Subject:	Re: Re: Dimmer switch troubleshooting
Date:	Friday, March 6, 2020 at 3:04:01 AM Eastern Standard Time
From:	chensong@manufacturer.com
To:	Eric Maycock
CC:	Eric Hines, Mary Hong, huangyanfeng@manufacturer.com, Nico, xiaohp@manufacturer.com, Xue Xiaofei, Arthur, Kellen, Abby Lin, Micah Klaassen, Nathan Harte, Brianna Gerrity, 'Nicole Miller'
Attachments:	image001(12-26-1(03-06-15-27-59).jpg, image002(12-26-1(03-06-15-27-59).png, image003(12-26-1(03-06-15-27-59).jpg, image004(12-26-1(03-06-15-27-59).jpg, image005(12-26-1(03-06-15-27-59).jpg

Hi，Eric：

The following is the reply from our engineers：

I believe there is some code still in the firmware that is trying to do the detection automatically. For example, the default is supposed to be Param 21 = 1 & Param 22 = 0. So the default configuration is Neutral and Single Pole. But, if I do a factory reset on an LZW31–SN that is connected in a 3–way circuit, it is acting like parameter 22 is 1. So it seems like the auto detection is still taking place and I think it is causing problems. Can you make sure that auto detect is completely removed?

We have checked the firmware code again and there is really no code for automatic detection

About turning off the lights automatically：

Now, we are going to change the maximum brightness to 85% and the lights that we tested so far didn't turn off automatically

Lastly, I have another question about the hardware on the dimmer that hopefully you can explain. On some circuits when the dimmer is set to 99% its output is only 110v. This is causing some bulbs to make sounds or flicker. If you hook the same bulbs up to a circuit that is 120v the noise and flickering stops. Can you help explain to me why the dimmer seems to be doing this?

1.When the brightness is 99, the output waveform of the dimmer is not the standard normal wave, there will be cutting wave.and in a part of the voltage drop on the line, result in the output root-mean-square value is only about 110V:

2.The non-sinusoidal wave output by the dimmer increases the harmonic coefficient of the waveform, which is easy to produce interference signal.This non-sinusoidal waveform is also easy to produce LC oscillation with the CX capacitor or inductance of the drive power input inside the LED lamp.This will lead to unstable operation of the driving power inside the LED lamp and abnormal output, which will lead to LED noise or flashing.

In view of this situation, the driving power inside the dimming LED lamp will add the discharge resistance or reduce the use of CX capacitance and inductance

Therefore, it is impossible to adapt the dimmer to all the LED dimmers on the market

Specific adaption of which lights need to refer to the product specification

---

陈崧 Song Chen
QPL（Quality Project Leader）
IoT品质工程部　IoT Quality Engineering Department
Mobile：15750897152
Email：chensong@manufacturer.com

manufacturer

From: Eric Maycock
Date: 2020-02-25 05:50
To: chensong@manufacturer.com
CC: Eric Hines; mary1; huangyanfeng; fanyoucan; Shaw xiao; xuexiaofei; Arthur; kellen@manufacturer.com; abby; Micah Klaassen; Nathan Harte; Brianna Gerrity; Nicole Miller
Subject: Re: Re: Dimmer switch troubleshooting

Ok, thanks for the update.

I really appreciate you looking into these issues. I would say that these bugs are probably some of the most important for us to resolve to keep customers comfortable with our products. I appreciate all the work going into figuring this out.

I've got a few comments regarding your responses:

Hi，Eric：

In the beginning of the dimmer switches' project , dimmer was designed to detect the single Line and Neutral &Line automatically via the different output level of detective circuit as below :

Single Line: LOW

Neutral & Line : HIGH

Later ,it was found that there was a crossover problem which means the firmware can't identify the wiring mode correctly based on the unclear input level. .

However ,the existing PCB board is too crowded to add any detective circuit at all that's why we set Parameter 21 &22 to clear the wring mode and load status in advance .

I believe there is some code still in the firmware that is trying to do the detection automatically. For example, the default is supposed to be Param 21 = 1 & Param 22 = 0. So the default configuration is Neutral and Single Pole. But, if I do a factory reset on an LZW31–SN that is connected in a 3–way circuit, it is acting like parameter 22 is 1. So it seems like the auto detection is still taking place and I think it is causing problems. Can you make sure that auto detect is completely removed?

We tried to make some changes in the firmware to solve the problem of automatic lights off. At present, our hardware engineers are testing.With so many test items and so many types of loads to test, the results could be ready by Friday.I'll let you know as soon as I get the result

Yes, please keep me updated on this issue. This one is very important for us to figure out as well.

