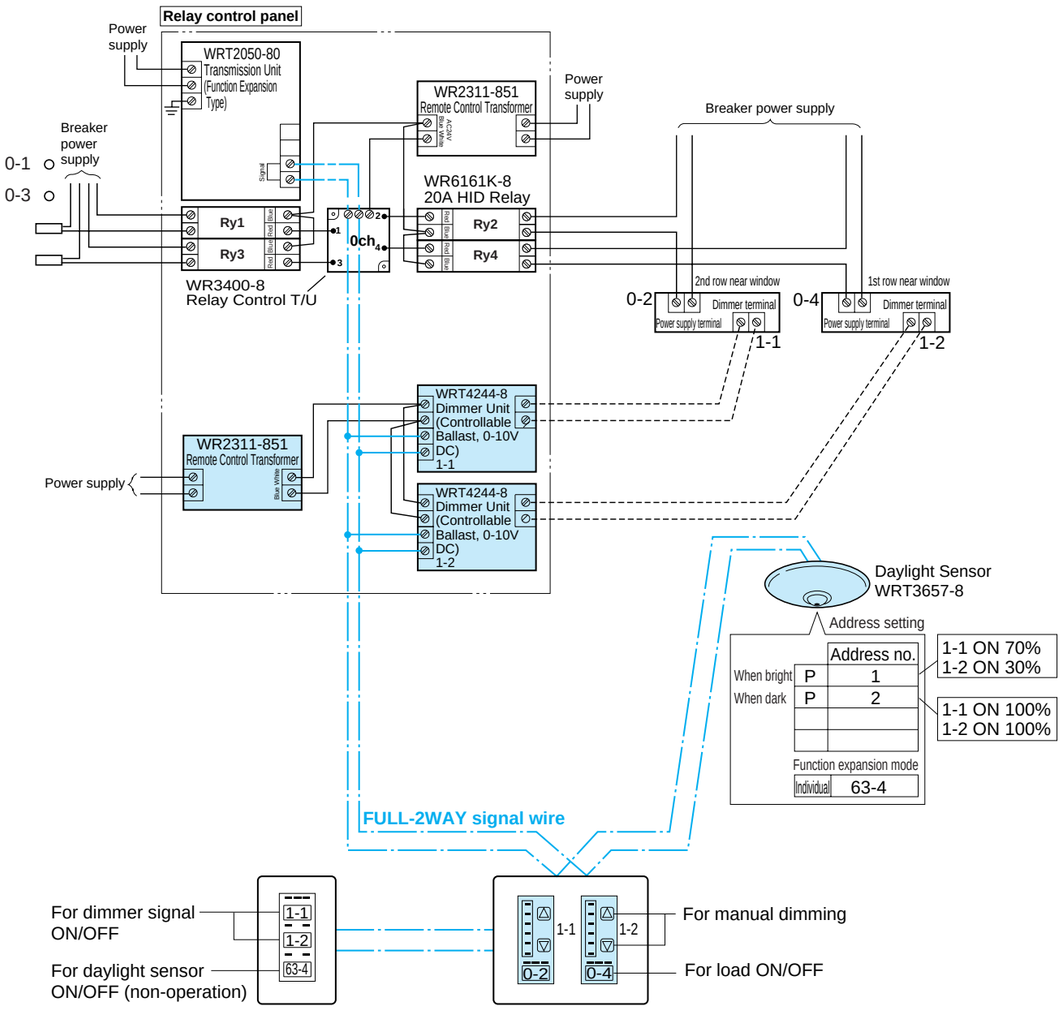
- The illuminance correlation is not stored in memory if the illuminance of the ceiling surface is 2 times or more that of the desktop surface.
- A correlation coefficient cannot be stored in memory if the illuminance of the ceiling surface exceeds 4000 lx.

Example of using Daylight Sensor Ceiling Unit

■Wiring diagram

Dims when outdoor light is bright, and lights up 100% when dark.





Wireless Control

Note
When using high-frequency fluorescent lamps, install the wireless receiver at least 1.5 meters away from lighting fixtures.

Circuit Design for Wireless Control

WRT1320-8
Wireless Receiver
(Ceiling Mount)
(Flush Mount)

WRT1514K-8
Wireless switch
(4) (Battery Type)
(Infrared I/O)

WRT9600-8

WRT9600-8
Wireless Programming Unit
Required for setting wireless switch addresses.
(WRT9500K-8
Wireless Address Setting Unit can be used for address setting.)

WRT9500K-8

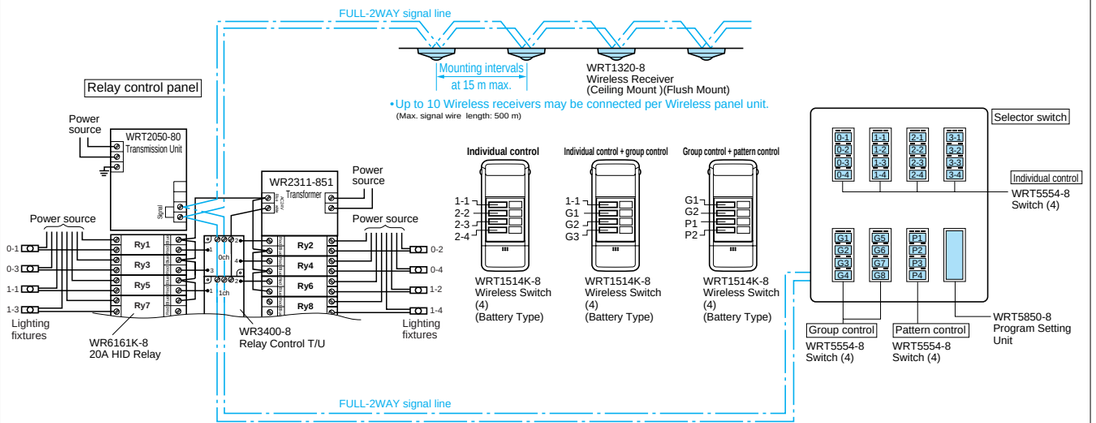
Design tips for circuit divisions

(1) A Wireless receiver, and aWireless switch can be added to the basic circuit to permit wireless control.

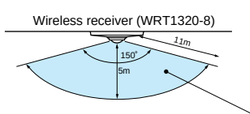
(2) For pattern and group control, set the address of the Wireless switch to match that of pattern or group switches on the selector switch.
(See page 56 for address setting method.)

Be sure to perform pattern and group control settings.
See pages 47 to 50 for details.

■Wiring diagram



■Notes on mounting a wireless receiver



•Operating range of receiver for receiving signal.
•Receivers should not be mounted in any location subject to direct sunlight.

Additional Functions

Dimmer Control for Incandescent lamps

Circuit Design for Dimmer Control (Incandescent lamps) ··· Use WRT2050-80 Transmission unit.

WRT5731WK-8
Dimmer Switch
(Infrared I/O Type)
(COSMO Module)
(White)

WRT4345-82
Dimmer Unit
(500W)
(Infrared I/O)
(Panel Use)

WRT4348-81
WRT4348-82
WRT4348K-814
Dimmer Unit
(800W)
(Infrared I/O)
(Panel Use)

WRT43415-81
WRT43415-82
WRT43415K-814
Dimmer unit
(1500W)
(Infrared I/O)

WRT3241-8
Dimmer Contact Input T/U
(for 1 Input)
(Infrared I/O)
(Panel Use)

WRT9600-8
Wireless Programming Unit

Necessary for address setting of DIMMER UNITS switch and T/U.

(WRT9500K-8
Wireless Address Setting Unit can be used for address setting.)

■Features

(1) Allows handling of a large number of dimmer circuits.
Uses (individual) load addresses.

(256 circuits) − (Circuits used for individual control)

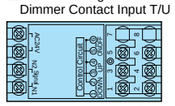
(2) Can perform group dimming.
Can control the collective dimmer circuits using (individual) load addresses with one dimmer switch.

Be sure to perform group control setting.
See pages 47 to 50 for details.

(3) Allows connection of dimmer control to other systems.
Possible by connecting non-voltage a-contact signal to the dimmer contact input T/U.

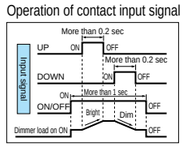
■Wiring diagram (using 2 dimmer circuits, 1 group dimmer, and 1 dimmer contact input)

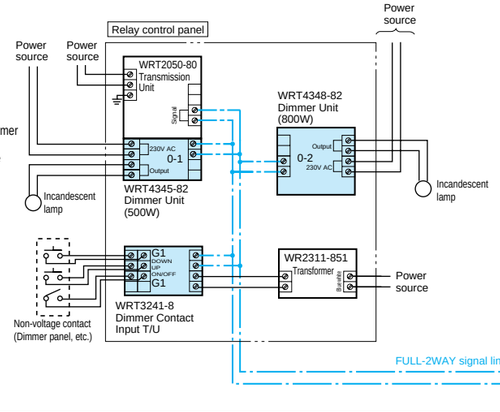
■Terminal assignment for Dimmer Contact Input T/U

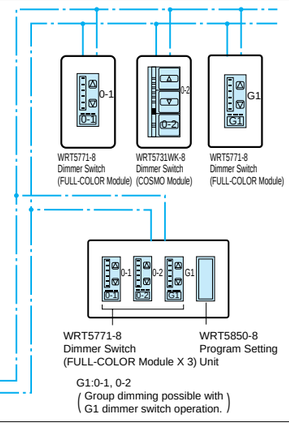


Terminal numbers 2, 4, and 6 of the dimmer contact input T/U are on the same pole.
Do not use terminals 1, 3, and 5 on the same terminal.

Operation of contact input signal







■Notes on dimmer control of incandescent lamps

(1) The minimum load capacity of dimmer circuits is 40W, and the maximum power is 200W per lamp.
(Multiple lamps can be connected within the rated capacity.)

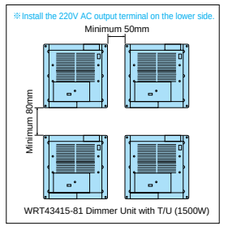
(2) Avoid dimmer control of lighting fixtures with voltage-down transformers (low-voltage lighting).

