# OLC NEMA PP Factory Test (Version 3)

## Default settings

|  |  |
| --- | --- |
| Network Address | 5000 |
| Network Channel | 4 |
| Authentication Key | none |
| Encryption Key | none |
| Node Address | calculated from unique EFR32FG12 identifier |
| DID | 64-bit unique EFR32FG12 identifier in HEX form |
| APIKEY | 1234 |

## Start-up Sequence

At start-up device publishing message to /APIKEY/DID/attrs:

{

"AOEstart": {

"ts": <UNIX timestamp, seconds>

}

}

If device has RTC configured and running at start-up, or already synchronized its time with neighbors, then the "ts" field will contain a number of seconds since Epoch. Otherwise, it will contain -1 value.

In most cases, device should complete time synchronisation in a few seconds after start.

This message means that device successfully started, connected to the Gateway, and ready for test.

## Turn on/off 12 volts output

To set 12 volt output regulator state, we should send command to /APIKEY/DID/cmd topic:

{

"C12vout": <Boolean>

}

If argument is true, then output should be enabled, if false – disabled.

This command will result to /APIKEY/DID/cmdexe topic.

{

"C12vout": <Integer>

}

If command executed successfully, result is 0, otherwise – negative error code.

## Start Internal Diagnostics

To start internal device test sequence, we should send command to /APIKEY/DID/cmd topic:

{

"Cdiags": <Type>

}

Where Type can be:

* 1 for full test (digital input read, accelerometer, RTC and time, DALI)

## Diagnostics Results

This command will result to /APIKEY/DID/cmdexe topic.

When invalid diagnostics type specified:

{

"Cdiags": <Integer, negative error code>

}

Otherwise, the complex object with results will be published:

{

"Cdiags": {

"digin": <Boolean, true – opened, false – closed to Neutral>,

"accl": {

"io": <Boolean, communication OK>,

"angl": {

"x": <Float, degrees>,

"y": <Float, degrees>,

"z": <Float, degrees>

}

},

"rtc": {

"io": <Boolean, communication OK>,

"run": <Boolean, RTC is running>,

"bkup": <Boolean, system got time from RTC at start-up>,

"ts": <Integer, UNIX timestamp, read from RTC>,

"sys": <Integer, UNIX timestamp, system time>

},

"dali": {

"io": <Boolean, communication OK and slave present>,

"errs": <Integer, number or I/O errors>,

"drv": <Integer, slave state>,

"als": <Integer, actual light level, 0-100>

}

}

}

### Common

In all structures field io means communication test result:

* true – communication with device working well,
* false – communication working with errors.

### Digital input

Field digin is state of digital input. Must be true when digital input is opened (high logic level), and false if it shorted to the neutral (low logic level). This is not a test, just reading current state of digital input.

### Accelerometer

Field angl is chip orientation angles calculated from accelerometer data. If no accelerometer available, this field must be null.

### Real Time Clock

Field run means that RTC was initialized and now running.

Field bkup means RTC backup power test. It should be true if system has initialized and running RTC at start-up, and false if not. When device first time programmed and started up, this field must be false. After successful time synchronization, and power cycle, this field must be true.

Fields ts and sys contains UNIX timestamp, number of seconds since Epoch. First is date and time obtained from RTC, second is system time.

### DALI

Field errs is number of DALI input/output error since start-up.

Field drv is driver status code according to DALI standard.

Field als is actual light state, obtained from driver.

## Test Sequence

1. Power-up. Download software to the device.
2. Wait for AOEstart attribute from device. If there are no message during 60 seconds (first start-up of the Wirepas software can be long), device considered as failed.
3. Send turn off 12 volts output command.
4. Send diagnostics type 1 command.
5. Wait for diagnostics command result during 10 seconds. If no result, repeat from (3). Set the repeat limit to 3 to consider device failed (communication unstable).
6. Check diagnostics results. RTC backup must be false if this is first start of the device in its life, otherwise it can be true. Digital input state must be true. If there are failed tests, stop.
7. Power cycle device with 10 seconds delay.
8. Wait for AOEstart attribute from device. If there are no message during 30 seconds, consider device failed (device unstable).
9. Send turn on 12 volts output command.
10. Send diagnostics type 1 command.
11. Wait for diagnostics command result during 10 seconds. If no result, repeat from (9). Set the repeat limit to 3 to consider device failed (communication unstable).
12. Check diagnostics. RTC backup must be true now. Digital input state must be false if loopback relay connected and controlled by 12V output. If there are failed tests, stop.
13. Device diagnostics finished successfully. Turn off device.

There are maximum timeout values specified in this sequence. It can be decreased while tuning test software.

# Examples

## First run example

/1234/90FD9FFFFEDA59D4/attrs

{

"AOEstart": {

"ts": 1535205155 device has proper date and time

}

}

/1234/90FD9FFFFEDA59D4/cmd

{

"C12Vout": false now turning off 12V output

}

/1234/90FD9FFFFEDA59D4/cmdexe

{

"C12Vout": 0

}

/1234/90FD9FFFFEDA59D4/cmd

{

"Cdiags": 1

}

/1234/90FD9FFFFEDA59D4/cmdexe

{

"Cdiags": {

"accl": {

"angl": {

"x": -4.258014678955078,

"y": 1.5835188627243042,

"z": -85.45604705810547

},

"io": true

},

"dali": {

"als": -1, my HID lamp failed

"drv": 34,

"errs": 0, …but DALI driver works OK

"io": true

},

"digin": true, digital input is opened

"rtc": {

"bkup": false, at start up RTC was disabled (supercap discharged)

"io": true,

"run": true, …and SNTP was used to obtain date and time

"sys": 1535205162,

"ts": 1535205161 timestamp difference can be 0-3 seconds

}

}

}

## Second run after power cycle

/1234/90FD9FFFFEDA59D4/attrs

{

"AOEstart": {

"ts": 1535205554

}

}

/1234/90FD9FFFFEDA59D4/cmd

{

"C12Vout": true now turning on 12V output

}

/1234/90FD9FFFFEDA59D4/cmdexe

{

"C12Vout": 0

}

/1234/90FD9FFFFEDA59D4/cmd

{

"Cdiags": 1

}

/1234/90FD9FFFFEDA59D4/cmdexe

{

"Cdiags": {

"accl": {

"angl": {

"x": -4.282781600952148,

"y": 0.807410717010498,

"z": -85.64149475097656

},

"io": true

},

"dali": {

"als": -1,

"drv": 34,

"errs": 0, DALI still works OK

"io": true

},

"digin": false, digital input is closed to Neutral (relay loopback)

"rtc": {

"bkup": true, at start up valid date and time was read from RTC

"io": true,

"run": true, …and next SNTP sync will be after 4 hours

"sys": 1535205569,

"ts": 1535205570 supercap backup is working

}

}

}