Lastly, I have another question about the hardware on the dimmer that hopefully you can explain. On some circuits when the dimmer is set to 99% its output is only 110v. This is causing some bulbs to make sounds or flicker. If you hook the same bulbs up to a circuit that is 120v the noise and flickering stops. Can you help explain to me why the dimmer seems to be doing this?
——

Eric Maycock
CTO | Inovelli

On Mon, Feb 24, 2020 at 2:58 AM chensong@manufacturer.com <chensong@manufacturer.com> wrote:

> Hi.Eric：
> We tried to make some changes in the firmware to solve the problem of automatic lights off.
> At present, our hardware engineers are testing.With so many test items and so many types of loads to test, the results could be ready by Friday.I'll let you know as soon as I get the result
>
> _____
>
> 陈崧 Song Chen
> QPL（Quality Project Leader）
> IoT品质工程部 IoT Quality Engineering Department
> Mobile：15750897152
> Email：chensong@manufacturer.com

manufacturer

From: Eric Maycock
Date: 2020-02-14 04:43
To: chensong@manufacturer.com
CC: Eric Hines; mary1; huangyanfeng; fanyoucan; Shaw xiao; xuexiaofei; Arthur; kellen@manufacturer.com; abby; Micah Klaassen; Nathan Harte; Brianna Gerrity; Nicole Miller **Subject:** Re: Re: Dimmer switch troubleshooting

Thank your for the response on this and for working on getting it resolved.

I have done some testing with maximum level set to 95. In some cases it does not completely solve the issue. We have had some customers that have said that they have to go all the way down to 80.

Is there not any other firmware method that we can use to detect when KEY1 detects a high that is false?

_____

Eric Maycock
CTO | Inovelli

On Wed, Dec 25, 2019 at 7:22 PM
chensong@manufacturer.com
<chensong@manufacturer.com> wrote:

> Hi,Eric:
>
> As for the dimmer project, it will turn off the lights automatically. The analysis is as follows:
>
> **Cause analysis:**At present, we have taken an Advance-Lights Out and a Basic-Knigth Flank sample and measured it. It is found that the detection signal of KEY1 turns into a high level when the lamp is adjusted to the highest brightness. Normally, KEY1 needs a low level.This causes the firmware to fail to detect an accurate signal and enter an uncontrollable state, so sometimes the lights turn off automatically and sometimes they don't.

Improve the countermeasures: It is recommended that APP set the maximum brightness of the load light to set the previous maximum brightness value of 99 (decimal) to 90 (decimal).

The field measurement verifies that when the maximum brightness value is set to 90 (decimal), the detection signal of Key1 always has a low level, and the logical truth table complies with the firmware requirements.The lights will no longer go out automatically

---

manufacturer

陈崧
IoT品保中心–品质工程部
邮箱：chensong@manufacturer.com

From: Eric Hines
Date: 2019-12-24 02:48
To: chensong@manufacturer.com; Mary Hong; Eric Maycock
CC: huangyanfeng@manufacturer.com; Nico; xiaohp@manufacturer.com; Xue Xiaofei; Arthur; Kellen; Abby Lin; Micah Klaassen; Nathan Harte; Brianna Gerrity; Nicole Miller
Subject: Re: Dimmer switch troubleshooting

Awesome, thanks!

We will be bringing some bulbs and other products to CES for you to bring back and analyze as well.

Thanks,

Eric
Founder / CEO | Inovelli

From: "chensong@manufacturer.com" <chensong@manufacturer.com>
Date: Monday, December 23, 2019 at 3:34 AM
To: Eric Hines <eric@inovelli.com>, "mary1@manufacturer.com" <mary1@manufacturer.com>, Eric Maycock <ericm@inovelli.com>
Cc: "huangyanfeng@manufacturer.com" <huangyanfeng@manufacturer.com>, Nico <fanyoucan@manufacturer.com>, "xiaohp@manufacturer.com" <xiaohp@manufacturer.com>, Xue Xiaofei <xuexiaofei@manufacturer.com>,

"arthur@manufacturer.com" <arthur@manufacturer.com>, Kellen <kellen@manufacturer.com>, Abby Lin <abbylin@manufacturer.com>, Micah Klaassen <micah@inovelli.com>, Nathan Harte <nathan@inovelli.com>, Brianna Gerrity <brianna@inovelli.com>, Nicole Miller <nicole@inovelli.com>

Subject: Re: Re: Dimmer switch troubleshooting

Hi,Eric:

I'm sorry that I didn't reply in time because the verification took some time. Our hardware engineers have rediscovered this anomaly and are currently analyzing it. The analysis result is expected on Wednesday.

---

manufacturer

陈崧
IoT品保中心-品质工程部
邮箱：chensong@manufacturer.com

发件人： Eric Hines
发送时间： 2019-12-21 05:16
收件人： Mary Hong; Eric Maycock; 'chensong'
抄送： huangyanfeng@manufacturer.com; Nico; xiaohp@manufacturer.com; Xue Xiaofei; Arthur; Kellen; Abby Lin; Micah Klaassen; Nathan Harte; Brianna Gerrity; Nicole Miller
主题： Re: 答复: Dimmer switch troubleshooting

Any update here everyone?