(3) This dimmer unit with T/U is for regular 220V AC incandescent lamps only. Do not use with special-function lighting fixtures (e.g. incandescent lamps with built-in dimmer functions) or fluorescent lamps.

•Incandescent lamps that can be used

•Low-voltage mini halogen lamps cannot be used.
•Globe-type fluorescent lamps cannot be used.

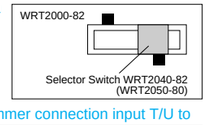
(4) When joining 2 or more dimmer units (500W, 800W), or installing multiple mounting dimmer units, keep the load capacity at 80% or less in order to prevent overheating.
WRT4345-82 (500W)···400W or less
WRT4348-82 (800W)···640W or less
WRT43415-82 (1500W)···1200W or less
Furthermore, when installing multiple units of the WRT43415-82, ensure at least the minimum mounting space between them as shown in the diagram on the right.



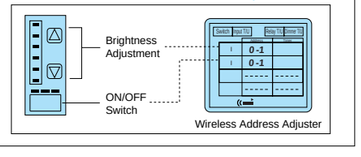
(5) The maximum number of circuits that can be controlled is 256, including individual control. Overlap with the addresses of other relay control T/U, 6A contact output T/U is not possible.
Since pattern and group control takes longer with the greater the number of dimmer circuits, it is recommended to limit the number of circuits to 64.

(6) Either individual addresses (0-1 to 63-4) or dimmer addresses (1 to 16) may be used. However, the group dim and fade functions will not work if dimmer addresses are used. Using individual addresses is therefore recommended.
Refer to page 60 for instructions on making address settings.

(7) In order to use an individual address for a T/U equipped dimmer unit, set the selector switch on the front of the unit to the WRT2040-82 position. To use a dimmer address, set the selector switch to the WRT2000-82 position.



(8) Set the address for the dimmer switch/dimmer connection input T/U to both "brightness adjustment" and "ON/OFF." It is also possible to set "brightness adjustment" and "ON/OFF" to different addresses.

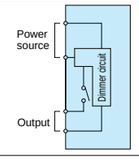


■Notes on installing a Dimmer Unit (for incandescent lamps)

The Dimmer Unit generates spurious electrical noise from phase control, radiated from the output wiring.
When using the Dimmer Unit for dimming incandescent lamps, there may be noise on radios or other audio devices.

■Internal circuitdiagram

WRT4345-82
WRT4348-82
WRT43415-82



Continuous Dimming Control of Dimmable Ballast (0-10V DC Type) (Continuous Dimming Type)

WRT4244-8
Dimmer Unit
(Controllable Ballast,
0-10V DC)
(Infrared I/O)
(Panel Use)

WRT3241-8
Dimmer Contact Input T/U
(for 1 Input)
(Infrared I/O)
(Panel Use)

Necessary for address setting.
WRT9600-8
Wireless Programming Unit
(WRT9500K-8
Wireless Address Setting Unit can be used for address setting.)

■Features

(1) Enables control of the continuous dimming of Dimmer Ballast (0-10 V DC Type).

(2) Enables step-free brightness adjustment to suit the situation from a local switch.

(3) Enables the handling of a large number of dimming circuits: Uses individual addresses.
(Circuits used for inverter dimming control) = (256 circuits) - (Circuits used for individual control) - (Circuits used for incandescent lamps dimming control)

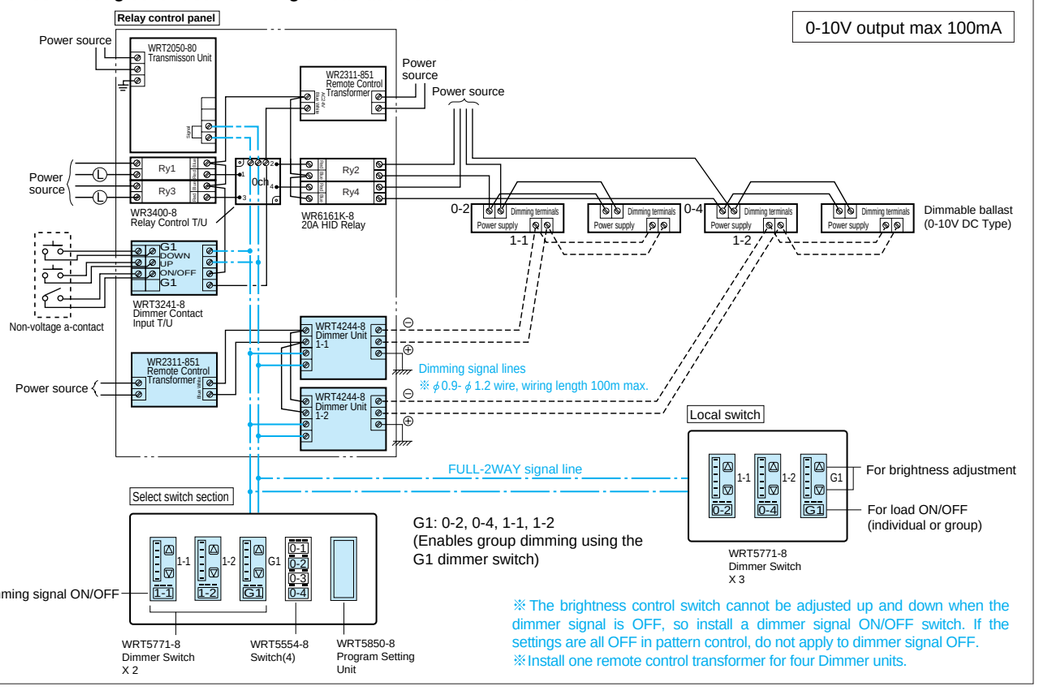
(4) Enables group dimming.
Dimming circuits using load (individual) addresses can be controlled as a group using a single dimming switch.
Be sure to perform group control content setting. For details, see P.50.

(5) Enables connection of dimmer control to other systems.
Possible by connecting non-voltage a-contact signal to the dimmer contact input T/U.

■Wiring diagram (for 2 dimming circuits, 1 group dimmer and 1 dimmer contact input)

• When conducting continuous dimming of load addresses 0-2 and 0-4

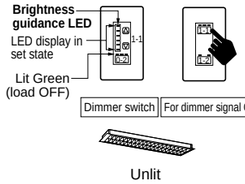
0-10V output max 100mA



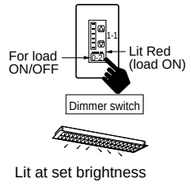
※The brightness control switch cannot be adjusted up and down when the dimmer signal is OFF, so install a dimmer signal ON/OFF switch. If the settings are all OFF in pattern control, do not apply to dimmer signal OFF.
※Install one remote control transformer for four Dimmer units.

■Operation Setting

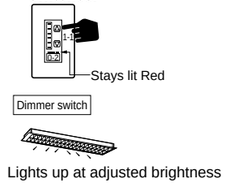
Step 1: **Press 1-1 of the Dimmer signal ON/OFF switch beforehand.**



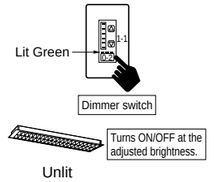
Step 2: **Press the Load ON/OFF switch.**



Step 3: **Adjust brightness by pressingthe△and▽of the Brightness adjustment switches.**



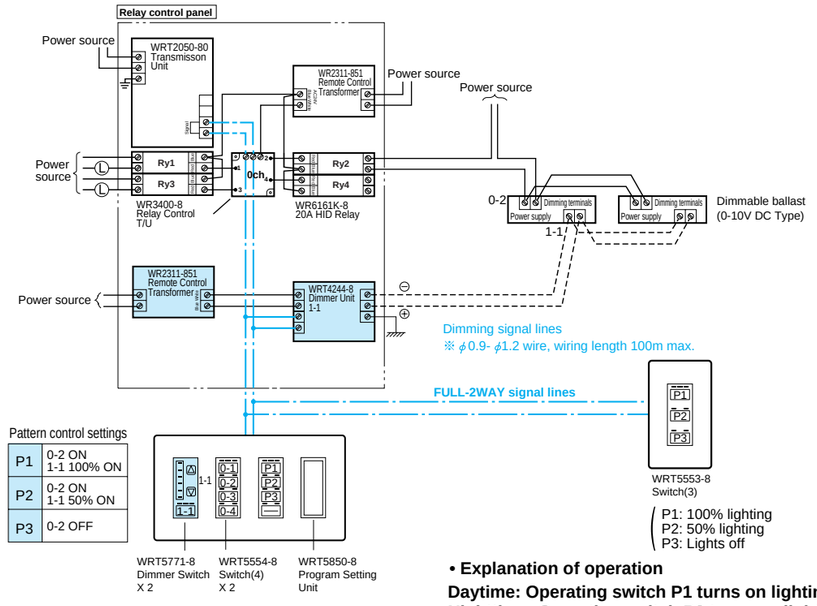
Step 4: **Press Load ON/OFF switch.**



Recommended for conference rooms and small banquet halls.

■Example of use in a corridor

Realizes energy conservation in spaces such as corridors, with no loss of harmony, by using dimming rather than thinned-out lighting.
•Switch is used for lighting at 100% during the day, and 50% at night.
•Turns lights off late at night after everyone leaves.



• Explanation of operation
Daytime: Operating switch P1 turns on lighting at 100%.
Nighttime: Operating switch P2 turns on lighting at 50%.
Late night: Operating switch P3 turns lighting off.

■Precautions

(1) This equipment is specially designed for a load consisting of 0-10V fluorescent continuous dimming type lighting fixtures.
Please inquire with us directly to determine if use is possible or not.

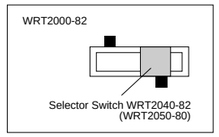
(2) Wiring distance between the dimmer unit and lighting fixtures lamps is 100m max. Wiring distance between the dimmer unit and remote control transformer is 25m max.

(3) Use ϕ0.9 or ϕ1.2 solid copper wire (CPEV wire, etc.) for dimmer signal lines.

