pivot

(RL-Z/X As of December, 2009 No.2)

USER'S GUIDE

REV LAMP *Z/X*
SPORTS & ECO

Thank you for purchasing PIVOT "REV LAMP".
Please read these instructions carefully before installing or using this device.
Please do not lose this user's guide, as you will held liable for the cost of reissuing it.

⚠ CAUTION Improper use or disregard of these warnings may result in the injury or death of people.

Using the lamp at full brightness at night or in dark places may cause the driver to become distracted or mesmerized; please turn the lamp OFF or adjust the brightness to a level that does not interfere with driving.

Do not work in areas where there is excessive exhaust. Due to vehicle exhaust emission poisoning or fire may result in a damage to humans.

Do not operate while driving.

Please be careful that the cable dose not get crushed by the seat rail or car door steel plate, nor cut by any sharp steel plate as this may cause a poor connection or an electric short leading to fire or other danger.

Please be sure to store bundle away all wires with tape, etc...
It is very dangerous to pull tangled wires by force or allow tangled wires to interfere with driving.

⚠ NOTE Improper use or disregard of these warnings may cause injury to persons, damage the product and other things.

PIVOT Corporation accepts no responsibility, in any manner whatsoever, for damage and/or trouble to your vehicle or product, nor for any accidents that are the result of the misuse of this product.

Please confirm that the type of vehicle you wish to install into is listed in the list of compatible models.

When installing this product, we recommend that if technical knowledge becomes necessary please consult a qualified mechanic.

This product is for DC12V cars; Installation cannot be carried out on cars with other voltage batteries.

When double-sided tape is used for an installation be warned that when hot the tape temporarily losses adhesiveness.

Do not, in any manner, process, take apart, or make changes to this product.

Do not use electrotap
Wiring should be carried out using the attached "cut connector" or by soldering, make sure to securely insulate all wiring parts with insulation tape, and confirm that no wires are sticking out.

Make sure to replace all screws and parts to their original place.

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Check the contents

Only Z


Sequential shift lamp


Double-sided tape

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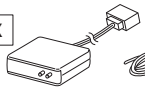
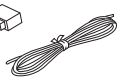
Large shift lamp


Allen wrench


Double-sided tape

Z and X


Controller


White extension cord


Earth terminal


Double-sided tape (Large)


Male wire crimps with cover ×3


Cut connectors ×4


Zip tie


User's guide・ECU wiring diagram list

FEATURES

RL-Z and RL-X

RPM Warning	The Rev Lamp will come on as a warning whenever the set engine RPM has been exceeded means optimal driving without having to pay attention to the tachometer.
ECO Warning Lamp	By setting to a lower RPM, the ECO warning lamp will come on when the set RPM has been exceeded.
SPORTS & ECO	Perfect for both Sports and Eco-driving
Fitted with Digital Tachometer	The built-in digital tachometer makes it perfect for cars without a tachometer. RPM display range = 100–9900rpm (100rpm unit)
Easy-to Install	One-step easy installation is possible in some Toyota, Daihatsu and MINI cars; simply connect to the diagnostic monitoring connector. For other model cars installation can be done by simply wiring to the ECU.
Compatible with Wide Range	All 1-8 cylinder cars compatible.
One-touch switch	Possible not only to make settings for both a Shift Point and an Eco Point, but just one touch allows you to switch modes to match your driving needs.

POINT Tips on Making RPM Settings

Please see below for some advice on making settings for different types of driving.

⚠ **To be safe, make sure to ask a passenger to help in checking the rpm settings.**

Tips for Using ECO Lamp Mode

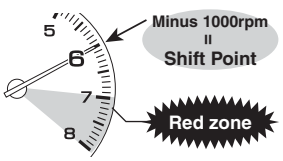
USE 1 Using ECO driving in cruising situations (Freeway driving and so on)
Set RPM = Engine RPM when cruising at speed of 60 - 80 km/h (top gear) plus 100 ~ 300 rpm

USE 2 Using ECO driving in city driving situations
Set RPM = Engine RPM at usual shift up point minus1000 ~ 300 rpm

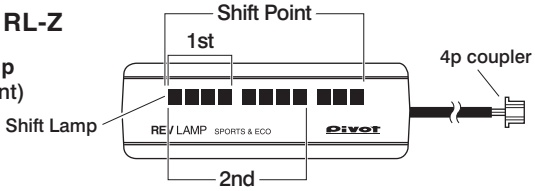
Tips for Using Shift Lamp Mode

USE 1 Using in Sports driving situations
Set RPM = Red zone minus about 1000 rpm
※ If your car does not have a tachometer and you are unsure of where the red zone is please contact your dealer for information or actually drive at high rpm and find at what point the torque is reduced. The point should be about 1000 rpm before the reduction in torque occurs.

