

---

### Power on (WR)

Topic: Vehicle number

QoS : 0

Payload:

```
{  
"a": 1 // integer , unlock  
}
```

Example: If you want to turn on the scooter, send {"a":1}

### Power on ack (RD)

Topic : bike

QoS : 0

Payload:

```
{  
"a": 2, // integer , Confirm power on  
"i": "12AB", // string , Vehicle number  
"t": 1503046415, // long,random number  
"s": <status>, // integer ,status: 0 :success; 1 :hardware fault; 2 : Firmware upgrading  
"n": 0 // integer , power on serial number  
}
```

---

### Power off (WR)

Topic: Vehicle number

QoS : 1 or 2

Payload:

```
{  
"a": 3// integer , Shutdown  
}
```

Example: if you want to turn off the scooter, send {"a":3}

### Power off ack(RD)

Topic : bike

QoS : 0

Payload:

```
{  
"a": 4, // integer , Confirm shutdown  
"i": "12AB", // string , Vehicle number  
"t": 1503046415, // long,random number  
"s": <status>, // integer ,Status: 0 :success; 1 :hardware fault; 2 : Firmware upgrading  
"n": 0 // integer, Shutdown serial number  
}
```

---

### Clear single riding mileage (WR)

- Instruction format:

Topic: Vehicle number

QoS : 0

Payload:

```
{  
"a": 5 // integer  
}
```

Example: If you want to clear single riding mileage, send {"a":5}

### Clear single riding mileage ack(RD)

Topic: bike

QoS : 0

Payload:

```
{  
"a": 6, // integer  
"i": "12AB", // string , Vehicle number  
"t": 1503046415, // long ,random number  
"s": <status>, // integer ,Status: 0 :success; 1 :hardware fault; 2 :Firmware upgrading ;3: It is already  
later than the latest shutdown time  
"n": 0 // integer serial number  
}
```

---

### Clear single riding time (WR)

- Instruction format:

Topic: Vehicle number

QoS : 0

Payload:

```
{  
"a": 7 // integer  
}
```

Example: if you want to clear single riding time, send {"a":7}

### Clear single riding time ack (RD)

Topic: bike

QoS : 0

Payload:

```
{  
"a": 8, // integer  
"i": "12AB", // string , vehicle number  
"t": 1503046415, // long,random number  
"s": <status>, // integer , Status: 0 :success; 1 :hardware fault; 2 :Firmware upgrading ;3: It is already  
later than the latest shutdown time  
"n": 0 // integer serial number  
}
```

```
}
```

### Clear total mileage (WR)

• Instruction format:

Topic: vehicle number

QoS: 0

Payload:

```
{  
"a": 9 // integer  
}
```

Example: if you want to clear total mileage, send {"a":9}

### Clear total mileage ack (RD)

Topic: bike

QoS : 0

Payload:

```
{  
"a": 10, // integer  
"i": "12AB", // string , vehicle number  
"t": 1503046415, // long, random number  
"s": <status>, // integer , Status: 0 :success; 1 :hardware fault; 2 :Firmware upgrading ;3: It is already  
later than the latest shutdown time  
"n": 0 // integer serial number  
}
```

### Clear the total riding time (WR)

• Instruction format:

Topic: vehicle number

QoS : 0

Payload:

```
{  
"a": 11 // integer  
}
```

Example: if you want to clear the total riding time, send {"a":11}

### Clear the total riding time ack(RD)

Topic: bike

QoS : 0

Payload:

```
{  
"a": 12, // integer
```

```
"i": "12AB", // string , vehicle number
"t": 1503046415, // long,random number
"s": <status>, // integer , Status: 0 :success; 1 :hardware fault; 2 :Firmware upgrading ;3: It is already
later than the latest shutdown time
"n": 0 // integer serial number
}
```

---

### Set the speed limit data (WR)

•Instruction format:

