

MITSUBISHI ELECTRIC CITY MULTI Control System and Mitsubishi Mr. SLIM Air Conditioners ON/OFF remote controller PAC-YT40ANRA Installation Manual

The content of this instruction manual is limited to the installation of an ON/OFF remote controller (hereafter remote controller) that is capable of managing and controlling a maximum of 50 units comprised of air conditioners, LOSSNAY units and general purpose interface (the units can be spread over a maximum of 16 groups). For information on how to wire and install the air conditioning units, refer to this manual for them.

1 Safety Precautions

- Read these Safety Precautions and perform installation work accordingly.
- The following two symbols are used for dangers that may be caused by incorrect use and their degree of severity:

WARNING This symbol denotes what could lead to serious injury or death if you misuse the PAC-YT40ANRA.

CAUTION This symbol denotes what could lead to a personal injury or damage to your property if you misuse the PAC-YT40ANRA.

After reading this manual, keep in a handy place. When removing or repairing the unit, give this manual to the installer. When the user changes, also give to the new user.

WARNING

- Ensure that installation work is done correctly following this installation manual. Any deficiency caused by your own installation may result in an electric shock or fire.
- Ensure that installation work is done correctly following this installation manual. Any deficiency caused by installation may result in an electric shock or fire.
- All electrical work must be performed by a licensed technician, according to local regulations and the instructions given in this manual. Any lack of electric circuit or any deficiency caused by installation may result in personal injury.
- Do not move and re-install the PAC-YT40ANRA yourself. Any deficiency caused by installation may result in an electric shock or fire. Ask your distributor or special vendor for moving and installation.
- To dispose of this product, consult your dealer.

CAUTION

- Do not install in any place exposed to flammable gas leakage. Flammable gases accumulated around the body of PAC-YT40ANRA may cause an explosion.
- Do not use in any special environment. Using in any place exposed to oil (including machine oil), steam and sulfuric gas may deteriorate the performance significantly or give damage to the component parts.
- Wire so that it does not receive any tension. Tension may cause wire breakage, heating or fire.
- Completely seal the wire lead-in port with putty etc. Any dew, moisture, insects entering the unit may cause an electric shock or a malfunction.
- Do not wash with water. Doing so may cause an electric shock or a malfunction.
- Do not install in any place at a temperature of more than 40°C or less than 0°C or exposed to direct sunlight.
- Do not install in any steamy place such as a bathroom or kitchen. Avoid any place where moisture is condensed into dew. Doing so may cause an electric shock or a malfunction.
- Do not install in any place where acidic or alkaline solution or special spray are often used. Doing so may cause an electric shock or malfunction.

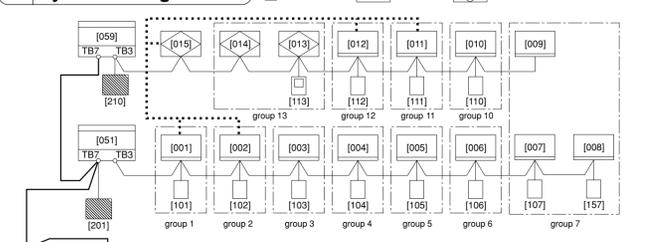
2 Confirming the Supplied Parts

Confirm that the box includes the following parts, in addition to this installation manual:

1. Remote controller (cover, body, Remote controller lower case).....	1
2. Cable for external input (5 wire).....	1
3. Cable for external output (4 wire).....	1
4. Cross recessed pan head screw (M4 x 30).....	2
5. Wood screw (4.1 x 16, used for directly hooking to the wall).....	2
6. Room name sheet.....	8 (Includes 4 spare sheets)
7. Operation Manual.....	1

NOTE: The remote control cord is not supplied with the product. Prepare electrical wiring that conforms to the specifications given below. Electrical wiring specification (CVV5) Use 1.25 mm² cable for any extension that exceeds 10m. • 10m or shorter: 0.75 mm² two-wire cable • Longer than 10m: 1.25 mm² two-wire cable Remote controller wiring entry points can support electrical wiring of maximum 1.25 mm². However 0.75 mm² electrical wiring is recommended for use.