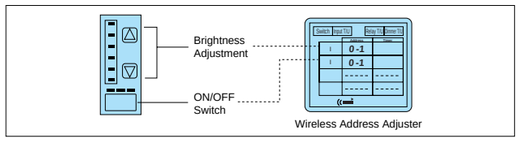
(4) The number of controlled circuits is 256max., including individual control and incandescent lamp continuous dimming control.
There can be no overlap with addresses for other T/U for relay control, 6A relay units with T/U or incandescent lamp dimmer units, etc. If the number of dimming circuits is too large, pattern/group control will take time, so we recommend using with at most 64 circuits.

(5) Both individual addresses (0-1 to 63-4) and dimmer addresses (dimmer 1 to 16) can be used, but group dimming and fade control cannot be used with dimmer addresses, so we recommend using individual addresses.

(6) When using a dimmer unit address with an individual address, switch the selection switch on the back of the fixture to "WRT2040-82." When using with a dimmer address, switch to "WRT2000-82."



(7) Set to both "Brightness adjustment" and "ON/OFF" for the address of a dimmer switch/dimmer contact input T/U.
Addresses of "Brightness Adjustment" and "ON/OFF" can be set to other addresses.



(8) A dimmer contact input T/U cannot be set to a dimmer address (dimmer 1-16). Individual or group addresses should be set.

(9) When the "ON/OFF switch" is turned off, the level is automatically set to minimum.

Appellation Indication System & Card Operation Switch

Circuit Design for Simplified Appellation Indication System

WR3900R-8
Appellation Indication Unit (Red)

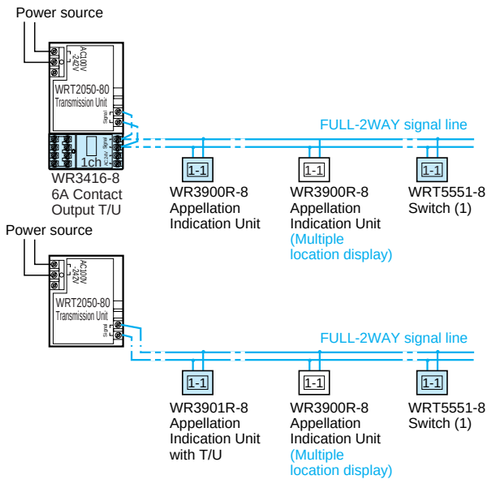
■Features

(1) ON/OFF display example with appellation indication unit (dip switch).
(2) Reduces wiring by using only the FULL-2WAY signal line feed wire to flash ON and OFF.
(3) Indication unit cover can be removed for the writing of names of items under control.
(4) Can have relay (load) ON state display using switch operation.

■Wiring diagram

Appellation indication for relay (load) ON state
⇩
Use WR3900R-8 Appellation Indication Unit (Relay State Display Model)

For designation display without Relay control T/U with the same load address
⇩
Use a WR3901R-8 Appellation Indication Unit with T/U



■Notes

(1) Neither a Relay control T/U nor a 6A contact output T/U should be used at the same load address as a Appellation indication unit with a T/U function (WR3901R-8). In such an application use a WR3900R-8 Appellation Indication Unit.
(See page 42 for details on address setting.)
(2) To have multiple indicators at the same load address when using a Appellation indication unit with T/U function, use a WR3900R-8 Appellation Indication Unit for the second location and beyond.

Circuit Design for Card Operation Switch (Dip switch)

WR3891-8
Card Operation Switch
(Individual/Group Controls)

Can control lights in each room of a hotel, for example, and automatically turn lights OUT when nobody is in.

Design tips for circuit division

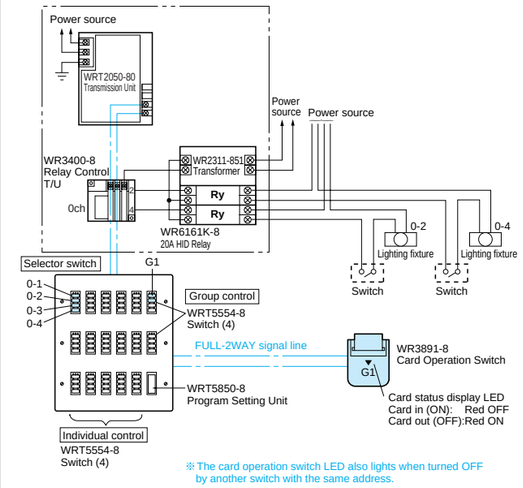
(1) Match to the card operation switch address.

■For group control (Pattern control not possible)
Match the addresses for the selector switch "group control" switch and the card operation switch.
(See page 42 for details on address setting.)

■For individual control
Match the addresses of the relay control T/U and the card operation switch.
(See page 42 for details on address setting.)

■Wiring diagram

• With power source control of multiple circuits (group control)

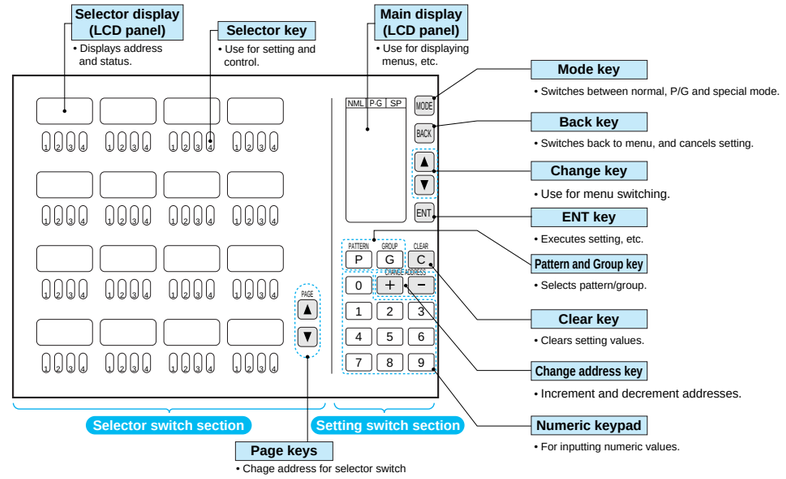


Notes
(1) Use a card specifically intended for an electronic key card reader. (Card not included.)
(2) Do not use magnetized cards such as telephone cards, nor transparent or metallic cards.

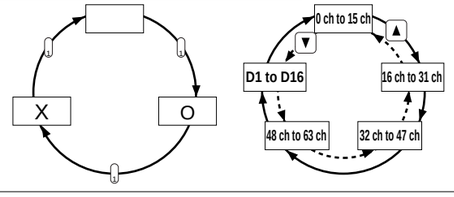
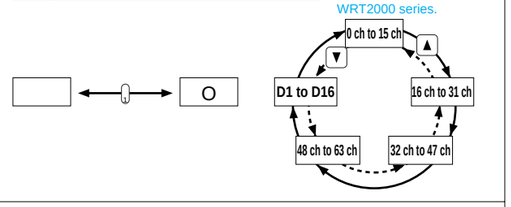
Central Control and Programming Unit

Central Control and Programming Unit (WRT9103K-89) Setting Method

■Part identification and function



■Basic Setting Method

Step	For Pattern Setting	For Group Setting
1	Using MODE, set the ▲ mark to P·G.	
2	Using ▲ and ▼, set to EDIT, and press ENT.	
3	Press P (pattern).	Press G (group).
4	Input the address to be edited by using the numeric keypad or ＋ and －. • The control setting for that address is displayed on the selector display. • Set the fade time or use the edit functions if necessary. To re-enter input, clear with C. You can input the control setting for the displayed address from the transmission unit by holding down ▼ at this time (for approx. 3 seconds).	
5	Use the selector keys to select the data. • The channel display can be selected with PAGE ▲ ▼. • The status changes each time the key is pressed. • During selection, the cursor (_) is displayed on the selector display. <Selector display> Display / Status O: ON (*O: Timer set, ₁O: Dimming level set) X: OFF None: Outside area ※*O and ₁O are displayed only when the transmission unit setting is WRT2050-80 	Use the selector keys to select the data. • The channel display can be selected with PAGE ▲ ▼. • The status changes each time the key is pressed. • During selection, the cursor (_) is displayed on the selector display. <Selector display> Display / Status O: Load included in group (*O: Timer setting) None: Load not included in group ※*O is displayed only when the transmission unit setting is WRT2050 series or WRT2040 series or WRT2000 series. 

※The control settings for the address being edited are not stored as is in memory of the unit, so store in memory by switching the address or switching the menu after editing.

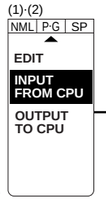
You can output the control setting for the displayed address from the transmission unit by holding down ▲ at this time (for approx. 3 seconds). (It is stored in memory of this unit at the same time.)

■Basic Setting Method (Continued)

Pattern/Group Control Setting Input (From Transmission Unit)

Input the pattern/group control setting from transmission unit to this unit.
※Set to the transmission unit to be connected to.

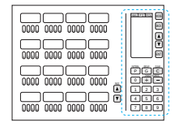
(1) Using MODE, set the ▲ mark to P·G.
(2) Using ▲ and ▼, set to INPUT FROM CPU unit, and press ENT.
(3) Using ▲ and ▼, select the input method, and press ENT.



<Input methods>

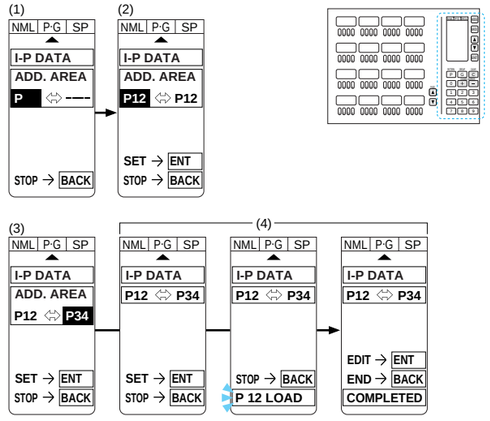
Menu	Input method
ADD. AREA	Input only desired address range
ALL P DATA	Input all patterns
ALL G DATA	Input all groups
ALL DATA	Input all patterns/groups

※ If the transmission unit setting is WR3212 series, there is no "OUTPUT TO CPU" menu option.