Ex) When the red zone is 7000rpm



Only RL-Z



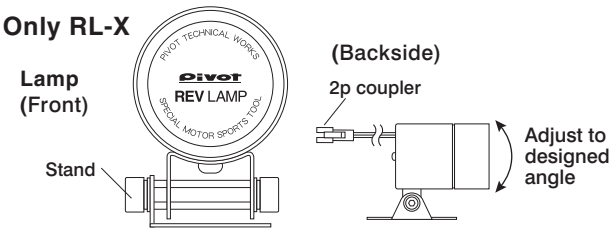
Sequential Shift Lamp

Our sequential lamp system shows you warning lights from 1000 rpm before the set shift point and at the set shift point all lamps flash ensuring a smooth shift every time.

SP Mode	Before 1000 rpm	Lamp on
	Before 500 rpm	Lamp on
	Shift Point	Blink
Ec Mode	Set RPM	Dimmed Lamp

Compact Body	The product's compact body allows for easy installation without worrying about place and position.

Only RL-X



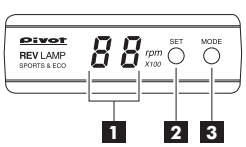
Large Shift Lamp

The high-class aluminum cutout lamps flash brightly at the set point.

Adjustable Neck Design	Can be installed in a variety of places and complete with adjustable head.

Part Names of the Controller

(Front)

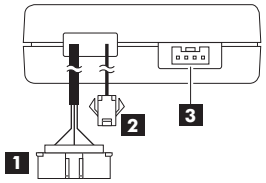


1 Display
RPM and each setting display

2 SET switch
Setting RPM for each Mode

3 MODE switch
Switching Modes

(Backside)



1 OBD2 connector
Connect to get power and the rpm signal. (for some car models)
※If only the white cable is connected, only power is received.

2 2p coupler cord (only RL-X)
Connect to the 2p coupler cord of Shift Lamp

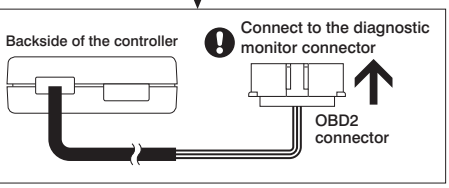
3 4p coupler (only RL-Z)
Connect to the 4p coupler cord of Shift Lamp

CONNECTING THE WIRES

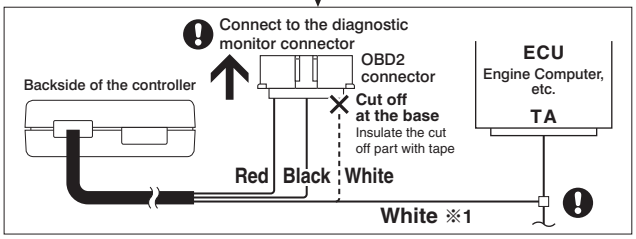
PREPARATION Before installation, please check the installation method is proper for the model of car.

1 Connect to the Power and RPM signal

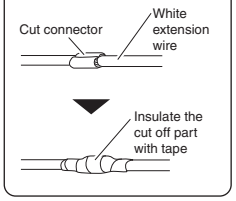
Type A : Car models with a ● or ○ mark in the "ECU Wiring Diagram List" (Some of Toyota, Daihatsu and MINI)



Type B : For Popular Models (other than Toyota, Daihatsu and MINI)



※1 If the white wire is not long enough, please use the white wire provided in this package to extend the length.
See【Reference 2】



□ = Use cut connector (or solder) ▭◁ = Connector (wire crimps)

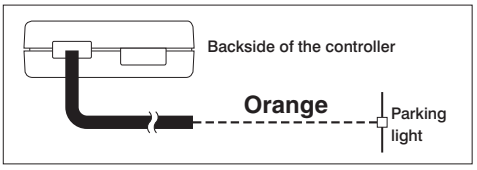
Explanation of wires

Color	Wiring place	Details
Red	IGN	12V with key switch ON (or Normal power)
Black	GND	Screw to gain earth, etc
White	TA	RPM signal
Orange	Illumi	12V with parking lights ON

Orange wire

(There is usually no need to make wire)

This wiring is to use the lowest brightness for the shift lamp when only the parking lights are on.



