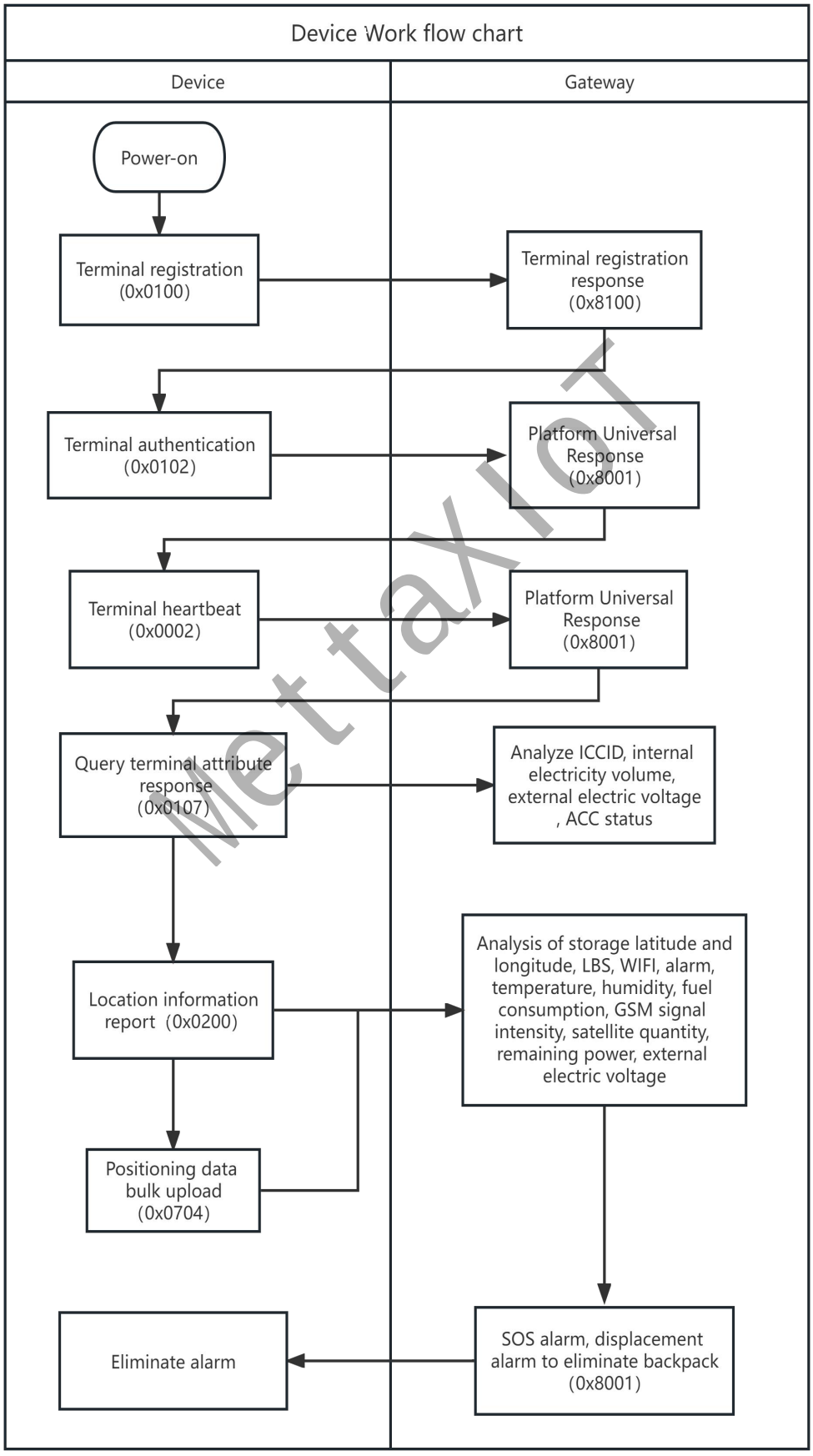
Explanation of JT808 Protocol Message Example

Device Work flow chart



Message structure

identification	Message header							Message body	Check code	identification
	Message ID	Message body properties				Terminal phone number	Message serial number			
		15 ~14	13	12~10	9~0					
		Reserved	Subcontracting	Data encryption	Message body length					