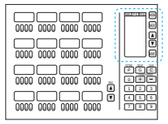
If an address range is selected

(1) Select P (Pattern) or G (Group) with P or G.
(2) Input the start address with the numeric keypad or ＋ and －, and press ENT.
(3) Input the end address with the numeric keypad or ＋ and －, and press ENT.
To re-enter an input in steps (2) and (3), clear with C.
(4) If the displayed content is correct, press ENT.
• Input will begin, and "COMPLETED" will be displayed when it is finished.
• To cancel input while it is in progress, press BACK.
Input will be canceled after input of the current address is finished.

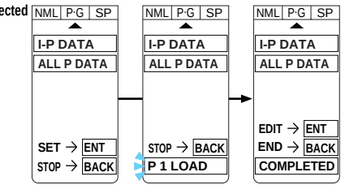


If all patterns, all groups or all P/G is selected

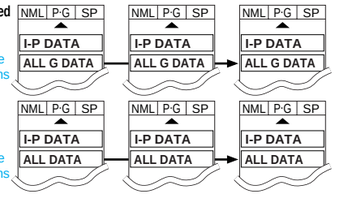
If the displayed content is correct, press ENT.
• Input will begin, and "COMPLETED" will be displayed when it is finished.
• To cancel input while it is in progress, press BACK.
Input will be canceled after input of the current address is finished.



■ If all patterns is selected



■ If all groups is selected
※The information at the bottom of the display is the same as when all patterns is selected.



■ If all P/G is selected
※The information at the bottom of the display is the same as when all patterns is selected.

※Input takes approx. 30 minutes when done with all P·G.
※If you are using a transmission unit other than the WRT2040 series or WRT2050 series, then to ensure correct setting, do not perform switch operation using the FULL-2WAY system during input.

If you wish to quit at this point, with either input method, press BACK.
To continue editing, press ENT.
• In editing, the system will switch to the edit screen for the first address.

Pattern/Group Control Setting Output (To Transmission Unit)

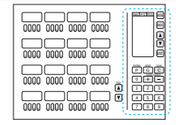
Outputs pattern/group control settings in this unit to a transmission unit.
※ This can only be done with WRT2050 series or WRT2040 series or WRT2000 series transmission units.
※ Set to the transmission unit to which to be connected.

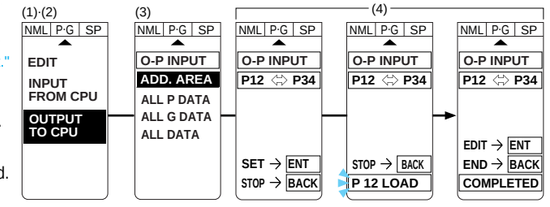
(1) Using MODE, set the ▲mark to P·G.
(2) Using ▲ and ▼, set to OUTPUT TO CPU, and press ENT.
(3) Using ▲ and ▼, select the output method, and press ENT.
• For the output method procedure, see "Pattern/Group Control Setting Input."
(4) If the displayed content is correct, press ENT.
• Output will begin, and "COMPLETED" will be displayed when it is finished.
• To cancel output while it is in progress, press BACK.
Output will be canceled after output of the current address is finished.

※Output takes approx. 30 minutes when done with all P·G.
※If you are using a transmission unit other than the WRT2050 series or WRT2040 series, then to ensure correct setting, do not perform switch operation using the FULL-2WAY system during output.

<Output method>

Menu	Output method
ADD. AREA	Output only desired address range
ALL P DATA	Output all patterns
ALL G DATA	Output all groups
ALL DATA	Output all patterns/groups





■Notes:

(1) To ensure correct input/output of setting content, do not perform switch operation using the FULL-2WAY system when outputting from this unit to a transmission unit, or when inputting to this unit.
(2) If all pattern and group addresses have been set, to input to this unit or to output from this unit to a transmission unit will take a maximum of approx. 30 minutes.
(3) The setting content, or the setting content input from a transmission unit to this unit, is not erased even if the power supply is turned off.
(4) Setting content is input or output for all 256 circuits, even if T/U for all channels have not been connected to the FULL-2WAY system.

Relay Status T/Us

Circuit Design for Relay Status T/Us

■ Appearance

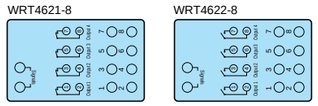
WRT4621-8
Relay Status T/U
(ON when conditions not met)
(Infrared I/O)

WRT4622-8
Relay Status T/U
(Also available in models that turn ON when conditions are met)

■ Features

- If a Relay Status T/U is installed, verification of pattern and group control data can be output to an external display.

■ Terminal assignments of Relay Status T/U



■ Specifications of Relay status T/U

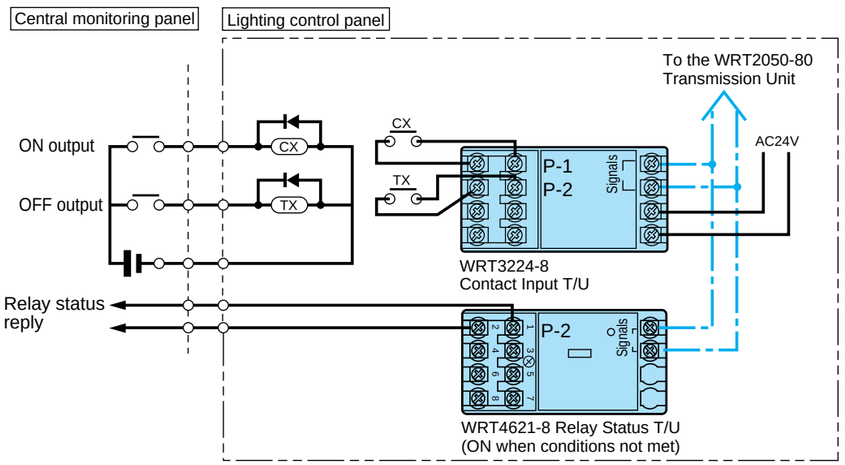
	WRT4621-8 (ON when conditions not met)	WRT4622-8 (ON when conditions are met)
Output type	• Pattern/group LED display and connection Switch LED display red: Contact output OFF Switch LED display green: Contact output ON	• Pattern/group LED display and connection Switch LED display red: Contact output ON Switch LED display green: Contact output OFF
Output rating	6A 300V AC	

■ Notes

(1) Set address to either pattern address or group address.
You cannot use with addresses set to individual or dimmer. Doing so will cause malfunction of the unit.
(2) When setting to group address, do not set the OFF-delay and ON-timer functions in the group control program.
(3) When setting to group address, monitoring of the loads in the group is not available.
(4) Two units can be used for each address.

■ Example of connection with central monitoring system

- Signals from central monitoring panel ····· Pattern control per area
  ON/OFF separate output (Pulse output longer than 0.2 sec.)
- Relay status reply to central monitoring panel ··· ON output even when 1 circuit ON within area.
  OFF output when all circuits OFF within area.

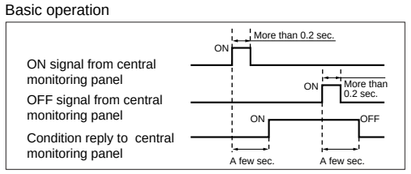


P1: Setting to ON within area
P2: Setting to OFF within area

By setting WRT4621-8 address to P2:
• Contact output OFF for all OFF within area.
• Contact output ON for a portion of lights within area ON.
Possible to monitor to detect lights forgotten to be turned OFF.

Notes
- When the signal from the central monitoring panel is a voltage pulse output, an HC relay or similar is needed to convert it to a no-voltage pulse signal.
- For pattern control by area from the central monitoring panel, 2 patterns are used for 1 area so the maximum number of areas that can be controlled by 1 transmission unit is 36. (Maximum 72 patterns)

Basic operation



- In addition to patterns connected to the central monitoring panel, 72 other patterns can be used (number of areas X 2).
- The condition reply to the central monitoring panel is a few seconds slower than the ON/OFF signal from the central monitoring panel.

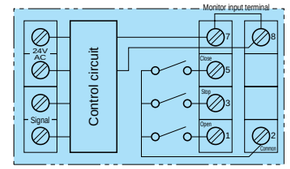
Motor-Driven Control

⚠ Caution: Do not attempt to operate remotely any motor-driven electrical equipment by motor drive T/Us. It may cause serious injury.

Notes
(1) Only individual control is possible with motor control switches.
(2) Control of motor-driven electrical equipment cannot be performed under group control.
(3) Only certain equipment can be controlled. Check the equipment control method.

Circuit Design for Controlling Motor Driven Electrical Equipment

■ Motor Drive T/U specifications (2 Types of motor drive T/Us: stop terminal N.O. and stop terminal N.C.)

	Terminal number and name	WRT4421-8, WRT4421-84 (stop terminal N.O. type)	WRT4422-8, WRT4422-84 (stop terminal N.C. type)
Output	(1) Open output terminal	Normally open 1 pulse (1.2 ± 0.2 sec.)	Normally open 1 pulse (1.2 ± 0.2 sec.)
	(2) Common terminal	————	————
	(3) Stop output terminal	Normally open 1 pulse (1.2 ± 0.2 sec.)	Normally close 1 pulse (1.2 ± 0.2 sec.)
	(5) Close output terminal	Normally open 1 pulse (1.2 ± 0.2 sec.)	Normally open 1 pulse (1.2 ± 0.2 sec.)
Input	(7) Monitor input terminal	Motor-driven equipment monitor output No-voltage contact, or 10 - 30V DC, 18 - 30V AC 10mA max. •Switch Green LED illuminates Green when monitor circuit is ON •Switch Red LED illuminates when monitor circuit is OFF	Motor-driven equipment side monitor output No-voltage contact, or 10 - 30V DC, 18 - 30V AC 10mA max. •Switch Green LED illuminates Green when monitor circuit is ON •Switch Red LED illuminates when monitor circuit is OFF
	(8) Monitor input terminal		
Internal circuit diagram		————	
Output ratings		6A 300V AC	

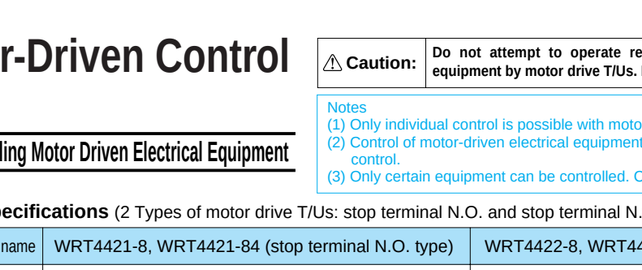
■ Basic wiring diagram

Connected to Motor Drive T/U
(single-pulse output)
(WRT4421-8, WRT4421-84,
WRT4422-8, WRT4422-84)

•Description of address abbreviations

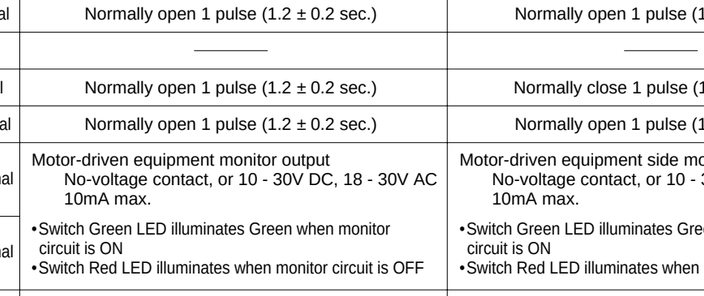
Abbreviated symbols	0-1	…	0-4
Address	Individual 0-1	…	Individual 0-4

•Without monitor



Note:
No transformer is required for connection without a monitor.