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at times like this

When another device is already connected to the RPM signal from the ECU

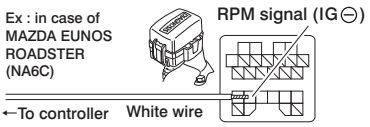
... and that device works properly keep that wiring.

... and the meter or other device stops working properly or sometimes becomes unstable disconnect from the ECU wire and get the RPM from the minus terminal of ignition coil or diagnosis. (Follow the directions as written below)

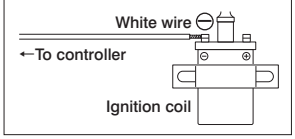
at times like this

To get the RPM signal from other than the ECU

●To get the RPM signal from diagnosis (check connector)



●To get the RPM signal from the ignition coil



When connecting the RPM signal to the ignition coil or diagnosis and the indicated rpm on the meter may be obviously lower than the actual rpm as shown on tachometer

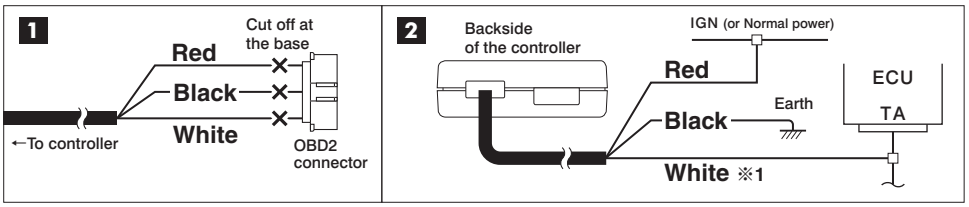
Ex : For a 6 cylinder car, the reading should be 3000 rpm, but display shows 500 rpm.

This may be caused by the individual wiring system of that model of car. Change the cylinder setting to "1". (See "SETTINGS A" for details.)

at times like this

If you are not using the diagnostic monitor connector

If you are wiring directly cut off and insulate all wires at the base of the OBD2 connector.



at times like this **※2 = X2 and X3 series, RM-07, WTM**

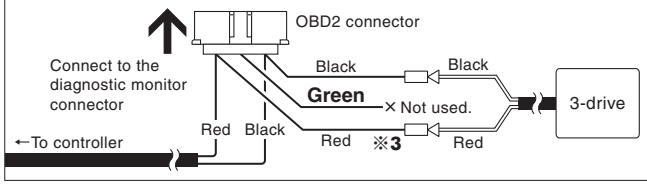
When use in conjunction with 3-drive or other PIVOT diagnostic monitor connected product (※2)

For details about using in combination with products that use another company's diagnostic monitoring connectors please see our Web Site at *http://pivotjp.com/information/obd_conjunction-e.html*.

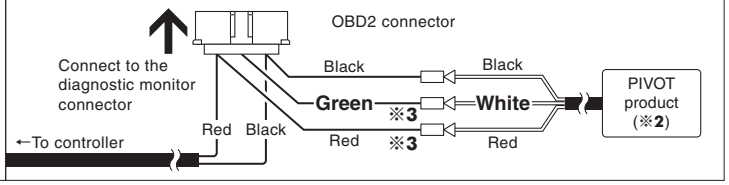
⚠ Insert while the engine is running

In order to prevent making mistakes when inserting the coupler, make sure to insert while the engine is running.

When use in conjunction with 3-drive series



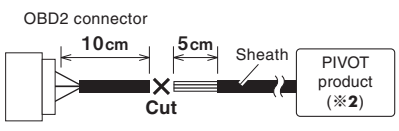
When use in conjunction with other PIVOT product (※2)



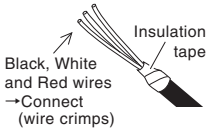
※3 Remove the red and green insulation caps and insert the male connector.

