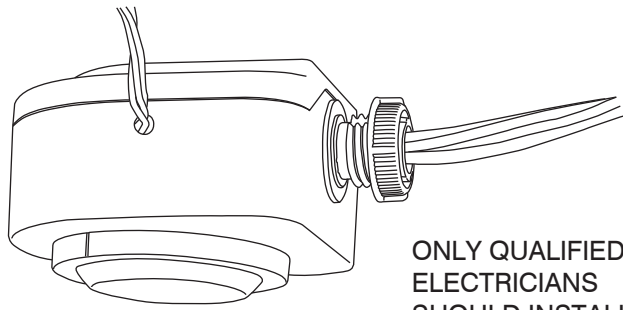




# ON-PPU-301

## OS-NET Power Pack & Load Controller

### INSTALLATION INSTRUCTIONS



**ONLY QUALIFIED ELECTRICIANS SHOULD INSTALL THIS DEVICE.**

**Indoor dry location use only**  
**Utilisation a l'interieur Uniquement**

#### WARNING & CAUTION

- TURN POWER OFF AT CIRCUIT BREAKER BEFORE INSTALLING THIS DEVICE.
- Install this device at least 1 ft. away from any occupant.
- Risk of Electric Shock – More than one disconnect switch may be required to de-energize the equipment before servicing.
- Use UL listed wires for all wiring connections. Low voltage wiring connection should use at least 22 AWG wire. Load switching wiring connection should use at least 12 AWG. AC power line voltage wiring connection should use at least 18 AWG wire. Wire all Class 2 circuits using types CL3, CL3P, CL3R, or equivalent conductors. For plenum return ceilings, use UL listed plenum-approved cables.
- Always check national, state and local building codes for necessary compliance. After initial wiring is complete, ensure to verify all the low and high voltage wires are correctly connected before applying the power. Incorrect wiring could possibly cause permanent damage to the power pack, lighting system, occupancy sensors or other control devices.

#### AVERTISSEMENT & PRUDENCE

- COUPER LE COURANT AU DISJONCTEUR AVANT D'INSTALLER BLOCS D'ALIMENTATION.
- Risque de choc électrique – Plus d'un interrupteur peut être nécessaire pour mettre hors tension le matériel avant l'entretien.
- Utiliser homologation UL fils pour toutes les connexions de câblage. Basse tension connection de câblage doit utiliser au moins 22 fils de AWG. Commutation de charges connexions de câblage doit utiliser au moins 12 AWG. Tension de la ligne de courante alternative connexions de câblage doit utiliser au moins 18 fils de AWG. Brancher tous les circuits de classe 2 à l'aide de types CL3, CL3P, CL3R, ou conducteurs équivalent. Pour les plafonds de retour de plénum, utiliser UL câbles ignifuges approuvés énuméré.
- Toujours vérifier les codes de constructions nationaux, étatiques et locales pour le respect nécessaire et conformité. Après le câblage initial est terminé, assurez-vous de vérifier que tous les fils basse et haute tension sont connectés correctement avant d'appliquer la puissance. Un câblage incorrect pourrait causer des dommages permanents à la batterie d'alimentation, système d'éclairage, aux détecteurs de présence ou autres dispositifs de commande.

### INTRODUCTION

The ON-PPU-301 is an OS-NET enabled power pack and plug load controller featuring wireless mesh network capability to provide top-notch intelligent lighting control. This power pack not only supplies 24 VDC power for IR-TEC's low voltage occupancy sensors, but also provides load switching up to 20A upon receiving control signals from wired sensors, or wireless commands from networked OS-NET devices of the same group. A unique radio command will be transmitted to other OS-NET devices for executing coordinated group controls whenever ON-PPU-301 receives a control signal from a wired sensor.

This device can be attached to a junction box, cable tray, or fixture through a 1/2 inch knockout with the designed threaded nipple and locknut. Subject to the wiring connection and control setting, the ON-PPU-301 can be programmed to provide occupancy or vacancy sensing control to the connected

light or plug load control for codes compliance. Numerous control settings, including burn-in time, delay time, group/ungroup, lock/unlock...etc. can be intuitively configured via a 2-way handheld remote programmer.