Thanks,

Eric
Founder / CEO | Inovelli

From: "mary1@manufacturer.com" <mary1@manufacturer.com> **Date:** Thursday, December 12, 2019 at 10:13 PM
To: Eric Maycock <ericm@inovelli.com>, 'chensong' <chensong@manufacturer.com>
Cc: "huangyanfeng@manufacturer.com" <huangyanfeng@manufacturer.com>, Nico

<fanyoucan@manufacturer.com>, "xiaohp@manufacturer.com"
<xiaohp@manufacturer.com>, Xue Xiaofei
<xuexiaofei@manufacturer.com>, "arthur@manufacturer.com"
<arthur@manufacturer.com>, Kellen <kellen@manufacturer.com>, Abby
Lin <abbylin@manufacturer.com>, Micah Klaassen
<micah@inovelli.com>, Nathan Harte <nathan@inovelli.com>,
Brianna Gerrity <brianna@inovelli.com>, Nicole Miller
<nicole@inovelli.com>, Eric Hines <eric@inovelli.com>
Subject: 答复: Dimmer switch troubleshooting

Hello Chensong ,

Pls note attached link to figure out why dimmer would be shut off randomly
based on below incandescent bulbs .

Thanks!

Best Regards
Mary
Internet of Things Business Unit
Mail: mary1@manufacturer.com

manufacturer GROUP

🌲 Please consider the environment before printing this email

发件人: Eric Maycock [mailto:ericm@inovelli.com]
发送时间: 2019年12月13日 3:34
收件人: Mary Hong
抄送: chensong; huangyanfeng@manufacturer.com; Nico; xiaohp@manufacturer.com; Xue Xiaofei; Arthur; Kellen; Abby Lin; Micah Klaassen; Nathan Harte; Brianna Gerrity; Nicole Miller; Eric Hines
主题: Re: Dimmer switch troubleshooting

From the customer:

```
The bulbs have no model number on them. The
previous homeowner installed them—may well be
Home Depot since HD does carry that brand.
I suspect it is this based on specs and
look: https://www.feit.com/product/incandescentre
flector-light-bulbsbr3065br30-fl-130/
The fourth bulb is GE brand, 65 watts 120V. GE
does not seem to have them on their web site
anymore. They are pushing LEDs (and I am
replacing these with LEDs as they burn out).
```

On Thu, Dec 12, 2019 at 11:58 AM Eric Maycock <ericm@inovelli.com> wrote:

> These are incandescent bulbs. I just asked him if he could provide some web links to the exact bulbs.

> On Mon, Dec 9, 2019 at 8:51 PM mary1 <mary1@manufacturer.com> wrote:

>> Hello Eric ,
>>
>> Could you share us the link of bulbs metioned in this screenshot ?
>> Are they incandescent or LED bulb ?

burns

- What type of bulb do you have connected to the switch Halogen, etc)?

4 standard incandescent PAR downlights.

- What is the approximate Load Wattage?

4x65W although some are specified as 130V, so they are pro
less wattage at 120V

- Bonus Points: Make/Model of your bulb(s)?
3xFEIT, 1xGE

- Switch Setup (ie: Single-Pole, 3-Way, 4-Way, etc)?
3-way with dumb switch.

I have a much longer description of how I got here on anot
think the specific thing about my case is that it is not r
clearly an issue with the SPDT dumb 3-way switch set in on

Thanks!

Best Regards
Mary
Internet of Things Business Unit
Mail: mary1@manufacturer.com
Website: iot.manufacturer.com

manufacturer GROUP ———

We Build Your Success in IOT

🌲 Please consider the environment before printing this email

发件人: mary1 [mailto:mary1@manufacturer.com]
发送时间: 2019年12月10日 9:49
收件人: 'Eric Maycock'
抄送: 'chensong'; 'huangyanfeng@manufacturer.com'; 'Nico';
'xiaohp@manufacturer.com'; 'Xue Xiaofei'; 'Arthur'; 'Kellen';
'Abby
Lin'; 'Micah Klaassen'; 'Nathan Harte'; 'Brianna Gerrity'; 'Nicole
Miller'; 'Eric Hines'
主题: 答复: Dimmer switch troubleshooting

Hi Chensong ,

Pls feedback below issue soonest ,if you have any concerns or
questions, put forward in this mail directly .

Thanks!

Best Regards
Mary
Internet of Things Business Unit
Mail: mary1@manufacturer.com

manufacturer GROUP

We Build Your Success in IOT

🌲 Please consider the environment before printing this email

发件人: Eric Maycock [mailto:ericm@inovelli.com]
发送时间: 2019年12月10日 8:49
收件人: Mary Hong
抄送: chensong; huangyanfeng@manufacturer.com; Nico; xiaohp@manufacturer.com; Xue Xiaofei; Arthur; Kellen; Abby Lin; Micah Klaassen; Nathan Harte; Brianna Gerrity; Nicole Miller; Eric Hines
主题: Re: Dimmer switch troubleshooting

Hi Mary, any update on this from your team?

On Fri, Dec 6, 2019 at 1:35 AM mary1
<mary1@manufacturer.com> wrote:

> Hello Chensong ,
>
> Please figure out why dimmer switch shut-off randomly in 3 way setting ,any details pls note the link as below .
>
> https://community.inovelli.com/t/dimmer-switches-random-shut-off-issue-data-collection-thread/1173

Thanks!

Best Regards
Mary
Internet of Things Business Unit
Mail: mary1@manufacturer.com

We Build Your Success in IOT

🌲 Please consider the environment before printing this email