Preparation

When use in conjunction with other PIVOT product (※**2**), cut the wires coming from the OBD2 connector and properly connect the wires using a connector.



① Disconnect the OBD2 connector from the diagnostic monitor connector on the car.
② Cut at about 10 cm from the connector.
③ Remove about 5 cm of sheath from where it has been cut.

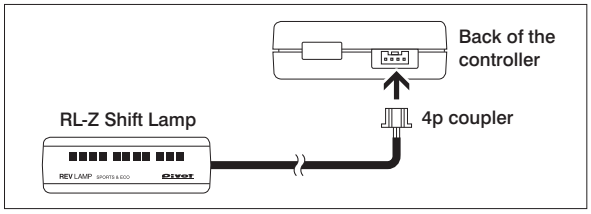


④ Leaving the black, white and red wires, cut off wires and securely insulate with insulation tape.
⑤ Properly connect the black, white and red wires using a connector.
⇒ See【Reference 2】

2 Connect to the Shift Lamp

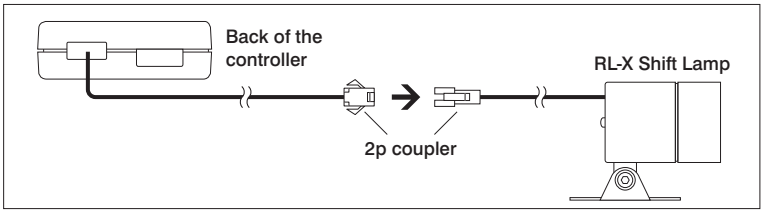
●RL-Z

Insert the 4p coupler from the shift lamp into the terminal at the back of the controller.

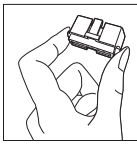


●RL-X

Insert the 2p coupler from the shift lamp into the 2p coupler at the back of the controller.



【REFERENCE 1】Notes about using the OBD2 connector



Make sure to grip the distended portions when pulling it out or inserting it.

If you unable to get a grip on the distended portions

With some car models it may be difficult to get a good grip on the connector.

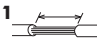
In such cases, use a lock tie to push or pull the connector.

⚠ NOTE

Do not pull on the wires when trying to remove the connector; the wires may become disconnected.

【REFERENCE 2】How to use the connectors

How to use the cut connectors



1 Peel off about 10mm of the vinyl cover at connection.

2 Peel off about 10mm of the vinyl cover at the end of the product's wire.

3 Twist the uncovered wires.

4 Close tightly with cut connector.

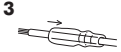
※Use a crushing tool to press the cut connector, if you do not have such a tool, use pliers or such to fold and crush the connector together for a secure contact.

※After covering, make sure to insulate properly with vinyl tape.

How to use the male wire crimps

1 Peel off about 10mm of vinyl covering from the tip of the wire.

2 Bend the outside wires around the core to make the wire thicker.



3 Pull the wire through the cover.

4 Place the wire onto the crimp.

5 Crush the center tabs of the crimp down to hold the center of the wire.

6 Crush down the outer tab of the crimp over the vinyl covering.

Note; Securely connect the male and female crimps, making sure to twist the male cover firmly into the female cover.

【REFERENCE 3】
How to use provided earth terminal

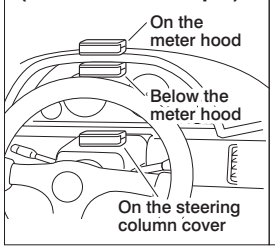
1. Peel off about 10mm of vinyl covering from the tip of the black wire.
2. Bend the outside wires around the core to make the wire thicker.
3. Crimp down on the earth terminal.
4. Connect it to a earth screw.

FASTENING THE PRODUCTS

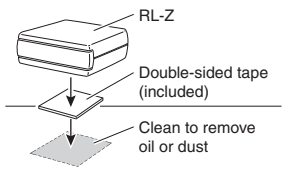
Install in an easy-to-view location.

Installation of the Controller and the Shift Lamp of RL-Z

(Installation Example)



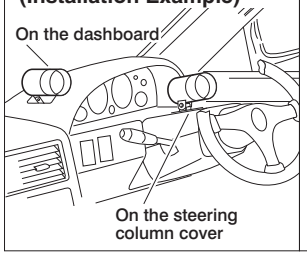
(installation Method)



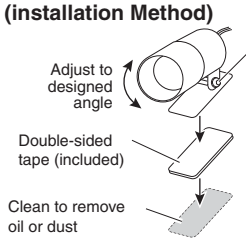
Fasten using the double-sided tape. (Clean the surface; removing all oil or dust.)