Topic: vehicle number

QoS : 1

Payload:

```
{
"a": 13, // integer
"k": 2025 // integer 2000---2030
}
```

Example: if you want to set the speed to 20km/h, send {"a":13,"k":2020}  
The numerical value after K is 2000+ X km/h

### Set the speed limit data ack (RD)

Topic: bike

QoS : 0

Payload:

```
{
"a": 14, // integer
"i": "12AB",// string , vehicle number
"t": 1503046415, // long,random number
"s": <status>, // integer , Status: 0 :success; 1 : fault
}
```

---

### Query vehicle parameters (WR)

•Instruction format:

Topic: vehicle number

QoS : 0

Payload:

```
{
"a": 15 // integer
}
```

Example: if you want to get the vehicle parameters, send {"a":15}

### Query Vehicle parameter ack (RD)

Topic: bike

QoS : 0

Payload:

```
{
  "a": 16 , // integer
  "i": "12AB", // string , vehicle number
  "s " : 8 , // integer   Status
  "k " : 8 , // integer speed limit values   KM
  "p " : 8 , // integer current speed KM
  "e " : 8 , // integer Vehicle error code (0 :no fault; 1:motor hall fault; 2: speed throttle fault; 4 :motor
  stalling; 5:over-current; 6: motor over temperature; 7: controller over temperature; 8: battery
  undervoltage; 9:battery overvoltage; 10: communication failure)
  "b " : 8 , // battery (battery percentage)
  "y": 8 , // integer   total riding time   seconds
  "q": 8 , // integer   total riding mileage   KM
  "w": 8 , // integer   single riding time   seconds
  "z": 8 , // integer   single riding mileage   KM
  "c": <status> // integer , status:   0 : power on ;1 : shutdown
}
```

---

### Query GPS location data (WR)

Topic: vehicle number

QoS : 0

Payload:

```
{
  "a": 18 // integer, issue the gps command
}
```

mark: if you want to get the longitude and latitude, send {"a":18}. But this command is not usually used. Because when the scooter is positioning successfully, it will actively report the position alternately. The default GPS reporting interval is about 30 seconds per time. It can be set through the command 33.

### Query GPS location data ack a (RD)

Topic: bike

QoS : 1

Payload:

```
{
  "a": 19, // integer
  "i": "12AB", //string, vehicle number
  "g": "latitude, longitude, business_type, location_type",
  // "3020.5887,12006.4229,1" business_type:0 Normal ,1 alarm , location_type : 0 GPS,1 LBS
  "t": 1503046415 // long GPS reporting time
}
```



## MQTT PROTOCOL FOR FITRDIER IOT

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Mark: This command will send to mqtt automatically when the iot gets valid gps data.

---

### Reboot IOT (WR)

•Instruction format:

Topic: vehicle number

QoS : 0

Payload:

```
{  
"a": 20 // integer  
}
```

Example: if you want to reboot the IOT, send {"a":20}

---

### Query hardware and firmware version (WR)

•Instruction format:

Topic: vehicle number

QoS : 0

Payload:

```
{  
"a": 21 // integer  
}
```

Example: if you want to get the hardware info of network module, send {"a":21}

---

### Query hardware and firmware version ack (RD)

Topic: bike

QoS : 1

Payload:

```
{  
"a": 22, // integer  
"i": "12AB", //string, vehicle number  
"h": hardware version  
"f": software version  
"c":simcard number  
"m": IEMI number  
"s": vehicle status: 0 :Powered on, 1 : Powered off  
"t": 1503046415 // long, random number  
}
```

---

### Start Upgrade firmware (WR)



## MQTT PROTOCOL FOR FITRIDER IOT

---

The server inform scooter to upgrade firmware

•Instruction format:

Topic: vehicle number

QoS : 0

Payload:

```
{
  "a": 23 ,// integer,
  "l": 50 ,// integer,   package number of updating file, 1024 bytes each package
}
```

