The Full-2way remote lighting control system provides simplified wiring, little maintenances, as well as energy savings and amenities.

- **Ecology**: “Energy-saving” while creating an efficient lighting environment
- **Amenity**: “User-Friendly”
- **Simple**: Simple Design and Labor-Saving Installation
- **Convenience**: Minimal Design, Minimum Maintenance
- **Flexibility**: Reduced Total Costs
“Energy-saving” while creating an efficient lighting environment

- **3 functions** make it easier to cut unnecessary light use.

**Centralized monitoring and control**
- Control and monitor all lighting from a central location.

**Functional display of lighting status**
- LED displays lighting status
  - **ON:** Red LED is lit
  - **OFF:** Green LED is lit

**Timer and sensor control**
- Connectable with timer or sensor control equipments for further energy saving
  - Program timer unit
  - Passive infrared ceiling unit
  - Daylight sensor unit

**Amenity** Amenity Means “User-Friendly”

- A single switch allows you to turn ON/OFF the lighting for appropriate scenes at the touch of a finger.
- Switching ON/OFF all lighting fixtures in a section at one time.
- Basic Control Functions:

**Group control**
- Turn ON all lights in The sales department
- Turn OFF all lights in The sales department

**Pattern control**
- 9:00 AM Work starts
- Noon to 1:00 PM Lunch break
- 2:00 to 3:00 PM Natural light comes from outside
- 6:00 PM Work finish

All lights ON All lights OFF
All lights ON Some lights OFF Lights near the windows OFF All lights OFF
Simple Design and Labor-Saving Installation

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

Wiring diagram for Full-2way remote control system

Distribution panel board

Relay control panel

Load 1

Load 2

Load 3

(n) locations

Selector switch

Switch

2 wires

Wiring diagram for Full-2way remote control system: Only 2 wires are required, regardless of the number of the switches. General-purpose electrical wire can be used.

Minimal Design, Minimum Maintenance

- A single switch is programmed for multiple functions, with the compact wireless programming unit. Thus speeding up everything from system design cost estimation, ordering of components, installation, and changes in system operation.

Convenience

4 functions in 1 unit!

1. Individual ON/OFF control
2. Group control
3. Pattern control
4. Timer control
**Flexibility**

Flexibility Reduces Total Costs

- Changes in the area for controlled lighting can be made quickly & easily by using below equipments.
- No need to modify the load-side wiring.

1. WRT5850-8
   - Program setting unit

2. WRT9600-8
   - Wireless programming unit

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**Specific Information**

**FULL-2WAY REMOTE LIGHTING CONTROL SYSTEM**

- System Outline
- Control Methods
- Flexibility
- Simple
- Energy-savings
- Ecology
- Convenience
- Amenity
- Applications

- Concept

**Applications**
The Differences in Switching Methods

Direct control

- **Common wiring**
  - The switch located between the load and the power source directly turn the power ON/OFF

Remote control

- **Multiplex transmission, Full-2way control**
  - The switch acts as a signal transmitter; sending commands to the relay to turn ON/OFF

System Outline

- **The bigger the building, the more labor-saving the installation.**

**System Mechanism**

**Full-2way Remote Control**

**Lighting Fixtures**

- **Load#15-2**
  - Light ON!

**HID Relays**

- Receives the current pulse and close the main contact to turn ON the load

**Relay control T/U**

- Receive signal and transmit the current pulse to #2 HID Relay

**Transmission Unit**

- Receive signal and send the control signal to #15 T/U

**Switches**

- Press the switch at #15-2 to send signal

**Diagram**

- Inside the Relay control panel
  - Ac24v
  - Full-2way Signal lines
  - Load Channel
  - Load No.
System Outline

Control Methods

Applications

Concept

- Simple
- Ecology
- Convenience
- Amenity
- Flexibility

Specific Information

FULL-2WAY REMOTE LIGHTING CONTROL SYSTEM

Energy-Savings to Prevent Global Warming

Energy-saving

Energy-Savings to Prevent Global Warming

6% Emissions* of Green House Gases by 2012
decided at Kyoto International Conference in Dec. 1997
* Comparing with 1990

Amended Energy-Saving Law enforced in Apr., 1999

< Target buildings are... >

Offices  Factories  Department stores  Hotels

Full-2way Remote Lighting Control System greatly contributes to Energy-Savings!
Further "Energy-savings" by Timer & Sensor Controls

- Lighting system  ➔ 33% of total energy consumption in buildings
- Achieving energy-savings by connecting below devices with F2W system.