•With monitor
(AC/DC voltage output)



Note:
Transformer not needed if there is a monitor (AC/DC voltage output)

•With monitor
(No-voltage contact)

Note:
A transformer is required for connection with a monitor (non-voltage contact)

Time Schedule Control

Circuit Design for Program Timer Unit (Astronomical Clock Type)

WRT3540K-8
Program Timer Unit
(Astronomical Clock
Type,24V AC)

■Features

(1) Enables lighting control using a timer set to correspond to a schedule
Enables timer-based lighting control (in one minute units) using a maximum of 30 programs.

(2) Enables operation according to an annual schedule
Enables settings that repeat every year (month X, day Y; X-day of Yth week of month Z), or setting of a date up to 13 months in advance (1 time only).

(3) Equipped with a solar timer function to determine sunrise and sunset
Enables tasks such as exterior lighting control to be done using the solar timer, with the sunrise and sunset times for 12 regions throughout the country stored in memory.

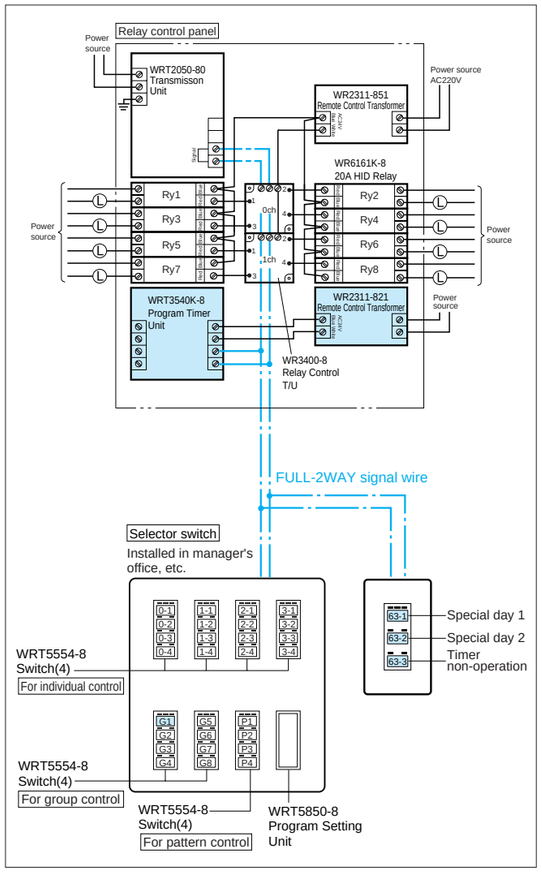
(4) Holidays (special days) can be set or canceled from FULL-2WAY switches
Special day 1, Special day 2 and timer on/off setting/cancel can be done from a FULL-2WAY switch by setting an address in the timer unit.

(5) Model for direct connection with FULL-2WAY signals
Contact input T/U and timer functions are integrated into a single unit, and the timer has been miniaturized, so relay control panel space can be conserved. ※For the setting method, see P. 67.

When performing pattern and group control, be sure to set the pattern/group control content beforehand.
For details, see P. 47, 48, 50.

WRT9600-8

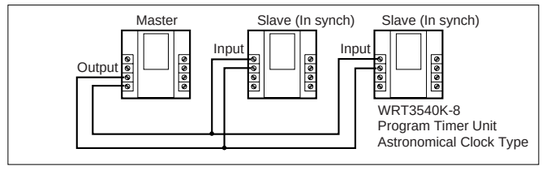
■Wiring diagram



■Notes

(1) To operate the same address twice in one day, set by changing the program no. (1 to 30)
(Example) Program no. 1: G1 8:00 to 12:00
Program no. 2: G1 13:00 to 17:00

(2) If two or more astronomical clock type program timer units are installed, and control is performed at the same time with different units, a discrepancy will arise in the controlled time by the amount of difference between the current time of each unit.
※Automatic correction can be done by making one unit a master, and synchronizing with the master time every hour, on the hour.



(3) Special day 1 and special day 2 timer operation can be set/canceled by using a switch on the FULL-2WAY system after setting an address in the program timer unit using the special mode function. If using this function, select a channel and address that are not used by another T/U, etc.

(4) When using the solar function, setting is done with a region no. (12 regions), so there may be some discrepancy in the sunrise or sunset time.
※Adjustment can be done in one minute units, in the range from a 90-minute delay, to a 90-minute advance.
Set to a value appropriate for the exact location.

■Ratings and Specifications

Rated voltage and Frequency	24V AC, 50/60 Hz (specially for WR2301-821/WR2311-821 Remote Control Transformer)
Rated current consumption	350mA
Signal current consumption	15mA
Synch output	12V DC, 0.5 sec, 50/60 Hz (output on the hour)
Synch input	3 to 30 V DC, 0.2 sec min., 50/60 Hz (effective only for 10 seconds before and after each hour, on the hour)
Power failure backup	24 hours (after power has been on for at least 6 hours at 25˚C)
Usable period	2001 to 2098
Time precision	±15 sec/month (at 25˚C)
Ambient temperature range	-10 to +50˚C
Number of programs	30 programs
Applicable transmission units	WRT2050-80 WRT2040series, WRT2000series
Control range	Individual: 0-1 to 63-4 Group: 1 to 127 Pattern: 1 to 72 (Dimming): 1 to 16 (ON/OFF only)

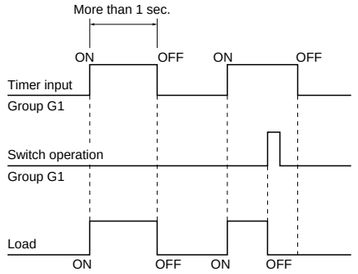
Example of Using a Program Timer Unit

■Example of control of common area and exterior lights using the Program Timer Unit

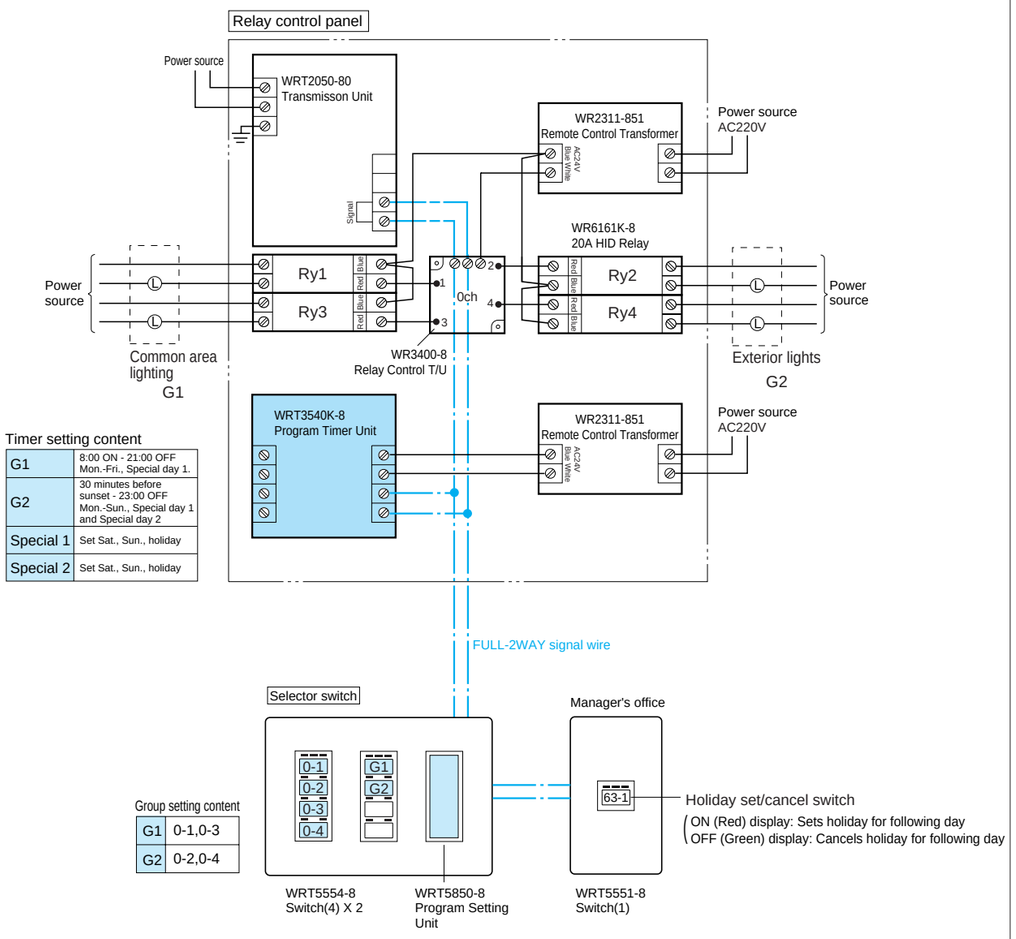
- **Common area lights are automatically lit from 8:00 to 21:00 on weekdays and turned off on holidays.**
- **Exterior lights are automatically lit in the evening and turned off at 23:00 on both weekdays and holidays.**
- **When employees work on holidays, common area lights are automatically turned on by switch operation in the manager's office the previous day.**

Ex of Programming	Weekdays (Mon. to Fri.) and Special work day (Special day 1)	Holidays (Sat., Sun.) and Holidays (Special day 2)
Common area G1 (0-1, 0-3)	OFF ON 8:00 / OFF 21:00	OFF (non-operation)
Exterior light G2 (0-2, 0-4)	OFF ON 30 minutes before sunset / OFF 23:00	OFF ON 30 minutes before sunset / OFF 23:00

■ON/OFF control with a timer



※You can control contact input and switch operation by giving priority to override input settings, such as those from the selector switch.