### Start Upgrade firmware (RD)

Topic : bike

QoS : 1

Payload:

```
{
  "a": 66, // integer ,
  "i": "12AB",// string , vehicle number
  "s": 0, // integer,  0 can be upgraded    1 prohibit to upgrade
}
```

---

### Send updating data(WR)

•Instruction format:

Topic: vehicle number

QoS : 0

Payload:

```
{
  "a": 67, // integer,
  "x":55, // integer,firmware package serial number
  "l":55, // integer,data length
  "d":012z//firmware data   binary type
}
```

### Send updating data ack(RD)

Topic : bike

QoS : 1

Payload:

```
{
  "a": 68, // integer,
  "i": "12AB", // string ,vehicle number
  "x":55, // integer,firmware package serial number
  "s": 0, // integer, 0 receive the firmware package successfully(can issue send next data packet)   1
  failed to receive the firmware package (at this time the server need to resend this packet of data.
```

When failed more than 5 times, the module will reboot for re-upgrading)

}

### Updating success report(RD)

Topic : bike

QoS : 1

Payload:

{

"a": 69, // integer ,

"i": "12AB", // string , vehicle number

"s": 0, // integer, 0 upgrade successfully 1 upgrade failed

}

---

### Query IEMI number(WR)

•Instruction format:

Topic: vehicle number

QoS : 0

Payload:

{

"a": 24 // integer

}

Example: If you want to get IEMI number, send {"a":24}

### Query IEMI number ack(RD)

• Instruction format:

QoS : 0

Payload:

{

"a": 25, // integer

"i": "12AB", //string, vehicle number

"h":1234567898888888, // IMEI number

"t": 1503046415 // long random number

}

---

### Vehicle status report (RD)





## MQTT PROTOCOL FOR FITRIDER IOT

### •Instruction format:

Topic : bike

QoS : 1

Payload:

```
{
"a": 27, // heartbeat
"i": "12AB", // string , vehicle number
"b": <battery ratio >, // integer, percentage of charge, from 0-100
"c": <status> // integer , status: 0 : power on; 1 : power off
"s":1<vehicle posture> // integer , status: 0 : normal; 1 : fall down . Only valid power on status.
"r":37.5<voltage of battery> // integer
"v":25 <sensitivity of vibration> // integer
"x":0> // 1= station attached; 3= no satation integer
}
```

Mark: This command has been sent to server automatically.

### Alarm buzzer( WR)

Topic: vehicle number

QoS : 0

Payload:

```
{
"a": 28 // integer , alarm
}
```

Example: If you want the buzzer of iot to sound, send {"a":28}

Mark: No ack for this command

### Set server parameters (WR) **This command has been deleted and replaced by command 101**

#### •Instruction format:

Topic: vehicle number

QoS : 0

Payload:

```
{
"a": 33, // integer
"u":18.180.156.177,1844,00012,30,10,3
}
```

// parameters as follows

IP+PORT+vehicle number+GPS reporting interval+ heartbeat packet interval+times(numbers) of resnet after network heartbeat packet failure



## MQTT PROTOCOL FOR FITRIDER IOT

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Example: if you want to set new IP as 123.456.789.123 , port as 1234, vehicle number as 000003, GPS reporting interval as 45 seconds, send {"a":33,"u":123.456.789.123,1234,000003,45}. When the command is executed successfully, the module will connect to the new IP, PORT. This process will take a while because IOT needs to reconnect to the network.