1. Terminal registration(0x0100)

7e0100003607006195286504fa00000000383639373 74e5438303800000000000000000000000000000031393532383635004c4231323334353637383930313233343560 7e

```
{
 "[7E]identification": 126,
 "[0100]Message ID": 256,
 "[0036]Message body properties": 54{
   "[bit15~bit14]Reserved": 0,
   "[bit13]Subcontracting": false,
   "[bit10~bit12]Data encryption": "None",
   "[bit0~bit9]Message body length": 54
 },
 "[070061952865]Terminal phone number": "070061952865",
 "[04FA]Message serial number": 1274,
 "
[00000000383639373 74E5438303800000000000000000000000000000031393532383635004C4231323334353637383930313233343560 7E]
Message body": {
   "[0000]Province ID": 0,
   "[0000]City ID ID": 0,
   "[3836393737]Manufacturer ID": "86977",
   "[4E5438303800000000000000000000000000000000]Terminal model": "NT808",
   "[31393532383635]Terminal ID": "1952865",
   "[00]License plate color": 0,
   "[4C4231323334353637383930313233343560 7E]Vehicle identification": "LB123456789012345"
 },
 "[60]Check code": 96,
 "[7E]identification": 126
}
```


Please note that the complete 15-digit IMEI can be constructed from the Manufacturer ID and Terminal phone number found in the Terminal registration (0x0100) protocol packet. The specific rule is to concatenate the 5-digit Manufacturer ID with the last 10 digits of the Terminal phone number.

2. Terminal registration response（0x8100）

7e8100000f0700619528651a6104fa00303730303631393532383635b07e

```
{
 "[7E]identification": 126,
 "[8100]Message ID": 33024,
 "[000f]Message body properties": 15{
   "[bit15~bit14]Reserved": 0,
   "[bit13]Subcontracting": false,
   "[bit10~bit12]Data encryption": "None",
```

```
    "[bit0~bit9]Message body length": 15
  },
  "[070061952865]Terminal phone number": "070061952865",
  "[1A61]Message serial number": 6753,
  "[04FA00303730303631393532383635]Message body": {
    "[04FA]Answer the serial number": 1274,
    "[00]result": 0,
    "[303730303631393532383635]Authentication code": "070061952865"
  },
  "[B0]Check code": 176,
  "[7E]identification": 126
}
```


The gateway can decide whether to use the authentication mode based on its business requirements. If the authentication mode is enabled, the gateway needs to generate an Authentication code for the terminal device at this point. When the terminal device has an Authentication code recorded, it will not send a Terminal registration (0x0100) message during the next boot or restart. Instead, it will carry the Authentication code recorded in the terminal device and send a Terminal authentication (0x0102) message.

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3. Terminal authentication（0x0102）

7e0102000c07006195286504fc303730303631393532383635 4c7e


```
{
  "[7E]identification": 126,
  "[0102]Message ID": 258,
  "[000c]Message body properties": 12{
    "[bit15~bit14]Reserved": 0,
    "[bit13]Subcontracting": false,
    "[bit10~bit12]Data encryption": "None",
    "[bit0~bit9]Message body length": 12
  },
  "[070061952865]Terminal phone number": "070061952865",
  "[04FC]Message serial number": 1276,
  "[303730303631393532383635]Message body": {
    "[303730303631393532383635]Authentication code": "070061952865"
  },
  "[4C]Check code": 76,
  "[7E]identification": 126
}
```


The Authentication code reported by the terminal device at this point is obtained from the Terminal registration response (0x8100) during previous communication with the gateway. If the gateway does not use the authentication mode, upon receiving Terminal authentication (0x0102), it simply needs to respond with a Platform Universal Response (0x8001) indicating failure. In this case, the terminal device will re-send the Terminal registration (0x0100) message.

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4. Platform Universal Response（0x8001）

7e8001000507006195286 51ab4004a070400dd7e


```
{
  "[7E]identification": 126,
  "[8001]Message ID": 32769,
  "[0005]Message body properties": 5{
    "[bit15~bit14]Reserved": 0,
    "[bit13]Subcontracting": false,
    "[bit10~bit12]Data encryption": "None",
    "[bit0~bit9]Message body length": 5
  },
  "[070061952865]Terminal phone number": "070061952865",
  "[1AB4]Message serial number": 6836,
  "[004A070400]Message body": {
    "[004A]Answer the serial number ": 74,
    "[0704]Answer ID": 1796,
```

```
    "[00]result": 0
  },
  "[DD]Check code": 221,
  "[7E]identification": 126
}
```

If the gateway does not use the authentication mode, it will return 1 in the "result" field.