3 System Configuration



M-NET model address setup (address duplication not possible)

Address setup	Address
Indoor unit / Interlocked unit	Any address within the range specified at unit. 1-50
Outdoor unit	The smallest address of indoor unit in the same refrigerant system + 50 51-100
Remote controller	The smallest address of indoor unit in the same group +100 101-200
ON/OFF remote controller	Any address within the range specified at right. 201-250

NOTE: The only indoor unit in this device can be used to operate in an M-NET central indoor unit. It will not operate as a K control indoor unit, even with a K transmission converter (PAC-SC50KA).

● To connect the system controller on the transmission line for central control and connect a power supply unit for transmission lines (PAC-SC50KUA), leave the power supply switch connector (CN41) on the outdoor unit as it is.

● Up to 2/16/12 system controllers can be connected when a power supply unit (PAC-SC50KUA) is connected.

Capacity coefficient

Central controller (G-50A)	ON/OFF remote controller (AN)	System remote controller (SR) Schedule timer (ST)
1	1	0.5

(e.g) In the case of a system with 1 central controller, 2 ON/OFF remote controllers, and 2 group remote controllers. These controllers are connectable because the calculation result is 6. $1 \times 3 + 2 \times 1 + 2 \times 0.5 = 6$ — Total number (≦ 6 [AN])

Power consumption of G-50A and AN are as follows: • One G-50A unit = Three AN units • One AN consumes 1/3 as much power as one G-50A. • One AN unit = Two GR units • One GR, SR, or ST consumes half as much power as one AN. (Note 1) Up to 2 central controllers (G-50A) can be connected only when different systems are kept separate.

● CAUTION4: Using with a certain combination of multiple system controllers.

● To connect the system controller on the transmission line for central control and be powered from the outdoor unit (Applicable only to R410A compatible models), disconnect the male connector from the female CN41 power supply switch connector, and connect it to the female CN40 power supply switch connector on only one of the outdoor units.

Up to three system controllers (AN/SR/ST/GR) can be connected on the transmission line for central control of the M-NET without the need for a power supply unit for transmission lines.

When the system controller is connected on the transmission line for central control and is powered from the outdoor unit, the number of indoor units that are connectable to each refrigerant system is reduced by 3/1/0.5 unit(s) for each system controller that is connected

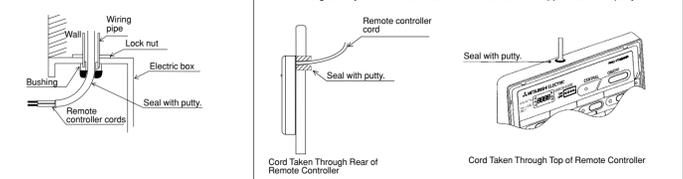
G-50A	AN	SR, ST, GR
Converted into three indoor units	Converted into one indoor unit	Converted into 0.5 indoor unit

4 How To Install

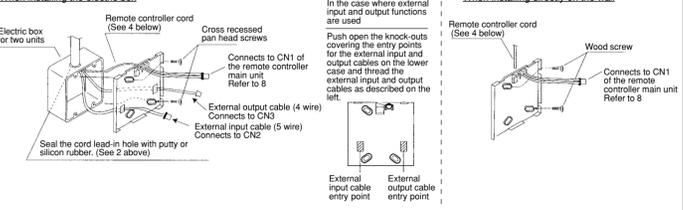
- Choose a location in which to install the system remote controller (electric box) in accordance with the following requirements:
 - The space as shown in the diagram at right is required whether the controller is installed on the wall or in the electric box.
 - Procure the following parts locally.
 - Electric box for two units
 - Thin-copper wiring pipe
 - Locknut and bushing

When using the electric box • When fitting to the electric box, seal the joint between the electric box and the wiring conduit with putty.

When fitting directly on the wall • When cutting a hole in the wall for the remote controller cord (ie when the remote controller cord exits from the rear of the remote controller), seal this hole in the same way. • When fitting directly to the wall as in 3, seal the cut-out in the upper case with putty.

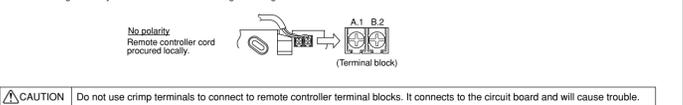


3. Install the lower case on the electric box or directly on the wall.



NOTE: Over-tightening the screws may result in deformation or cracking of the lower case. NOTE: Choose a flat plane for installation. Fasten the electric box at more than two places when installing directly on the wall.