With ON-PPU-301, you can easily enable wireless smart lighting control with IR-TEC low voltage occupancy sensors. Zone lighting and plug load control can be easily done at any junction box or fixture.

Combining the ON-PPU-301 with the OS-NET Button gives unparalleled flexibility and ease for room control. Whether it is a new construction or retrofit project, OS-NET will save time in installation, commissioning, and user adoption.

### SPECIFICATIONS

Power supply	120/277 VAC, 60 Hz
DC power output	24 V, 100 mA max.
Maximum load	1 HP @120VAC 1 HP @ 240VAC 20A Resistive @ 120/277VAC 20A Ballast @120/277VAC
Control signal	Dry contact or active low open collector
Wireless protocol	Modified Zigbee Light Link (ZLL)
Radio frequency	2.4 GHz
Radio range	Typical 12 m (40 ft.) @ indoor
Remote range	Typ. 5 m (16 ft), indoor with no backlight
Op. humidity	Max 95% RH
Op. temperature	-20°C ~ 55°C (-4°F ~ 122°F)
Dimensions	111 x 90 x 46 mm (4.37" x 3.54" x 1.80")
Purpose of control	Operating Control with Electronic Independently Mounted
Type Action	Type 1
External Pollution Situation	Pollution Degree 2
Rated Impulse Voltage	4000 V

#### Federal Communication Commission Interference Statement FCC ID: NRIRS330100

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radiation Exposure Statement:  
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Install the sensor at least 1 ft. away from any occupant.

Programming Guide

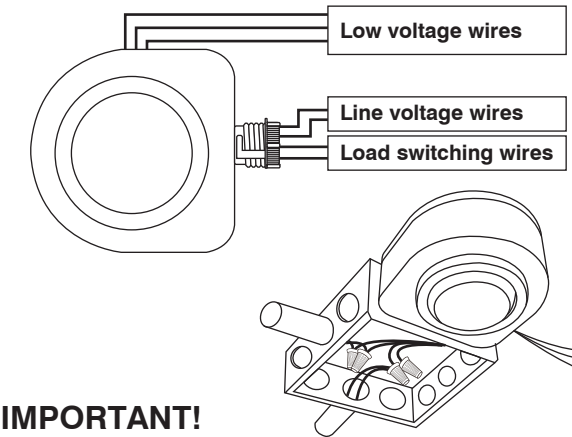


### SETTING

The ON-PPU-301 can be configured to link with other OS-NET devices wirelessly to execute specific control via SRP-281. For more details about remote operation, please refer to the OS-NET Programming Guide available from [www.irtec.com](http://www.irtec.com).

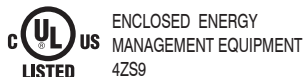
Settings	Description	Options	Default
INDIV-SET	To setup an individual device		
GROUP-SET	To setup all devices of the group with same settings		
CONTROL	Control schemes available for ON-PPU	ON/OFF, VSC, PLC	ON/OFF
DELAY	Delay time that ON-PPU will turn off load	30 sec./1/3/5/10/15/20/30/60 min.	20 min.

### INSTALLATION



#### IMPORTANT!

1. All line voltage wiring connections should be made inside of junction box.
2. To obtain optimal wireless communication, avoid placing the device behind a metal mesh/plate.
3. To enable wireless network control, the ON-PPU-301 must be grouped and linked with the other OS-NET devices. An "ungrouped" ON-PPU-301 with low voltage occupancy sensor connected will only operate in standalone control.



www.irtec.com P/N: 058-30101-001 Printed in Taiwan  
This product may be covered by one or more U.S. patents or patent applications.  
Please visit [www.irtec.com](http://www.irtec.com) for more information.