**Time schedule control**
- Program timer unit
  - All lights ON while working
  - Some lights OFF at lunch break

**Passive infrared sensor control**
- Passive infrared ceiling unit
  - Automatically lights ON when people come
  - Automatically lights OFF after people leave

**Daylight sensor control**
- Daylight sensor unit
  - Automatically some lights OFF in daytime
  - Automatically all lights ON in sunset time

- Automatically turn ON/OFF at a preset time to match a regular schedule.

**System composition**

**Application example**

- For Offices, Conference rooms

  - Before work: 7:30-8:30
  - Work time: 8:30-12:00
  - Lunch break: 12:00-13:00
  - Work time: 13:00-19:00

  - Some lights automatically ON at 7:30
  - All lights automatically OFF at 8:30
  - Some lights automatically OFF at 12:00
  - All lights automatically ON at 13:00

  - Annual schedule also can be programmed

**8% energy saved**
Passive Infrared Sensor Controls -1

- Automatically turn ON/OFF by detecting the movement of human body (infrared ray).

**Application example**

- **For Rest rooms**
  - Lights automatically ON when person enter a room
  - Lights automatically OFF after person left a room

**System composition**

- Passive Infrared ceiling unit (For OFF-delay setting)
- HID Relay
- L/F Relay
- Control
- HID Relay
- Transmission unit
- Transformer
- Full-2way signal line

61% energy saved

Daylight Sensor Controls

- Automatically turn ON/OFF by detecting the daylight from outside.

**Application example**

- **For Corridors (near the windows)**
  - Daytime: Over 200Lx, while daylight enters, lights OFF
  - Night time: Less than 200Lx, after getting dark, Lights ON
  - Illumination detection level available: Over 200Lx, 200Lx

**System composition**

- Transmission unit
- Full-2way signal line
- Daylight sensor unit
- Relay Control
- Transformer
- HID Relay
- L/F

69% energy saved
System Outline

FULL-2WAY REMOTE LIGHTING CONTROL SYSTEM

Specific Information

Concept

Energy-savings

Simple

Ecology

Convenience

Amenity

Flexibility

Control Methods

Applications

FULL-2WAY 2WAY REMOTE LIGHTING CONTROL SYSTEM

Hotels

Commercial facilities

Residences

Office Buildings

Proposals of Recommended Building Applications

Full-2way remote control system proposal for your projects
Office Buildings -1

Applications

Centralized monitoring & control + Timer control

- Up to 256 circuits per system can be handled from a centralized control room.

Program timer unit
Selector switch

Uses
Building superintendent's office
Emergency management center

Effect
Reduced labor for control and management
Lights always get turned OFF automatically by timer control

Office Buildings -2

Applications

Wireless control + LCD switch control

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

Uses
Conference rooms
Presentation rooms

Effect
Centralized monitoring & control
Adjust lighting as needed
Total control by wireless switch

Wireless switch
& receiver
### Applications

**Office Buildings**

- **Daylight sensor control + Dimmer control**

**Uses**
- Working floors
- Corridor
- Entrance

**Effect**
- Energy-saving
- Optimal lighting control

- **Daylight sensor unit**
  - 30% ON while daytime
  - 100% ON after dark

- **Dimmer unit** (Controllable ballast, 0-10V)

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**Office Buildings**

- **Applications**

**NTT Makuhari (Chiba)**

Total lighting control/monitor in an intelligent building

- **Location**: 1-6 Nakase, Mihama-ku, Chiba-shi, Chiba-pref.
- **Total area**: 40,602.67 m²
- **Total floor area**: 174,717.19 m²
- **Scale**: 26 floors + 1 basement levels
- **Completion**: June 1993
- **No. of system**: 57 systems, 8 systems
- **No. of HID relays**: 8,624 units

- **Time scheduled lighting control**
  - For common areas by central control panel
Proposals of Recommended Building Applications

Applications

Office Buildings

Commercial facilities

Hotels

Residences

Full-2way remote control system proposal for your projects

- Full-2way remote control system

Commercial Facilities -1

Applications

Commercial facilities

Pattern control

Uses

Gymnasiums
Indoor pools

Effect

Energy saving
Labor for control & management saving

A single switch allows you to turn ON/OFF the lighting for programmed lighting scenes at the touch of a finger.

<table>
<thead>
<tr>
<th>All ON</th>
<th>50% ON (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50% ON (2)</td>
<td>All OFF</td>
</tr>
</tbody>
</table>

- Pattern control
Photoelectric EE switch + Timer control

Automatically turn ON/OFF at a preset time to match a regular schedule by sensor & schedule function.

**Uses**
- Outside lights
- Parking lots

**Effect**
- Energy saving
- Labor for control & management saving

---

**Commercial Facilities**

- **Applications**
- **Universal Studios Japan (Osaka)**

Lighting Control Systems for more than 50 attractions

Centralized Lighting Control Room
National Full-2way remote lighting control system has been installed in below 10 of 10 sites!