4. Connect the remote controller cord to the terminal block on the lower case.



NOTE: Do not use crimp terminals to connect to remote controller terminal blocks. If connects to the circuit board and will cause trouble.

Rotary switch setting

Rotary switch setting	Address
01-50	201-250

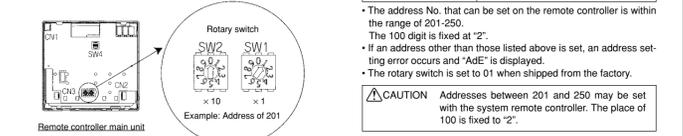
• The address No. that can be set on the remote controller is within the range of 201-250. The 100 digit is fixed at "2".

• If an address other than those listed above is set, an address setting error occurs and "AdE" is displayed.

• The rotary switch is set to 01 when shipped from the factory.

CAUTION: Addresses between 201 and 250 may be set with the system remote controller. The place of 100 is fixed to "2".

5. Set the system remote controller address with the rotary switches.



6. When used in conjunction with the master system controller (centralized controller), set the system remote controller to "Slave" with the switch as shown in the diagram below.

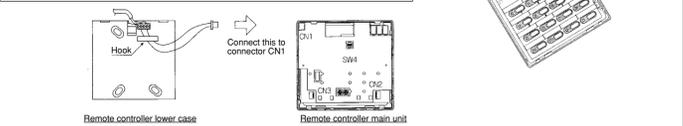
- The switch is set to "Master" when shipped from the factory. SW4-1: OFF = "master" ON = "slave"
- SW4-2, SW4-3 are for switching between external input modes.

7. Wiring hole for fitting directly on the wall

- Cut off the shaded area from the upper cover using a knife, nippers, etc.
- Take out the remote control cord connected to the terminal block via this portion.
- External input/output cables (Only in the case when using external input and output functions directly connected to the wall) • Using a suitable knife or cutting implement, cut and remove the thin walled part on the left and right side of the remote controller main unit.
- CN2 side: For external input cable
- CN3 side: For external output cable
- Insert the external input/output cables through these points.

8. Connect the lower case connector to connector CN1 on the remote controller main unit.

- Connect the external input and output function, also connect the external input cable connector (5 wire) to CN2 and connect the external output cable connector (4 wire) to CN3.
- Connect firmly as shown in the diagram at right. The system will not operate unless these connections are made.
- After connecting the wiring, ensure that the upper case does not hang off the cord as shown in the diagram below at the right. This may result in a break in the cord, and thus cause problems with operation.
- Always pass the cord through the hook to hold it in place.



9. Mount the remote controller main unit.

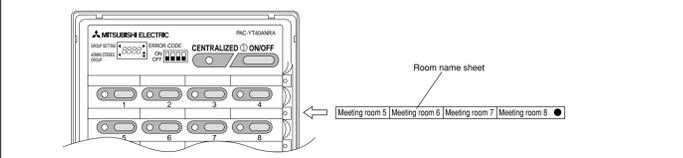
- Remove the remote controller main unit, insert a minus screwdriver into one of the open slots and move it in the direction of the arrow as shown in the diagram at right.

The first, hook the two upper claws and then fit it as shown in the above diagram. When the external input and output functions are used and the lower case cable entry points are being used, mount the remote controller main unit while pushing the external input/output cables to the electric box side. (Push towards the electric box sides from the lower case with the cable sheath part is reached.)

CAUTION: Press the cover until it snaps shut. If not, it may fall off. Do not turn the screwdriver in the slot. Doing so may damage the slot.

NOTE: A protective sheet has been affixed to the control panel. Remove it before starting.

10. Write the room names on the room name sheet and insert it into the remote controller main unit as described below.



NOTE: A protection sheet is stuck to the room name sheet. Remove the protection sheet before using the room name sheet.

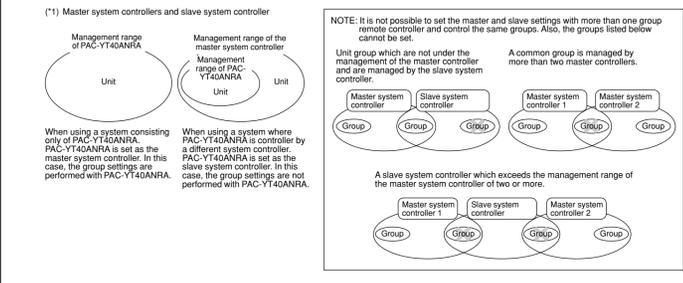
11. Fasten the remote controller cover.