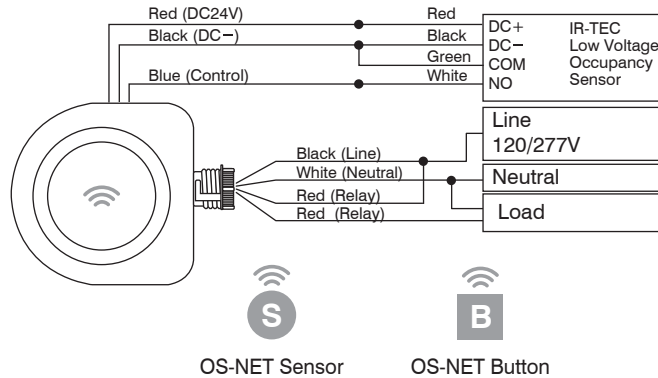


## WIRING DIAGRAMS

Line Voltage Wires				Low Voltage Wires			
Color	Description	Function	Gauge	Color	Description	Function	Gauge
White	Neutral	Line voltage	18 AWG	Red	DC24V	DC power supply	22 AWG Class 2
Black	Line	Line voltage	18 AWG	Black	DC-		
Red	Relay contacts	Load switching	12 AWG	Blue	Control	Sensor signal input	
Red							

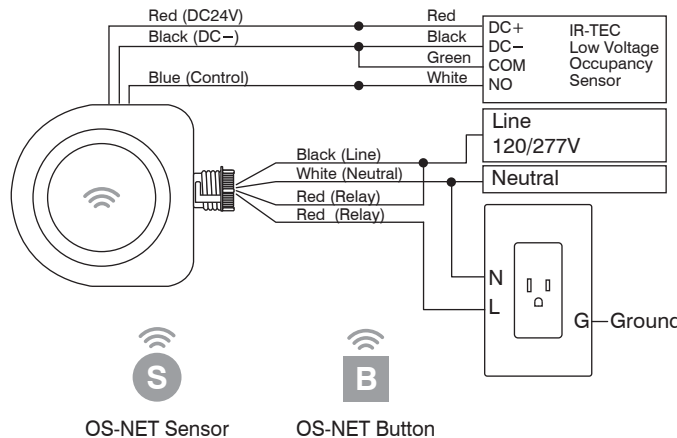
Following are basic wiring diagrams for typical controls, consult with an IR-TEC team member for correct wiring diagram if a more complex control is required.

### A. Occupancy/Vacancy Sensing Control



NOTE: For Vacancy Sensing Control (VSC), at least one OS-NET Button should be installed and grouped with the ON-PPU-301 to enable manual-on control.

### B. Plug Load Control



NOTE: If PLC is selected, the OFF-command from OS-NET Button will be ignored.

## CONTROL SCHEME

The following schemes can be programmed via CONTROL setting of the SRP-281. Depending on the connection of wired **Low Voltage Occupancy Sensor (LVOS)** and grouped **OS-NET Sensor (ONS)/OS-NET Button (ONB)**, the ON-PPU may control the load in slightly different patterns.

### CONTROL = ON/OFF

The load will be switched ON when ON-PPU receives 1) control signal from a wired LVOS, or 2) wireless command from a grouped ONS/ONB, and switched OFF when programmed delay time elapses or receives the OFF-command from a grouped OSB.

If the load was switched OFF via an OSB, the ON-PPU will operate in Presentation Mode. The load will remain OFF if motion is detected before the delay time elapse. The ON-PPU will resume to auto-ON, auto-OFF control after delay time elapsed.

“√” means “one or more units connected/grouped”

LVOS	ONS	ONB	ON-PPU-301 Operations	
√	-	-	Load ON	Any LVOS detects occupancy
			Load OFF	Last active LVOS delay elapses
			Delay reset	Not activated
-	√	-	Load ON	Any ONS detects occupancy
			Load OFF	ON-PPU delay elapses
			Delay reset	When ONS detects occupancy
-	-	√	Load ON	Any ONB is pressed ON
			Load OFF	ON-PPU delay elapses or ONB is pressed OFF
			Delay reset	When ONB is pressed ON
√	√	-	Load ON	Any LVOS/ONS detects occupancy
			Load OFF	Both LVOS and ON-PPU delays elapse
			Delay reset	When ONS detects occupancy
√	-	√	Load ON	Any LVOS detects occupancy or ONB is pressed ON
			Load OFF	Last LVOS delay elapses or ONB is pressed OFF
			Delay reset	When ONB is pressed ON
-	√	√	Load ON	Any ONS detects occupancy or ONB is pressed ON
			Load OFF	ON-PPU delays elapse or ONB is pressed OFF
			Delay reset	When ONS detects occupancy or ONB is pressed ON
√	√	√	Load ON	Any LVOS/ONS detects occupancy or ONB is pressed ON
			Load OFF	Both LVOS and ON-PPU delays elapse or ONB is pressed OFF
			Delay reset	When ONS detects occupancy or ONB is pressed ON