Installation of the Shift Lamp of RL-X

(Installation Example)



(installation Method)

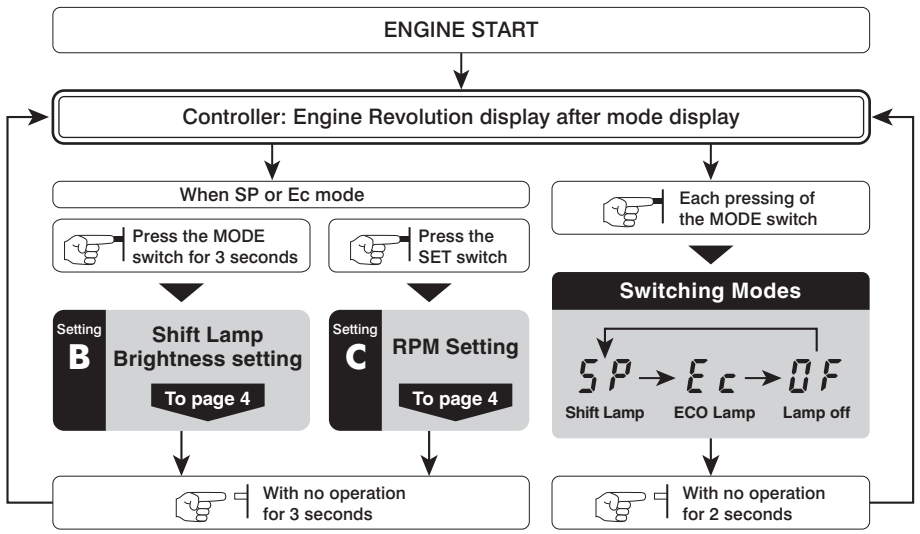


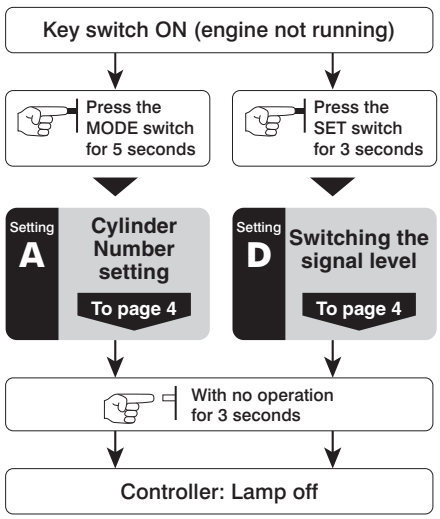
① Fasten using the double-sided tape. (Clean the surface; removing all oil or dust.)

② After deciding the position and angle of the meter face, fasten the hexagonal bolts on both sides to secure.

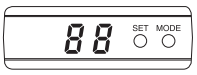
BASIC OPERATION

Basic flow of operations for REV LAMP. For details about settings see each [SETTINGS].





SETTINGS



All settings are made using the switches and display on the controller.

SETTING A Cylinder Number Setting

Set the cylinder number for the car being used.

1 ON — Press the MODE switch for 5 seconds

Press the MODE switch for 5 seconds during the key switch ON (engine not running)

2 Cylinder display Ex) P4

(The factory default setting is for a four-cylinder engine)

3 SET (Down) MODE (Up)

Press the switch to change the pattern and set to the proper one.

Turn: P4 ▷ P5 ▷ P6 ▷ P8 ▷ PA ▷ P1 ▷ P2 ▷ P3

Patterns for cylinder settings display

Display	Number of cylinders	Car models
P1	1	NISSAN (FAIRLADY Z Z33) · MAZDA (ATENZA and others) ※
P2	2	MAZDA (RX-8) · SUBARU (early type of PLEO and others) ※
※For one and two cylinder engines, set the signal level switch to "Lo". ⇒See "Setting D How to switch signal level" for details.		
P3	3	Three-cylinder
P4	4	Four-cylinder, Rotary engine (RX-7)
P5	5	Five-cylinder
P6	6	Six-cylinder
P8	8	Eight-cylinder
PA	Special A	NISSAN MARCH / CUBE, etc.