- The initial setting is set while the cover is removed. Fasten the cover after performing the initial setting.
- Remove the remote controller cover, gently rotate a slotted screwdriver in the claw points as shown in the right diagram.

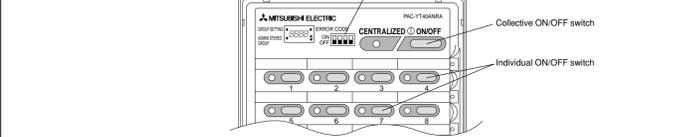
CAUTION: Press the cover until it snaps shut. If not, it may fall off. When rotating the driver, gently rotate without applying much force. If too much force is applied, it could break the claw parts.

5 Initial Setting

- There are the following two types of initial setting mode.
- Minimum controlled group No. setting The remote controller determines the controlled group range using its own address setting. If the controlled group range that is determined by the remote controller's own address causes trouble, change the controlled group range by performing the minimum group No. setting.
 - Group setting This is used to include the controllers controlled by the remote controller in each group. Indoor units, ventilation units, local remote controllers and slave system controllers are entered in each group.
 - When setting a master system controller
 - When setting a slave system controller
 It is necessary to perform the group setting. Moreover, it is necessary to perform minimum controlled group No. setting when required. It is necessary to perform minimum controlled group No. setting when required. The group setting is not necessary. The group setting is performed on the master system controller side. When interlocking control of a ventilation unit with an indoor unit, the interlocking setting is necessary but it is not set on the remote controller. Perform the interlocking setting on the local remote controller when this remote controller is set as the master system controller or perform it on the system controller of the master system controller setting when this remote controller is set as the slave system controller. (If an ON/OFF remote controller is set as the system controller in the master system controller setting, set the interlocking setting on the local remote controller.)



5-1 Initial Setting Method



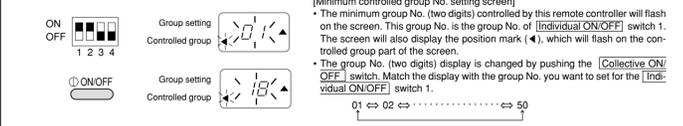
- Remove the cover.
 - Supply power to this remote controller.
- "HO" is displayed and Centralized Control lamp flashes. • If group setting information has already been registered, "H1" is displayed after the power is supplied, then the screen will be blank and normal operation becomes possible. (This state is described below as normal mode.)

3. Operation to switch to initial setting mode

- It is possible to switch to initial setting mode when "HO" of (2) is displayed on the screen or when all groups are off in normal mode. When the ON/OFF lamp of an individual group is lit during normal mode, press the [Collective ON/OFF] switch to turn off all groups.

- Set SW3-1 to "ON".
 - [Screen displaying remote controller's own address] • The remote controller's own address flashes for about 2 seconds and then the screen display switches to the initial screen for group setting.
 - [Initial screen for group setting] • The address display part "-" and the position mark (▲) on the group setting part of the screen flash.
 - If the group setting information has already been registered in the initial screen for group setting, the registered unit No. of the smallest address will be displayed.

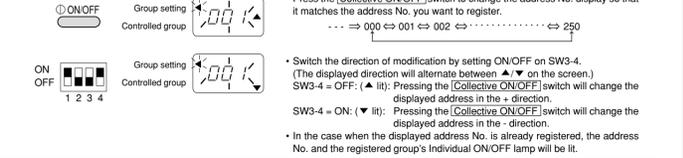
- (Minimum controlled group No. setting) Set SW3-2 to "ON".
 - Note: Only change this setting when you want to change the group range controlled by this remote controller. The group range controlled by this remote controller is determined by this remote controller's address setting. If trouble arises from the controlled group range that was determined by this remote controller's address, perform the minimum controlled group No. setting regardless of whether this remote controller is set to master setting or slave setting. (Example) If you want to control exactly the same groups with two ON/OFF remote controllers, it is not possible to duplicate the remote controller address. Therefore the range of the groups that the two ON/OFF remote controllers can control will not match. In such a case, the minimum controlled group No. setting can be modified to determine a controlled group range that is not relative to the remote controller's own address setting.
 - [Minimum controlled group No. setting screen] • The minimum group No. (two digits) controlled by this remote controller will flash on the screen. This group No. is the group No. of [Individual ON/OFF] switch 1. The screen will also display the position mark (▲), which will flash on the controlled group part of the screen.
 - The group No. (two digits) display is changed by pushing the [Collective ON/OFF] switch. Match the display with the group No. you want to set for the [Individual ON/OFF] switch 1.