### Set server parameters ack (RD)

Topic : bike

QoS : 0

Payload:

```
{  
  "a": 34, // integer,  
  "i": "12AB", // string , vehicle number  
  "s": 0, // integer  0: success ; 1: failure  
}
```

---

### Query server parameters (WR)

•Instruction format:

Topic: vehicle number

QoS : 0

Payload:

```
{  
  "a": 35, // integer  
}
```

Example: if you want to get user parameters, send {"a":35}

### Query server parameters ack(WR)

Topic : bike

QoS : 0

Payload:

```
{  
  "a": 36, // integer ,  
  "i": "12AB", // string , vehicle number  
  "u": "018.180.156.177,1883,username ,password, vehicle number,30"  
}
```

IP,IP\_PORT,username,password,vehiclenumer,gps interval-gps

---

### Lamp switch setting(WR)

Topic: vehicle number

QoS : 0

Payload:

```
{  
  "a": 37, // integer , headlight control  
  "d": 0 // integer  0: turn off the light  1: turn on the light  
}
```

Example: This command only works when Lamp mode setting in " command cntrol mode"  
after send commad `{"a":43,"j":0}`

### Lamp switch setting ack(RD)

Topic : bike  
QoS : 0  
Payload:  
{  
"a": 38, // integer ,  
"i": "12AB", // string , vehicle number  
"s": 0, // integer 0: Success 1: failure  
}

---

### Vibration sensitivity setting (WR)

Topic: vehicle number  
QoS : 0  
Payload:  
{  
"a": 39, // integer , Vibration setting  
"v": 0 // integer 0: turn off vibration >0: vibration sensitivity  
}

Example: vibration here is vibration of scooter caused by outside detected when the scooter is off. When the number of successive vibrations reach a value, the bell sounds and alarms, at the meantime, the scooter motor will be locked. It means motor stalling to prevent somebody to slide the scooter. If the scooter do not detect vibration in 120 seconds, it will exit this status.

The value 0 behind this command is turn off vibration. If you send the command `{"a":39,"v":0}`, the scooter's buzzer will not make any sound when the user moves or vibrates the scooter.

When the value behind v is >0, it is used to adjust the vibration sensitivity. Bigger value, less sensitive. The biggest value is 99. The default value is 25. If you want to set the sensitivity as 10, send `{"a":39,"v":10}`

### Vibration sensitivity setting ack(RD)

Topic : bike  
QoS : 0  
Payload:  
{  
"a": 40, // integer ,  
"i": "12AB", // string , vehicle number  
"s": 0, // integer 0: success 1: failure  
}

---

### Kilometer or mile switch setting (WR)

Topic: vehicle number  
QoS : 0



## MQTT PROTOCOL FOR FITRIDER IOT

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Payload:

```
{
"a": 41, // integer , Kilometer mile switch
"f": 0 // integer    0: kilometer    1: mile
}
```

Example: if you want to set speed unit as kilometer on display, send {"a":41,"f":0} when the scooter is off.

if you want to set speed unit as mile on display, send {"a":41,"f":1} when the scooter is off.

### Kilometer or mile switch setting ack(RD)

Topic : bike

QoS : 0

Payload:

```
{
"a": 42, // integer ,
"i": "12AB", // string , vehicle number
"s": 0, // integer    0: success    1: failure
}
```

---

### Lamp mode setting (WR)

Topic: vehicle number

QoS : 0

Payload:

```
{
"a": 43, // integer , headlight switchover
"j": 0 // integer    0: command control    1: always on
}
```

Example: This command works only when the scooter is powered on. You need to send command {"a":1} turn on the scooter first.

### Lamp mode setting ack ack(RD)

Topic : bike

QoS : 0

Payload:

```
{
"a": 44, // integer ,
"i": "12AB", // string , vehicle number
"s": 0, // integer    0: success    1: failure
}
```

---

### Set\_Assist\_Level (WR)

• Instruction format:

Topic: vehicle number

QoS : 1

Payload:

```
{
"a": 49, // integer
"k": 0 // integer[ 0~2]
}
```

### **Set\_Assist\_Level ack (RD)**

Topic: bike

QoS : 0

Payload:

```
{
"a": 50, // integer
"i": "12AB", // string , vehicle number
"s": <status>, // integer , Status: 0 :success; 1 fault
}
```

### **APN setting(WR)**

•Instruction Format:

Topic: vehicle number

QoS : 0

Payload:

```
{
"a": 53, // integer
"z": AT+QICSGP=15,1,"apn","username","password",0 // string
}
```

Example: If you want to set the APN as 123, username as 456, password as 789, send {"a":53, "z":AT+QICSGP=15,1,"123","456","789",0}

If there is no username and password, the relevant position is empty. Such as APN is 123, username is empty, password is empty, send {"a":53, "z":AT+QICSGP=15,1,"123","","",0}

### **APN setting ack(RD)**

Topic : o

QoS : 0

Payload:

```
{
"a": 54, // integer,
"i": "12AB", // string ,vehicle number
"s":0, // integer 0: success 1: failure
}
```

---

### **Scooter status parameter Report(RD)**

Topic : o

QoS : 0

Payload:

```
{
  "a": 55, // integer,
  "i": "12AB", // string ,vehicle number
  "s": 0, // integer  0: the scooter is not fall down  1: the scooter is fell down
  "r" //interger means the battery voltage, unit v
}
```

Mark: This command is deleted in latest protocol version.

### **Vibration dection Report(RD)**

Topic : o

QoS : 0

Payload:

```
{
  "a": 57, // integer,
  "i": "12AB", // string ,vehicle number
  "s": 1, // integer
}
```

Mark: This command is deleted in latest protocol version.

---

### **Special alarm buzzer(WR)**

Topic : vehicle number

QoS : 0

Payload:

```
{
  "a": 58, // integer,ring
  "v": 5, // Numbers of rings
  "i": 100, // time of buzzer ring  unit:ms
  "L": 200 // the time of that the buzzer does not sound  unit:ms
}
```

Annotation: The above parameter means that the buzzer will ring for 100ms, then not for 200ms, so it alternates 5 times.

---

### **Battery unlock(WR)**

Topic: vehicle number

QoS : 0

Payload:

```
{
  "a": 60 // integer
}
```

Example: if you want to remove battery, send {"a":60}

### Battery unlock ack(RD)

Topic : bike

QoS : 0

Payload:

```
{  
"a": 61, // integer, confirmed power on  
"i": "12AB", // string , vehicle number  
"s": <status> // integer, status: 0 : success ; 1: hardware failure; 2: firmware upgrading  
}
```

---

### Battery lock(WR)

Topic: vehicle number

QoS: 0

Payload:

```
{  
"a": 62 // integer  
}
```

Example: if you want to lock the battery, send {"a":62}

### Battery lock ack(RD)

Topic : bike

QoS : 0

Payload:

```
{  
"a": 63, // integer , confirmed power on  
"i": "12AB", // string , vehicle number  
"s": <status> // integer , status: 0 : success ; 1: hardware failure; 2: firmware upgrading  
}
```

---

### Chainlock unlock(WR)

Topic: vehicle number

QoS: 0

Payload:

```
{  
"a": 71 // integer  
}
```

Example: if you want to unlock the chain lock, send {"a":71}

### Chainlock unlock ack(RD)

Topic : bike

QoS : 0

Payload:

```
{  
"a": 72, // integer  
"i": "12AB", // string ,vehicle number  
"s": <status> // integer , status:  0 :success ; 1: hardware failure; 2:firmware upgrading  
}
```

### **Enter pause mode (WR)**

Topic: vehicle number

QoS: 0

Payload:

```
{  
"a": 73 // integer  
}
```

Example: if you want to enter pause mode{"a":73}

### **Enter pause mode ack(RD)**

Topic : bike

QoS : 0

Payload:

```
{  
"a": 74, // integer ,  
"i": "12AB", // string ,vehicle number  
"s": <status> // integer , status:  0 :success ; 1: failed  
}
```