- Seoul
- Inchon
- Jeonju
- Suwon
- Gwanjiu
- Daejeon
- Daegu
- Ulsan
- Busan
- Seogwipo

Applications

Commercial Facilities

Soccer Stadiums (Korea)

Fitted with our Full-2way remote lighting control system + 2000-lux lighting apparatuses to assist high-resolution TV broadcasting. (FIFA only requires 1500-lux)

- Location: Sangam-dong, Mapo-gu, Seoul, Korea
- Total Area: 216,712 m²
- Building Area: 58,747 m²
- Total Floor Area: 150,784 m²
- Shape: Rectangle (206m x 243m)
- Seating Capacity: 64,677 seats
- Completion: December 2001
Proposals of Recommended Building Applications

- Full-2way remote control system proposal for your projects

Office Buildings
Commercial facilities
Residences

Hotels

Full-2way remote control system

Applications

Proposals of Recommended Building Applications

- Full-2way remote control system proposal for your projects

Office Buildings
Commercial facilities
Residences

Hotels

Full-2way remote control system

Applications

Proposals of Recommended Building Applications

- Full-2way remote control system proposal for your projects

Office Buildings
Commercial facilities
Residences

Hotels

Full-2way remote control system

Applications
Applications

Commercial facilities

Hotels

- Card switch control
  - Controllable with lighting, power supply, and air conditioning by inserting/removing a card.
  - Power ON: When inserting cards
  - Power OFF: 30 sec after removing cards

Uses
  - Guest rooms

Elegant look!

Effect
  - Energy saving
  - Labor for control & Management saving

Optional Switches
  - Light-Con type
  - Glacier type

Imperial Hotel (Osaka)

- Location: Temmabashi 1-chome, Kita-ku, Osaka
- Total Floor Area:
  - Main 66,212m² (24 floors)
  - Annex 7,876m² (5 floors + 3 basement levels)
- Accommodation: 390 guest rooms (17 suites)
- 12 restaurants, lounges, 20 ball rooms, 3 special executive/VIP floors, lavish fitness wing
Proposals of Recommended Building Applications

Applications

- Full-2way remote control system proposal for your projects

Office Buildings

Commercial facilities

Hotels

Residences

Full-2way remote control system

Residences -1

Applications

- Centralized monitoring & control + Timer control

Kitchens
Living rooms
Bed rooms

Uses

Effect

Energy saving
Optimal lighting control
Centralized control

Selector switch

Allows a person to Check and ON/OFF air conditioning and lighting from the selector switch.
Living rooms
Bed rooms

Optimal lighting control
(Creating an effective atmosphere for the situations)

Uses
Living rooms
Bed rooms

Effect
Optimal lighting control

— Home party
— Relaxing time
— Mealtime
— Dimmer switch

A single press of a switch can turn OFF all the lights in a house when going out in a hurry.

Uses
Front doors
Back doors

Effect
Preventing lights being left ON

"OFF-delay" function available

Applications
Commercial facilities
Residences
— Hotels
— Residences

Bunglow Houses (Singapore)
Location: Gallop Road, Singapore
Scale: 2 story, 1,500m²
Completion: Dec. 1994
No. of system (Transmission unit): 1 unit
No. of HID relays: 64 units

Centralized control at 1st story for monitoring purposes.

Sensor & Timer controls available.
System expansion also possible with an addition of components needed.
FULL-2WAY REMOTE LIGHTING CONTROL SYSTEM

System Outline

Energy-savings

Concept

Simple

Convenience

Flexibility

Amenity

Application

Control Methods

External Connection to FULL-2WAY System

FULL-2WAY Remote Lighting Control System

Control Methods

Contact Transmission

Network Communication

Dry Contact

A Contact Input T/U is needed for receiving a dry contact signal from external equipment such as Fire Alarm, Security and other system to control the lightings of the FULL-2WAY system.
Up to 31 systems of FULL-2WAY lighting control system can be monitored and controlled with a central equipment (BA) by means of adding a NCU (Network Control Unit) and LIUs (Local Interface Unit).

**System Diagram**

- **Capacity of System:** Up to 7936 circuits (31 pcs of Transmission Units to be used)

**Control Methods**

- **Head Quarter**
  - Monitoring all shops on a PC
  - Lightings record at night time
  - To maintain the data (patterns/groups)

- **Shop A**
  - Monitor & Control on the screen
  - Scheduling Control

- **Shop B**
  - Monitor & Control on the screen
  - Scheduling Control

**Remote Control System (Chain Store)**

- **Ethernet / LAN**
  - To supervise at the head quarter of the chain stores is available.

**Features:**

- Capable to manage at each shop
- Easy to expand the system
- Easy to modify the specifications
- Low construction cost
Thank you for your kind attention!