Timer setting content

G1	8:00 ON - 21:00 OFF Mon.-Fri., Special day 1.
G2	30 minutes before sunset - 23:00 OFF Mon.-Sun., Special day 1 and Special day 2
Special 1	Set Sat., Sun., holiday
Special 2	Set Sat., Sun., holiday

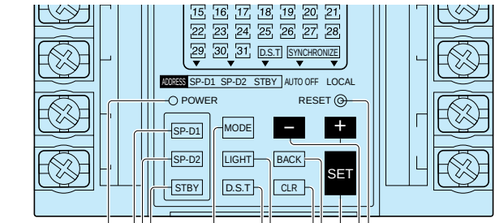
Group setting content

G1	0-1,0-3
G2	0-2,0-4

Program Timer Unit (WRT3540K-8) Setting Method

■Names and Functions

Identifying Control Features



Power indicator light
•24 V AC input power OK.

Special Day 1 key
•Program or clear the next day for Special day 1.

Special Day 2 key
•Program or clear the next day for Special day 2.

Standby key
•Enter standby mode.

Mode key
•Choose a mode function.

Daylight Saving Time key
•Advance a clock by 1 hour from present time.

Backlight key
•Turn the backlight on. The backlight automatically switches off if there is no key activity for a period of 5 minutes.

Reset key
•Reset all the configuration parameters to default settings.

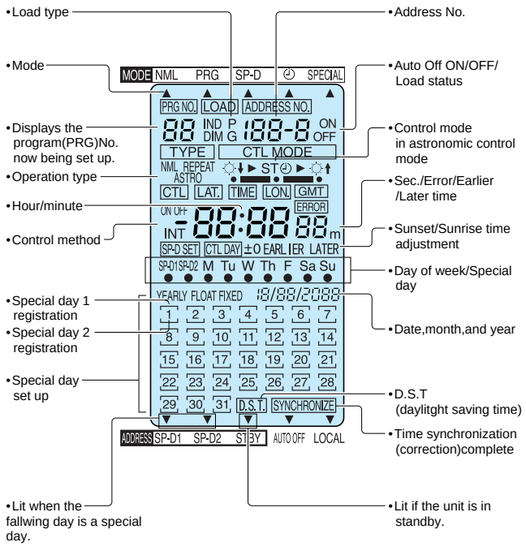
+/- keys
•Scroll up or down

Set key
•Set your selection and or advance selection to the next item.

Backspace key
•Return selection to the previous item.

Clear key
•Cancel the last input.

LCD Panel



■Before Use——About Modes

Select the appropriate Mode before setting the clock or the program.

Timer Modes and Their Functions

The pointer " ▲ " or " ▼ " in the top or bottom area of the LCD display indicates which timer mode has been selected.
The timer mode changes each time the MODE key is pressed.

Mode	Functions
NML	NORMAL mode
PRG	Program the unit,modify existing programming,or verify programming just entered.
SP-D	Program special days(holidays).
🕘	Set the present time and date.The unit defaults to this mode when it is turned On for the first time.
SPECIAL	

Timer mode scrolls when MODE key is pressed.

The timer mode changes each item the + − key is pressed

SP-D1	Input the address of the FULL-2WAY wall switch to activate the Special day 1 feature remotely.
SP-D2	Input the address of the FULL-2WAY wall switch to activate the Special day 2 feature remotely.
STBY	Input the address of the FULL-2WAY wall switch to activate the Timer On/Standby feature remotely.
AUTO OFF	To program the LCD display ON/OFF for auto off
LOCAL	Set the location for the ASTRO, LAT,LON and GMT. Set the date and time for D.S.T(Daylight Saving Time)

About MODE
Pressing the MODE key while setting, verifying, changing clock, region program or special setting will save all changes to that point.

Caution! The values entered will not be saved unless the SET key is pressed.

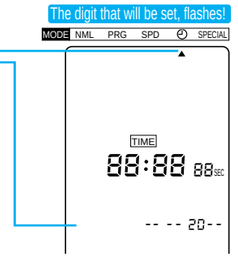
■Setting Present Time

Move the pointer "▲" to the 🕘 potision with the MODE key.

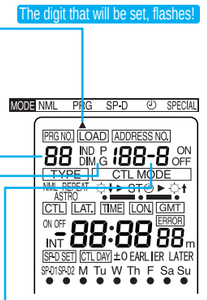
Adjust the month,date,hour,minute,and second digits in the same way.
Adjust the Year digit with the + − keys,then press the SET key.
•The allowable range of calendar years is 2001 or 2098.
•The clock starts after you set the seconds digit,when the SET key is pressed.

When all clock setting is finished,move the pointer "▲" back to the NML (Normal)position, with the MODE key.

※The Timer will not function correctly unless the Normal mode is selected.



■Basic Operating Steps



1 Move the pointer "▲" to the PRG(Program)position with the MODE key

2 Assign a program number to the program you are setting
The allowable range of PRG No.(Program No.) is 1 to 30.
Select with + − ,press SET.

Verifying the control program
Select a program number.If a program is already assigned to that number, the contents will be displayed 2 seconeds later.

3 Selecting a LOAD Type
Select the desired LOAD type from IND(Individual), P(pattern),G(group),and DIM(Dimmer)with + − ,press SET.

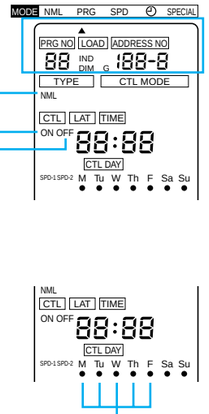
4 Setting ADDRESS No.
Using the + − keys, select the ADDRESS No.you wish to control,press SET.
※Record your address No.in the program list on the last pages(pages 89).
※If you press and hold CLR for more than 2 sec., in program mode, all the control program date associated with the PRG No. now on the display will be cleared.

5 Selecting Operation type
Select NML(Nomal) with + − ,press SET.

6 Setting On Time
Set the hour digits with + − ,press SET.
Set the minute digits with + − ,press SET.
※If no On time setting is required, leave the digits blank (--:--).
※The time digits will be cleared (--:--) with the CLR key.

7 Setting Off Time
Set hour digits with + − ,press SET.
Set minute digits with + − ,press SET.
※If no Off time setting is required, leave the digits blank (--:--).
※The time digits will be cleared (--:--) with the CLR key.

8 Setting Days of Week to Enable Timer
Mark the Special day(s) or day(s) of week with the pointer "●" on which the timer is to be enabled.
Change ON/OFF status using the + − keys press SET.
By default, Monday through Friday are marked with dots.
※Advance day using the SET key.



9 To set another stage, repeat the above procedure from step 1.

10 When finished finished, move pointer "▲" back to the NML(Normal) position with the MODE key.
※The timer will not function correctly unless the Normal mode is selected.

Error Display

Error Display		Error description	Inspection	Corrective Action
Error retated to FULL-2WAY system	10	No FULL-2WAY signal	FULL-2WAY signal lines connected?	Connect the FULL-2WAY signal lines.
			Are FULL-2WAY Signal lines shorted to each other?	Check the FULL-2WAY signal lines.
			Is Transmission Unit power turned On?	Turn the transmission Unit Power On.
	11	Uncontrollable	Is Output of amplifier shorted?	Check the Output wirings of amplifier.
			Is Transformer fuse bumed out?	Replace Transformers fuse.
Error retated to time synchrorization	20	No synchrorized output	Are Sync. output terminals shorted together?	Check connections for Sync. output terminals.

Additional Functions

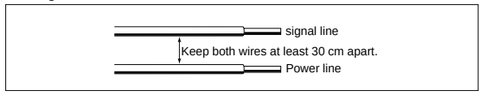
Notes on Installation

1 Matsushita products are not compatible with other companies' remote control systems. Do not combine our products with systems from other companies. Use only Matsushita remote control relays, circuit breakers, and transformers.

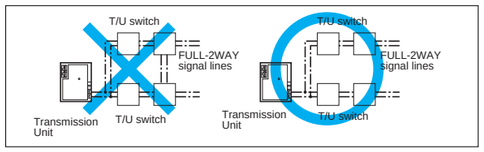
2 For multiplex transmission signal wire, use only that made especially for FULL-2WAY remote control.

3 Cautions for wiring

- Although general purpose electrical wire can be used, it is recommended that communication cable (CPEV) be used for signal lines to differentiate them from power lines and prevent their mis-wiring.



- Avoid wiring signal and power lines in parallel. This may damage system components or cause those connected to signal lines to malfunction. If such parallel wiring is unavoidable, keep both wires at least 30 cm apart, or house them in separate conduit pipes.
- Be sure to use feed wiring or star wiring for signal lines, and avoid loop wiring that may cause malfunctions.



- Signal and power lines can be run in parallel less than 30cm apart inside a distribution panel.
  However, install signal wire at least 5cm away from a main line (100 A or above).
- The maximum length of a control wire (0.8 to 1.4mm diameter) from a relay control T/U to a 20A HID remote control relay is 50m using single-core cable. Keep signal and power lines at least 30cm apart.
- Apply grounding to Transmission Units from the grounding terminal.

4 For signal lines installed outside, use steel conduit pipes to house them to prevent the effects of induced lightning surges, etc.

5 FULL-2WAY type remote control products (except 20A HID relays) installed in distribution panels should be kept at least 10cm away from wires carrying a current of 15A or above.

6 When using FULL-2WAY remote control to run remote-controlled circuit breakers, install equipment and wiring (control, signal) at least 5cm away from the main line.
We recommend using the CL Type remote-controlled circuit breaker.