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5. Terminal heartbeat（0x0002）

7e0002000000726101900403 78ff7e

```
{
  "[7E]identification": 126,
  "[0002]Message ID": 2,
  "[0000]Message body properties": 0 {
    "[bit15~bit14]Reserved": 0,
    "[bit13]Subcontracting": false,
    "[bit10~bit12]Data encryption": "None",
    "[bit0~bit9]Message body length": 0
  },
  "[007261019004]Terminal phone number": "007261019004",
  "[0378]Message serial number": 888,
  "[]Message body ": {
    null
  },
  "[FF]Check code": 255,
  "[7E]identification": 126
}
```

---

6. Query terminal attribute response （0x0107）

7e0107005407006195286500090 0ff38363937374e5438303800000000000000000000000000000313935323836358986040310209076200612443736355f414430375f323032333033313712443736355f414430375f323032333033313703 21e97e

```
{
  "[7E]identification": 126,
  "[0107]Message ID": 263,
  "[0054]Message body properties": 84{
    "[bit15~bit14]Reserved": 0,
    "[bit13]Subcontracting": false,
    "[bit10~bit12]Data encryption": "None",
    "[bit0~bit9]Message body length": 84
  },
  "[070061952865]Terminal phone number": "070061952865",
  "[0009]Message serial number": 9,
  "
[00FF38363937374E5438303800000000000000000000000000000313935323836358986040310209076200612443736355F414430375
F323032333033313712443736355F414430375F32303233303331370321]Message body": {
    "[00FF]terminal type": 255{
      "bit0": "for passenger vehicles",
      "bit1": "Dangerous goods vehicles",
      "bit2": "for ordinary freight vehicles",
      "bit3": "suitable for rental vehicles",
      "bit6": " support hard disk video",
      "bit7": "split machine"
    },
    "[3836393737]Manufacturer ID": "86977",
    "[4E5438303800000000000000000000000000000000]Terminal model": "NT808",
    "[31393532383635]Terminal ID": "1952865",
    "[89860403102090762006]Terminal SIM card ICCID": "89860403102090762006",
    "[12]Terminal hardware version number length": 18,
    "[443736355F414430375F3230323330333137]Terminal hardware version number": "D765_AD07_20230317",
    "[12]Terminal firmware version number length": 18,
```

```
    "[443736355F414430375F3230323330333137]Terminal firmware version number": "D765_AD07_20230317",
    "[03]GNSS module properties": 3 {
      "bit0": "support GPS positioning",
      "bit1": "support Beidou positioning",
      "bit2": "does not support GLONASS positioning",
      "bit3": "not Support Galileo positioning"
    },
    "[21]Communication module attributes": 33 {
      "bit0": "support GPRS communication",
      "bit1": "does not support CDMA communication",
      "bit2": "does not support TD-SCDMA communication",
      "bit3": "does not support WCDMA communication",
      "bit4": "does not support CDMA2000 communication",
      "bit5": "support TD-LTE communication",
      "bit6": "Reserved",
      "bit7": "does not support other communication methods"
    }
  },
  "[E9]Check code": 233,
  "[7E]identification": 126
}
```