※If the engine is a two cycle engine, multiply the number of cylinder by two.
(Ex; For a two-cycle three-cylinder engine the setting would be six.)

4 With no operation for 3 seconds

5 Display off

SETTING B Shift lamp brightness setting

The brightness for the Shift Lamp can be adjusted in 5 steps.
(Because the ECO Lamp is dimmed its brightness cannot be adjusted.)

1 RPM display — Press the MODE switch for 3 seconds

While displaying RPM (when SP or Ec mode), press the MODE switch for 3 seconds.

2 Ex) L5 The shift lamp will turn on and the display shows the brightness setting

(EX: Highest Brightness)

3 SET (Down) MODE (Up)

Each pressing will change the brightness.

Dark ▬▬▬▬ Bright

L1 ▷ L2 ▷ L3 ▷ L4 ▷ L5

4 With no operation for 3 seconds

5 After displaying Sp or Ec: RPM display

SETTING C RPM Settings

Make RPM setting for turning on the Shift Lamp and the ECO Lamp.

Mode	Changing item	Setting range
SP	Shift Point	2000 - 9900rpm (100rpm unit)
Ec	ECO Warning Point	1500 - 4000rpm (100rpm unit)

1 RPM display — Press the SET switch

While displaying RPM (when SP or Ec mode), press the SET switch once.

2 After displaying Sp or Ec

Ex) 35 Current setting display (Ex; 3500rpm)

3 SET (Down) MODE (Up)

Press the switch to change the RPM setting

Pressing the SET button one time will decrease the RPM setting by 100 rpm; pressing the MODE button will increase the setting by 100 rpm.
※Holding down the either button will rapidly change the setting.

4 With no operation for 3 seconds

5 After displaying Sp or Ec: RPM display

SETTING D Switching the signal level

Changes are only necessary for those car models listed below.
NISSAN (FAIRLADY Z Z33) · MAZDA (after 2002) ·
MITSUBISHI (COLT and others) · SUBARU (early type of PLEO and others)
※See the "ECU Wiring Diagram List" for details.

1 ON — Press the SET switch for 3 seconds

Press the SET switch for 3 seconds during the key switch ON (engine not running)

2 Display Hi or Lo

3 Press the SET ／ MODE switch

The display will change with each pressing of the switch.

Hi If the generic car — Lo If the level is small

4 With no operation for 3 seconds

5 Display off

TROUBLESHOOTING

Trouble	Possible Causes	Possible Solutions
With the engine running the controller does not show the rpm.	Poor connection of each wire.	Check the wire connections or conditions.
	Poor connection of OBD2 connector.	Check the coupler connections or conditions.
	The signal detection level is not correct.	See page 4 [SETTING D] and [ECU Wiring Diagram List], make any necessary changes.
The car' s tachometer and the REV LAMP reading are very different.	The cylinder setting is wrong.	Due to difference in accuracy, readings may not be the same as those on the standard tachometer. See page 4 [SETTING A] and make any necessary changes.
	The signal detection level is not correct.	See page 4 [SETTING D] and [ECU Wiring Diagram List], make any necessary changes.
The shift lamp or ECO Lamp does not light up.	The engine rpm has not reached the set shift point.	See page 4 [SETTING C] and make any necessary changes in the rpm point.
	Poor connection of 4p or 2p coupler cord.	Check the wire connections or conditions.
Even with the parking lights on, brightness of the shift lamp does not decrease.	Poor connection of orange wire (12V with parking lights ON).	Check the orange wire connections or conditions.
	The shift lamp brightness setting is set too low.	See page 4 [SETTING B], please check the setting.
The display of the controller is operating even when the engine has been stopped.	Noise from the car (door locks and so on) may cause it to temporarily operate.	If the operation is only temporary it is not a malfunction; but if it still causes worry cut the red wire in the OBD2 connector and connect it to IGN.
The auto-power window function and/or other electronic devices are re-set.	This is due to the minus terminal on the battery being disconnected.	Re-connect the minus terminal and follow re-setting instructions for any affected devices.

PIVOT CORPORATION 87-3, Shimookada Okada, Matsumoto-shi, Nagano, 390-0313 Japan TEL0263-46-5901 http://pivotjp.com/