7 If an electromagnetic switch is used as the load for the 20A HID Relay or the 6A Contact Output T/U Unit, ensure the switch has an input surge current of no more than 500 mA.
Also, to prevent malfunction or equipment damage due to surge voltage, fit a surge damper or similar to the electromagnetic switch.

8 Keep the power circuits for products requiring a 110/220V AC power supply-such as the transmission unit, transformer, amplifier, and wireless panel unit-separate from the load. Furthermore, if power is supplied from a generator, prevent flickering by including an AC/GC circuit.

9 Apply grounding to the transmission unit, amplifier, signal line monitor T/U, and Computer Interface Unit.

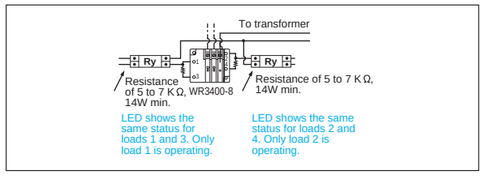
10 Avoid the following connections to transmission units, amplifiers, and wireless panel units.

- Connecting signal wires from multiple transmission units or amplifiers to each other;
- Connecting a signal wire from a transmission unit to an output signal wire from an amplifier;
- Connecting a signal wire from a transmission unit to a wireless signal line from a wireless panel unit.

11 Do not connect inappropriate types of electric wire to the screw terminals (signal terminals, etc.). (Doing so cloud cause electric wires to become detached.) If this type of connection is unavoidable, use pressure terminals instead.

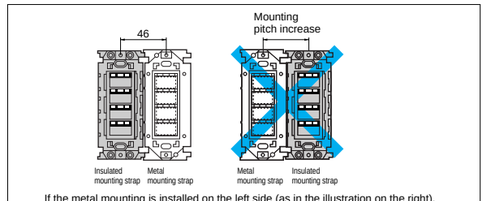
12 When using the All-ON setting switch for setting the pattern control program

- If there is a terminal not connected to a relay (in the case of 3 or fewer relays connected) in the relay control T/U (4-Circuit), the pattern switch condition display lamp will not light up.



(1) Connect a relay to the vacant terminal.
(2) Use a Relay Control T/U (1-Circuit) (WR3430-8).
(3) Connect a resistor as in the diagram.
(4) When using the All-ON setting switch for setting the pattern control program, either follow steps (1) to (3) above, or, after pressing the All-ON switch when performing pattern settings, press the individual address switch corresponding to the open terminal to exclude it from the pattern.

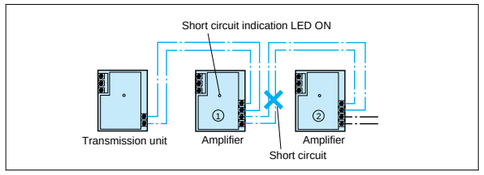
13 When a WN3700-8 FULL-COLOR Metal Mounting Strap, or a Device with a Metal Mounting Strap, is connected next to a WN3710-8 FULL-COLOR Insulated Mounting Strap or a Device with an Insulated Mounting Strap, install the WN3710-8 on the left side of the WN3700-8 as shown in the diagram.



If the metal mounting is installed on the left side (as in the illustration on the right), the fastening pitch of the strap is too large and the plate cannot be installed.

14 Signal line short-circuit indication

- Transmission Units and Amplifiers have signal line short-circuit indication LEDs. These LEDs light up when the signal line is short-circuited. Momentary flashing indicates the signal line is normal. Any short-circuit occurring in a signal line between multiple amplifiers is indicated by an LED continuing to flash in the nearest amplifier. (See diagram.)



15 Be sure to contact a mega test on wiring after disconnecting a power line to the system components (Including a Transmission Unit and an Amplifier, etc.). Never attempt any mega testing for signal lines.

16 To set addresses for switches and T/Us, connect them to a FULL-2WAY signal wire from a Transmission Unit and use a Wireless Address Setting Unit (WRT9600-8 or WRT9500K-8).

17 Remove the cover from the switch (Infrared I/O) and use a pencil to write the load addresses. Use a name plate less than 0.3mm thick.

18 A Transmission Unit is under initialization for approximately the first 20 seconds after it is turned on (the status of the relays are being matched to switch indications). During this time, loads will not operate even if a switch is pressed.

19 The life span of the electronic components used in FULL-2WAY remote control system is approximately 8 years, dependant on use. When replacing the Transmission Unit, pattern and group settings must be reset. Therefore, be sure to keep a copy of the pattern and group control program settings in a suitable location, such as in the distribution panel.

20 If you choose to install an uninterruptable power supply as backup in case of power failure, select a sine wave output model. Rectangular wave output models will not work with this equipment.

21 Use the WR3913-80 Amplifier with the WRT2050-80 Transmission Unit.

22 As Remote control relays (both 20A and 6A) are self-holding, after a power failure they will return to the state held just prior to the power failure.

Notes on Design

1 Because of its incompatibility with other manufacturers' remote lighting control systems, this system cannot be used in combination with any other system.

2 For Infrared I/O Switches and Terminal Units, be sure to use WRT2050-80 or WRT2040 series Transmission Unit.

- Dip switch fixtures can also be connected to WRT2000 series Transmission Unit.

3 Load addresses must not be duplicated

- Do not set the same load addresses for more than two Relay Control T/Us (Including 6A Contact Output T/Us and Appellation Indication Units with T/U Function). Doing so may result in malfunction of the system.