### CONTROL = VSC

VSC refers to Vacancy Sensing Control. This control requires user to turn ON the load by pressing a grouped OSB, and the ON-PPU will turn OFF the load when delay time elapses or receives the OFF-command from a grouped OSB.

LVOS	ONS	ONB	ON-PPU-301 Operations	
-	-	√	Load ON	Any ONB is pressed ON
			Load OFF	ON-PPU delay elapses
			Delay reset	When ONB is pressed ON
√	-	√	Load ON	Any ONB is pressed ON
			Load OFF	Both LVOS and ON-PPU delays elapse or ONB is pressed OFF
			Delay reset	When ONB is pressed ON
-	√	√	Load ON	Any ONB is pressed ON
			Load OFF	ON-PPU delays elapse or ONB is pressed OFF
			Delay reset	When ONS detects occupancy or ONB is pressed ON
√	√	√	Load ON	Any ONB is pressed ON
			Load OFF	Both LVOS and ON-PPU delays elapse or ONB is pressed OFF
			Delay reset	When ONS detects occupancy or ONB is pressed ON

### CONTROL = PLC

PLC refers to Plug Load Control. The ON-PPU will enable the plug load power when it receives 1) control signal from a wired low voltage occupancy sensor, or 2) wireless command from a grouped OS-NET Sensor/Button, and switch OFF the plug load power after the area is vacant and programmed delay time elapsed.

LVOS	ONS	ONB	ON-PPU-301 Operations	
√	-	-	Same as ON/OFF control	
-	√	-	Same as ON/OFF control	
-	-	√	Load ON	Any ONB is pressed ON
			Load OFF	ON-PPU delay elapses
			Delay reset	When ONB is pressed ON
√	√	-	Same as ON/OFF Control	
√	-	√	Load ON	Any LVOS detects occupancy or ONB is pressed ON
			Load OFF	Last LVOS delay elapses
			Delay reset	When ONB is pressed ON
-	√	√	Load ON	Any ONS detects occupancy or ONB is pressed ON
			Load OFF	ON-PPU delay elapses
			Delay reset	When ONS detects occupancy or ONB is pressed ON
√	√	√	Load ON	Any LVOS/ONS detects occupancy or ONB is pressed ON
			Load OFF	Both LVOS and ON-PPU delays elapse
			Delay reset	When ONS detects occupancy or ONB is pressed ON

### NOTE

- The DELAY timer of ON-PPU will only be activated by receiving the wireless command from grouped OS-NET devices.
- The ON-PPU will transmit OCC signal wirelessly for group control when wired LVOS detects occupancy.
- To prevent unintentionally shutting off the power for plug load control, ensure to set the DELAY of the ON-PPU longer than the setting of grouped ONS.
- Under PLC mode, all OFF-command from the OS-NET Button will be ignored.

## DEVICE LED ACKNOWLEDGEMENT

The device will acknowledge the setting success or failure with following indications by device LED in BLUE or GREEN. BLUE means the device is unlinked and GREEN means the device is network linked.

DEVICE LED	ACKNOWLEDGEMENT
LED on	Control scheme is set to ON/OFF sensing control
Slow blinking (on-off per 0.5 second)	Control scheme is set to vacancy sensing control (VSC)
Blinks twice every 2-second	Control scheme is set to plug load control (PLC)
Blinks irregularly in BLUE or GREEN	Receiving commands from the remote
Fast blinking in BLUE and GREEN intermittently	Scanning for an open network and linking
Blinks slow once and fast twice	The device is under test mode
Blinks slow once and fast once	The device is under burn-in mode
Lit for 2 seconds in GREEN	Grouping/setting is completed