- (Change the direction of modification by setting ON/OFF on SW3-4. (The displayed direction will alternate between ▲/▼ on the screen.)
- SW3-4 - OFF: (▲ lit): Pressing the [Collective ON/OFF] switch will change the value in the + direction.
- SW3-4 - ON: (▼ lit): Pressing the [Collective ON/OFF] switch will change the value in the - direction.

- The group No. that can be controlled by this remote controller will become the range from the group No. set here until that group No. + 15. (Example) When the remote controller's own address is 210, and the minimum controlled group No. is modified from "10" to "25". In this case, the controlled group No. range has been changed so that group 25 through group 40 can be controlled; [Individual ON/OFF] switch 1 = Group 25, [Individual ON/OFF] switch 2 = Group 26, and so on to [Individual ON/OFF] switch 16 = Group 40.
- Switch to the initial screen for group setting of (2) by switching SW3-2 to "OFF".

③ (Group Setting) Display the Address numbers you want to include.



- Press the [Collective ON/OFF] switch to change the address No. display so that it matches the address No. you want to register. --- ⇒ 000 ⇒ 001 ⇒ 002 ⇒ ⇒ 250
- Switch the direction of modification by setting ON/OFF on SW3-4. (The displayed direction will alternate between ▲/▼ on the screen.) SW3-4 - OFF: (▲ lit): Pressing the [Collective ON/OFF] switch will change the displayed address in the + direction. SW3-4 - ON: (▼ lit): Pressing the [Collective ON/OFF] switch will change the displayed address in the - direction.
- In the case when the displayed address No. is already registered, the address No. and the registered group's Individual ON/OFF lamp will be lit.

③ - 1 (To register) Press the Individual ON/OFF switch of the group in which you want to make an entry.

- Beginning from the state where the address No. is flashing, press the [Individual ON/OFF] switch of the group you want to register the address No. in. The controller of the displayed address No. will be registered to that group.
- When this address No. is successfully registered, the address No. and lamp of the registered group will change to lit and the address No. will be included in this group.
- If there is no controller for the specified address No., or if you are trying to register different types of units to the same group, an error will occur. In such a case the address No. and the Individual ON/OFF lamp will flash.

③ - 2 (To remove) Press twice, the Individual ON/OFF switch of the group in which you want to remove an entry.

- Beginning from the state where the address No. is lit, press the [Individual ON/OFF] switch of the group you want to remove the displayed entry from twice in succession. The controller entry of the displayed address No. will be removed.
- When this removal process is performed successfully, the address No. will be flashing and the lamp of the group from which the entry was removed will change from lit to not lit.

③ - 3 (To remove all entry data) Press Individual ON/OFF switch 1 and Individual ON/OFF switch 16 simultaneously for 3 seconds.

- The display will change to as shown on the left and when the removal process is successfully performed, the initial screen for group setting of (2) will be displayed. This process also resets the minimum controlled group No. setting to the controlled group range determined by the remote controller's own address.

③ Repeat operations ③ and ④ to perform the registration operations for all controllers.

- First register all the indoor units, stand-alone LOSSNAY units or general purpose interface, then register the local remote controller, and lastly register the slave system controller. By following this sequence for the setting operation, the registering operation can be performed smoothly.
- You cannot register units of a different type (indoor units, ventilation units) in the one group.
- A single group can have a maximum of 15 units (indoor units or ventilation units) and the combined total of local remote controllers and system controllers in the group can be as many as 4 units.
- When connecting local remote controllers to the system, you must register the local remote controller address in the group. However, if the local remote controller is an MA remote controller, registration in the group is not required.

③ Set SW3-1 to "OFF".

- Set the dip switch 3-1 to "OFF" to exit from group setting mode.
- "H1" will be the startup process is performed successfully, the address No. will be flashing and the lamp of the group from which the entry was removed will change from lit to not lit.
- The startup process has completed once "H1" is no longer displayed. The operation state becomes normal mode and normal operation is possible.