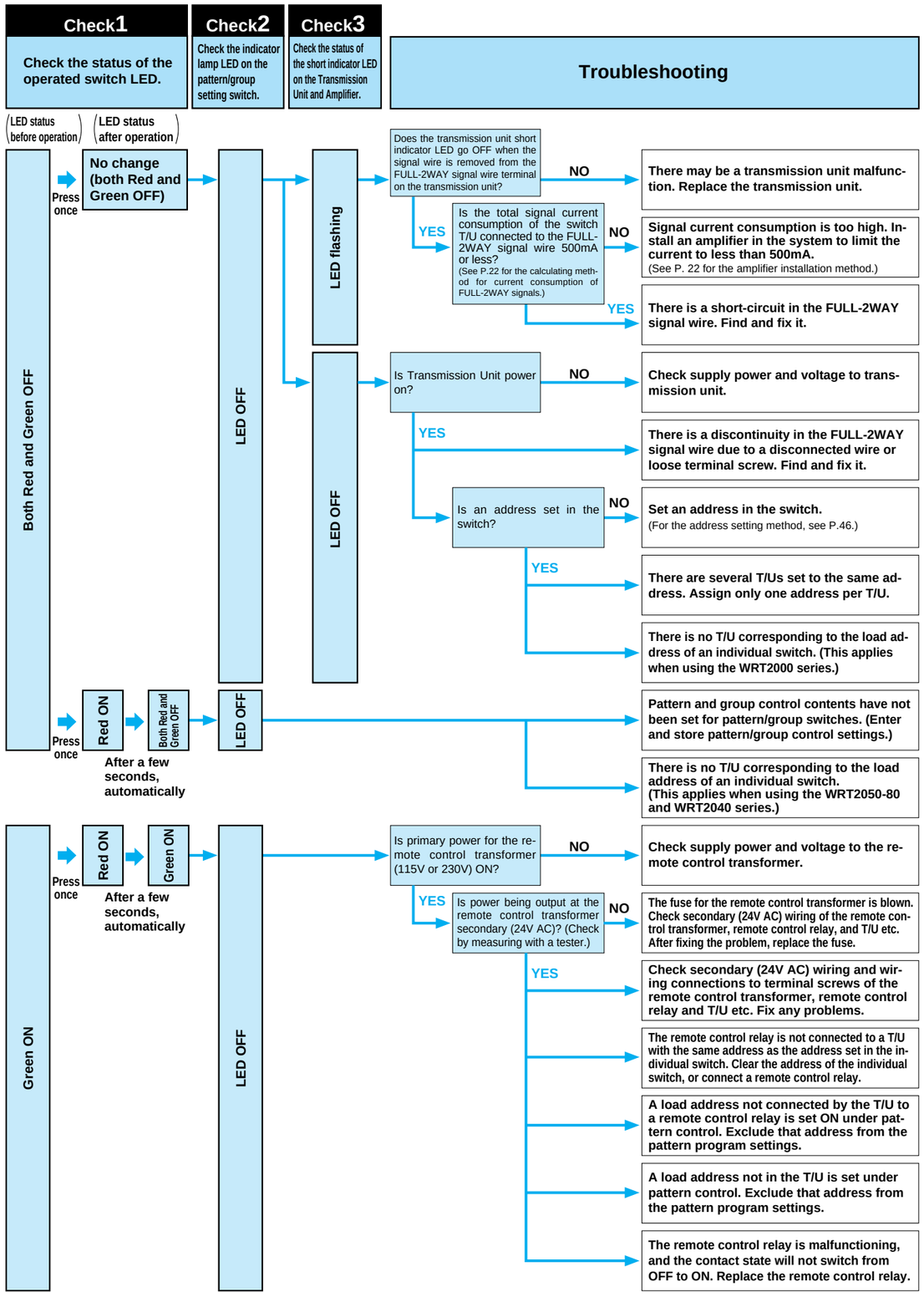
4 Transformer Capacity

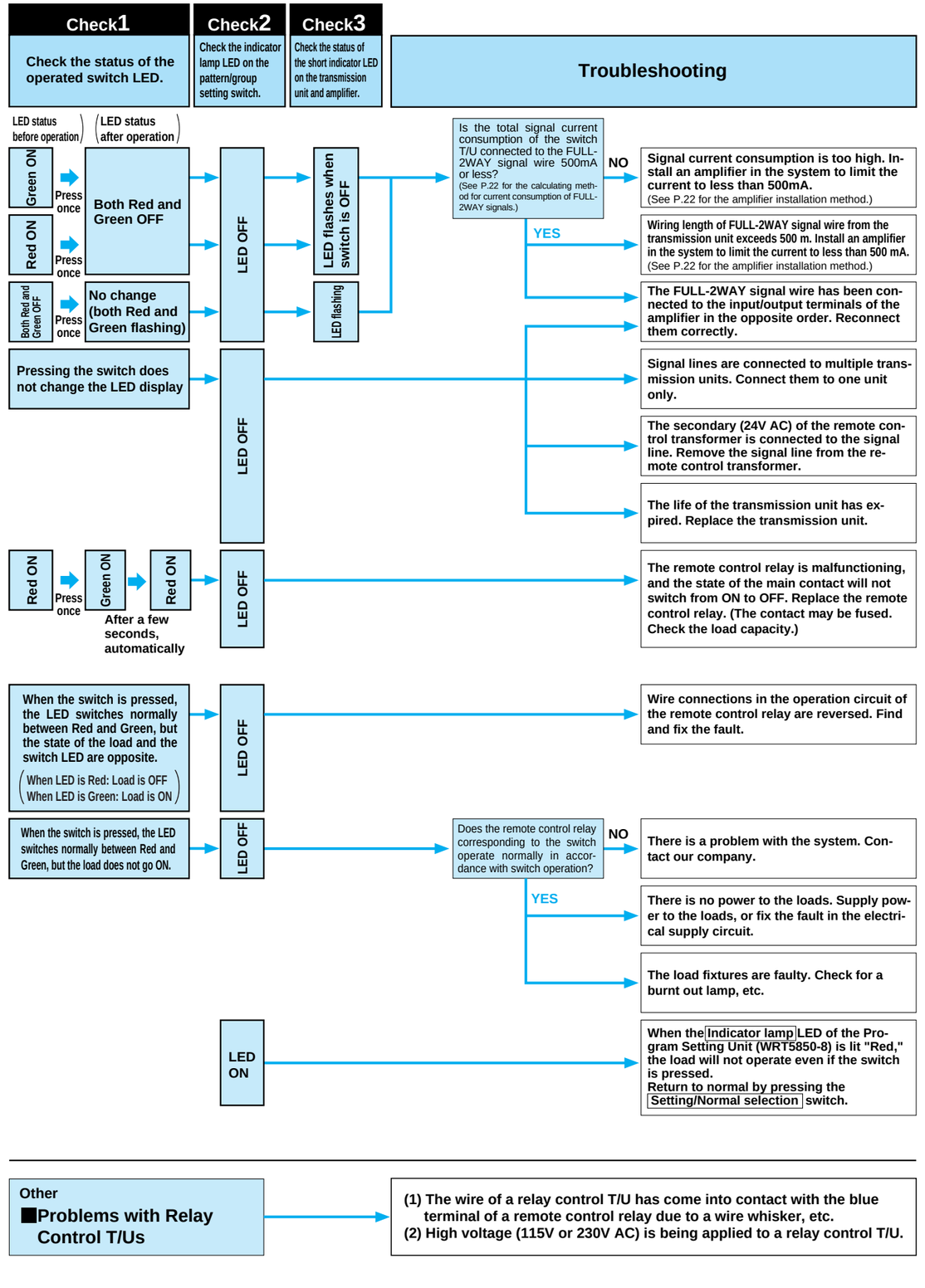
- Power supply to all the 20A HID Relays can be provided by one Transformer per Transmission Unit.
  A Transmission Unit sequentially controls Relay Control T/Us, which simultaneously operate four 20A HID Relays, at intervals of 15m sec. (Under the pattern control, group control, etc.) The momental current consumption of National relay is 0.35A x 4 pcs, and the transformer capacity is 1.5A. Therefore, up to four 20A HID Relays are controlled by a Transformer per transmission unit.
- For easier wiring, it is recommended that a Transformer be installed to each relay control panel.
- When a Transformer capacity exceeds 1.5A, such as when using Contact Input T/Us, be sure to add another Transformer to the system.

Installation

Trouble Shooting

Load (lights) do not work even when a switch is pressed (when using the WRT2040 series or WRT2000 series or WRT2050-80 Transmission Units)





Other

■Problems with Relay Control T/Us

(1) The wire of a relay control T/U has come into contact with the blue terminal of a remote control relay due to a wire whisker, etc.
(2) High voltage (115V or 230V AC) is being applied to a relay control T/U.

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WTC9204-8	COSMO Module Plates Applicable to Switches (Aluminum) (4-Gang)	35
WTC9205-8	COSMO Module Plates Applicable to Switches (Aluminum) (5-Gang)	35
WTC9206-8	COSMO Module Plates Applicable to Switches (Aluminum) (6-Gang)	35

WTV

WTV6101S1-8	GLACIER Series Plates applicable to Switches (GLACIER Type) (1-Gang)	35
WTV6102S1-8	GLACIER Series Plates applicable to Switches (GLACIER Type) (2-Gang)	35
WTV6103S1-8	GLACIER Series Plates applicable to Switches (GLACIER Type) (3-Gang)	35

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SELECTING CHART of AVAILABLE PRODUCTS for EACH MARKET

Product Name	Model Number	Available item		Remark
		for U.S.A.	for ASIA	
Switches (COSMO Module)	**WRT5501WK-8**	✓	✓	
	WRT5502WK-8	✓	✓	
	WRT5503WK-8	✓	✓	
	WRT5504WK-8	✓	✓	
	WRT5731WK-8	✓	✓	
Switches (FULL-COLOR Module)	**WRT5551-8**	✓	✓	
	WRT5552-8	✓	✓	
	WRT5553-8	✓	✓	
	WRT5554-8	✓	✓	
	WRT5771-8	✓	✓	
Switches (GLACIER Type)	**WRV5601S1-8**	✓	✓	
	WRV5602S1-8	✓	✓	
	WRV5603S1-8	✓	✓	
	WRV5604S1-8	✓	✓	
	WRV5831S1-8	✓	✓	
Master Switches (Surface Mount)	**WRT6120WK-8**	✓	✓	
	WRT6144WK-8	✓	✓	
	WRT6168WK-8	✓	✓	
	WRT6024WK-8	✓	✓	
	WRT6048WK-8	✓	✓	
	WRT6072WK-8	✓	✓	
Program Setting Unit	**WRT5850-8**	✓	✓	
Wireless Programming Unit	**WRT9600-8**	✓	✓	
Wireless Address Seting Unit	**WRT9500K-8**	✓	✓	
Central Control and Programming Unit	**WRT9103K-89**	✓	✓	
Transmission Unit	**WRT2050-80**		✓	Non-UL
	WRT2040-894	✓	✻	24V AC
Amplifier	**WR3913-80**		✓	Non-UL
	WR3912-894	✓	✻	24V AC
Transformer	**WR2301-811**		✓	Non-UL
	WR2311-851		✓	Non-UL
20A HID Relays	**WR6161K-8**		✓	Non-UL
	WR61613K-8		✓	Non-UL
	WR6166-8		✓	Non-UL
	WR61663-8		✓	Non-UL
	WR6161K-84	✓	✻	UL-Approved
	WR61613K-84	✓	✻	UL-Approved
	WR6166-84	✓	✻	UL-Approved
	WR61663-84	✓	✻	UL-Approved
	WR6172-84	✓	✓	UL-Approved
	WR61723-84	✓	✓	UL-Approved
6A Contact Output T/Us (Panel Use)(DIP switch)	**WR3416-8**		✓	Non-UL
	WR3426-8		✓	Non-UL
	WR3416-84	✓	✻	UL-Approved
	WR3426-84	✓	✻	UL-Approved
6A Contact Output T/Us (Panel Use)(Infrared I/O)	**WRT4124-8**		✓	Non-UL
	WRT4124-84	✓	✻	UL-Approved
6A Contact Output T/Us (Wall Mount)(Infrared I/O)	**WRT4101-8**		✓	Non-UL
	WRT4104-8		✓	Non-UL

Product Name	Model Number	Available item		Remark
		for U.S.A.	for ASIA	
Relay Control T/Us (Panel Use)(DIP Switch)	**WR3400-8**	✓	✓	
	WR3440-8	✓	✓	
	WR3430-8	✓	✓	
Relay Control T/Us (Panel Use)(Infrared I/O)	**WRT4014-8**	✓	✓	
Wireless Control	**WRT1320-8**	✓	✓	
	WRT1511K-8	✓	✓	
	WRT1514K-8	✓	✓	
	WRT1561-8	✓	✓	
	WRT13906-8	✓	✓	
	WRT15919-8	✓	✓	
Dimmer Units	**WRT4345-81**		✓	Non-UL
	WRT4345-82		✓	Non-UL
	WRT4348-81		✓	Non-UL
	WRT4348-82		✓	Non-UL
	WRT43415-81		✓	Non-UL
	WRT43415-82		✓	Non-UL
	WRT4348K-814	✓	✻	UL-Approved
	WRT43415K-814	✓	✻	UL-Approved
	WRT4244-8	✓	✓	
	WRT3241-8	✓	✓	
	WRT5731WK-8	✓	✓	
	WRT5771-8	✓	✓	
Motor-Drive Control	**WRT4421-8**		✓	Non-UL
	WRT4422-8		✓	Non-UL
	WRT4421-84	✓	✻	UL-Approved
	WRT4422-84	✓	✻	UL-Approved
	WRT5401WK-8	✓	✓	
Passive Infrared Ceiling Units	**WRT3374K-8**		✓	
	WRT3364K-8	✓	✓	
	WRT3375-8		✓	
	WRT3365-8	✓	✓	
	WRT3367-8	✓	✓	
	WRT3311-8		✓	
	WRT3315-8		✓	
	WRT3394-8		✓	
	WRT3395-8		✓	
Datylight Sensor	**WRT3657-8**	✓	✓	
Program Timer Unit	**WRT3540K-8**	✓	✓	
Contact Input T/Us	**WRT3224-8**	✓	✓	
	WRT3211-8	✓	✓	
Relay Status Units	**WRT4621-8**		✓	Non-UL
	WRT4622-8		✓	Non-UL
	WRT4622-84	✓	✻	UL-Approved
Signal Line Monitoring Unit	**WR39319-8**	✓	✓	
Card Operation Switch	**WR3891-8**	✓	✓	
Computer Interface Units	**WR3381K-81**		✓	Non-UL
	WR3381K-82		✓	Non-UL
Appellation Indication Units	**WR3900R-8**	✓	✓	
	WR3901R-8	✓	✓	

✓ : Available
UL-Approved : Approved by UL.

✻ : Not recommended but available. Please contact our sales companies for details.
Non-UL : UL approval required , but NOT Approved. It CANNOT be available for sale in USA.