### **Exit pause mode (WR)**

Topic: vehicle number

QoS: 0

Payload:

```
{  
"a": 75 // integer  
}
```

Example: if you want to exit pause mode{"a":73}

### **Exit pause mode ack(RD)**

Topic : bike

QoS : 0

Payload:

```
{  
"a": 76, // integer ,  
"i": "12AB", // string ,vehicle number  
"s": <status> // integer , status:  0 :success ; 1: failed  
}
```

### **Query IOT Log(WR)**



Topic: vehicle number

QoS: 0

Payload:

```
{  
"a": 77 // integer  
}
```

Example: if you want to query IOT Log send {"a":77}

### Query IOT Log ack(RD)

Topic: vehicle number

QoS: 0

Payload:

```
{  
"a": 78 // integer  
"i": "12AB", // string ,vehicle number  
"b": "12AB", // string ,vehicle number  
"c": "12AB", // string ,vehicle number  
"d": "12AB", // string ,vehicle number  
"e": "12AB", // string ,vehicle number  
"f": "12AB", // string ,vehicle number  
"g": "12AB", // string ,vehicle number  
}
```

### Query status of chain lock (WR)

Topic: vehicle number

QoS: 0

Payload:

```
{  
"a": 83 // integer  
}
```

Example: if you want to query status of chain lock send {"a":83}

### Query status of chain lock (RD)

Topic : bike

QoS : 0

Payload:

```
{  
"a": 84, // integer ,  
"i": "12AB", // string ,vehicle number  
"s": <status> // integer , status: 0 :close ; 1: open  
}
```

### Viberating check (RD)

Topic : bike

QoS : 0

Payload:

```
{  
"a": 88, // integer ,  
"i": "12AB", // string ,vehicle number  
"s": <status> // integer , status: reserved}
```

---

### Reboot IOT if Updated (WR)

Topic: vehicle number

QoS: 0

Payload:

```
{  
"a": 93 // integer  
}
```

Example: if you want to reboot the iot after you update it successfully send {"a":93}

Remark:No response for this command.

---

### Query 4G signal intensity(WR)

Topic: vehicle number

QoS: 0

Payload:

```
{  
"a": 97 // integer  
}
```

Example: if you want to query signal intensity, send {"a":71}

### Query 4G signal intensity ack(RD)

Topic : bike

QoS : 0

Payload:

```
{  
"a": 98, // integer ,confirmed power on  
"i": "12AB", // string ,vehicle number  
"x": // integer , level of signal intensity  
}
```

---

### Set server parameters (WR)

•Instruction format:

Topic: vehicle number

QoS : 0

Payload:

```
{  
"a": 101, "u":18.180.156.177: 1883:username :password:  
}
```

### Set Iot Parameters ack(RD)

QoS : 0

Payload:

```
{  
"a": 102, // integer ,confirmed power on  
"i": "12AB", // string ,vehicle number  
"s": // 0=success 1=failed  
}
```

---

### Modify IOT SN (WR)

•Instruction format:

Topic: vehicle number

QoS : 0

Payload:

```
{"a": 103,"u":SN_Number:}
```

### Modify IOT SN ack(RD)

QoS : 0

Payload:

```
{  
"a": 104, // integer ,confirmed power on  
"i": "12AB", // string ,vehicle number  
"s": // 0=success 1=failed  
}
```

---

### unlock the motor lock (WR)

•Instruction format:

Topic: vehicle number

QoS : 0

Payload:

```
{"a": 105}
```

### unlock the motor lock ack(RD)

QoS : 0

Payload:

```
{  
"a": 106, // integer ,confirmed power on  
"i": "12AB", // string ,vehicle number  
"s": // 0=success 1=failed  
}
```

---

### lock the motor lock (WR)

•Instruction format:

Topic: vehicle number

QoS : 0

Payload:

```
{"a": 107}
```

### lock the motor lock ack(RD)

QoS : 0

Payload:

```
{  
"a": 108, // integer ,confirmed power on  
"i": "12AB", // string ,vehicle number  
"s": // 0=success 1=failed  
}
```