6 Using the External Input and Output

When using the external input and output functions, use the external input and output cables provided with the remote controller. (A 5 wire cable for input and 4 wire cable for output are provided.)

1. External signal input function

- External Input By using an external no voltage contact signal, it is possible to send Emergency stop/Normal, ON/OFF or Prohibit/Permit local remote controller operation commands to all units being controlled. (This is selected by the SW4 setting. SW4 is mounted on the main unit board.)

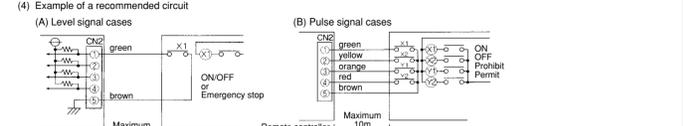
No.	External input signal functions	SW4 No.2	SW4 No.3	Comment
1	Do not use external input signal (This is the factory setting.)	OFF	OFF	
2	Send a level signal for Emergency stop/Normal	OFF	ON	The Emergency stop state prohibits the ON/OFF operation from the local remote controller and the ON/OFF operation and the Prohibit/Permit operation from this unit.
3	Send a level signal for ON/OFF	ON	OFF	This state prohibits the ON/OFF operation from both the remote controller and this unit.
4	Send a pulse signal for ON/OFF and Prohibit/Permit	ON	ON	When the contact is ON, make the pulse duration 0.5sec or longer.

- Level signal and pulse signal (A) Level signal (B) Pulse signal (Example) Case of ON/OFF signal

External input specification

CN2	Lead wires (5 wires)	Level signal for Emergency stop/Normal	Level signal for ON/OFF	Pulse signal for ON/OFF, Prohibit/Permit
No. 1	Green	Emergency stop/Normal input	ON/OFF input	On input
No. 2	Yellow	Not used	Not used	Off input
No. 3	Orange	Not used	Not used	Prohibit local remote controller operation input
No. 4	Red	Not used	Not used	Permit local remote controller operation input
No. 5	Brown	Common 0V		

- Level signal cases
 - In the case where the Emergency stop/Normal signal is selected, when the external input signal contact OFF changes to contact ON, "Normal" changes to "Emergency stop". When contact ON changes to contact OFF, "Emergency stop" changes to "Normal".
 - In the case where the ON/OFF signal is selected, when the external input signal contact OFF changes to contact ON, "OFF" changes to "ON", and when contact ON changes to contact OFF, "ON" changes to "OFF".
- Pulse signal cases
 - If the "ON" signal is sent while the equipment is on, the equipment remains on. (The same applies to OFF, Prohibit and Permit.)
 - In the case where local remote controller operation is prohibited, the ON/OFF operations by the local remote controller are prohibited.
 - Set the pulse duration (contact ON period) to 0.5sec or longer.



- The no voltage contact point and the extension cable are not supplied with the product.
- The length of the connection cable extension should not exceed 10m. (Use a cable of 0.3 mm² or thicker.)
- Cut off the cable not being used close the connector and properly insulate the cut off ends with tape or the like.

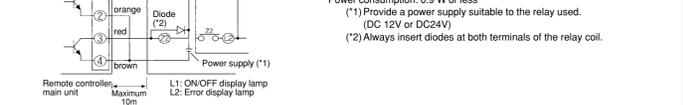
2. External signal output function

- External output In the case when one or more air conditioner units are "ON", and an error is occurring on one or more air conditioner units, a signal indicating that an error is occurring is output.
- External output specification

CN3	Lead wires (4 wires, with black tube)	Detail of each terminal
No. 1	Yellow	ON/OFF
No. 2	Orange	ON/OFF
No. 3	Red	ON/OFF
No. 4	Brown	Error/Normal

- "On" is output even when there is "Error".

3. Example of a recommended circuit



- For relay Z1, Z2 use the specifications given below. Operation coil Rated voltage: DC12V, DC24V Power consumption: 0.9W or less (1) Provide a power supply suitable to the relay used. (2) Always insert diodes at both terminals of the relay coil.

- When units are "ON" and an error is occurring, each element is ON.
- The extension length of the connection cable can be up to 10 m.
- The relay, lamps, diodes and extension cables are not supplied with the product.