7. Location information report（0x0200）

7e0200004207006195286500520001000000000001015881c906ca8e0500000000000023072707091430011f3101005108000000000000000056023100570800020000000000000063020000fd020026157e


```
{
  "[7E]identification": 126,
  "[0200]Message ID": 512,
  "[0042]Message body properties": {
    "[bit15~bit14]Reserved": 0,
    "[bit13]Subcontracting": false,
    "[bit10~bit12]Data encryption": "None",
    "[bit0~bit9]Message body length": 66
  },
  "[070061952865]Terminal phone number": "070061952865",
  "[0052]Message serial number": 82,
  "
[00010000000000001015881C906CA8E0500000000000023072707091430011F3101005108000000000000000056023100570800020000
0000000063020000FD020026]Message body": {
    "[00010000]Alarm sign": 65536 {
      "[bit31]illegal open the door alarm (terminal does not set the area, do not judge the illegal open the
door)": "0",
      "[bit30]rollover warning": "0",
      "[bit29]collision warning": "0",
      "[bit28]illegal displacement of vehicles": "0",
      "[bit27]illegal ignition of the vehicle": "0",
      "[bit26]vehicle stolen (through vehicle anti-theft device)": "0",
      "[bit25]vehicle oil is abnormal": "0",
      "[bit24]Vehicle VSS failure": "0",
      "[bit23]The route is off the alarm": "0",
      "[bit22]The road travel time is insufficient / too long": "0",
      "[bit21]out of the route": "0",
      "[bit20]out of the area": "0",
      "[bit19]timeout parking": "0",
      "[bit18]the cumulative driving overtime on that day": "0",
      "[bit17]Magnetic inductive alarm": "0",
      "[bit16]Light alarm": "1",
      "[bit15]Vibration alarm": "0",
      "[bit14]fatigue driving warning": "0",
      "[bit13]speeding warning": "0",
      "[bit12]road transport card IC card module failure": "0",
      "[bit11]camera failure": "0",
      "[bit10]TTS module is faulty": "0",
      "[bit9]Terminal LCD or monitor failure": "0",
      "[bit8]The terminal main power is powered down": "0",
```

```
    "[bit7]terminal main power undervoltage": "0",
    "[bit6]GNSS antenna short circuit": "0",
    "[bit5]The GNSS antenna is not connected or cut": "0",
    "[bit4]GNSS module has failed": "0",
    "[bit3]dangerous warning": "0",
    "[bit2]fatigue driving": "0",
    "[bit1]speed alarm": "0",
    "[bit0]emergency alarm, trigger the alarm switch after the trigger": "0"
  },
  "[00000000000000000000000000000001]status ": 1{
    "[bit22~bit31]Reserved": "0000000000",
    "[0]bit21": "not used Galileo satellite positioning",
    "[0]bit20": "not using GLONASS satellites",
    "[0]bit19": "not using the Beidou satellite positioning",
    "[0]bit18": "GPS GPS is not used for positioning",
    "[0]bit17": "door 5 off",
    "[0]bit16": "door 4 off",
    "[0]bit15": "door 3 off",
    "[0]bit14": "door 2 off",
    "[0]bit13": "door 1 off",
    "[0]bit12": "unlock the door",
    "[0]bit11": "vehicle circuit is normal",
    "[0]bit10": "vehicle oil line is normal",
    "[00]bit8~bit9": "empty",
    "[bit6~bit7]Reserved": "00",
    "[0]bit5": "latitude and longitude without confidentiality plug-in encryption",
    "[0]bit4": "operating status",
    "[0]bit3": "East",
    "[0]bit2": "latitude",
    "[0]bit1": "not positioned",
    "[1]bit0": "ACC on"
  },
  "[015881C9]latitude": 22577609,
  "[06CA8E05]longitude": 113937925,
  "[0000]Elevation": 0,
  "[0000]speed": 0,
  "[0000]direction": 0,
  "[230727070914]time": "2023-07-27 07:09:14",
  "Location list of additional information items": [
    {
      "[30]Additional information ID": 48,
      "[01]Additional information length": 1,
      "[1F]extra information": "wireless communication network signal strength(31)"
    },
    {
      "[31]Additional information ID": 49,
      "[01]Additional information length": 1,
      "[00]extra information": "GNSS positioning satellite number(0)"
    },
    {
      "[51]Additional information ID": 81,
      "[08]Additional information length": 8,
      "[0000000000000000]extra information": "temperature(0 0 0 0)"
      05DB 03E7 0000 010A
    },
    {
      "[56]Additional information ID": 86,
      "[02]Additional information length": 2,
      "[3100]extra information": "Power expansion(31%)"
    },
    {
      "[57]Additional information ID": 87,
      "[08]Additional information length": 8,
      "[0002000000000000]extra information": "Demolition alarm"
    },
    {
      "[63]Additional information ID": 99,
      "[02]Additional information length": 2,
      "[0000]extra information": "Number of wake-ups in wireless mode(0)"
    },
```

```
      {
        "[FD]Additional information ID": 253,
        "[02]Additional information length": 2,
        "[0026]extra information": "Car battery voltage(2.6V)"
      }
    ]
  },
  "[15]Check code": 21,
  "[7E]identification": 126
}
```

8. Positioning data bulk upload（0x0704）

7e0704004707006195286500 4a00010100420001000000000001015881c906ca8e0500000000000023072707091430011f31010051080000000000000000056023100570800020000000000063020000fd020026107e

```
{
  "[7E]identification": 126,
  "[0704]Message ID": 1796,
  "[0047]Message body properties": 71{
    "[bit15~bit14]Reserved": 0,
    "[bit13]Subcontracting": false,
    "[bit10~bit12]Data encryption": "None",
    "[bit0~bit9]Message body length": 71
  },
  "[070061952865]Terminal phone number": "070061952865",
  "[004A]Message serial number": 74,
  "
[00010100420001000000000001015881C906CA8E0500000000000023072707091430011F31010051080000000000000000056023100570800020000000000063020000FD020026]Message body": {
    "[0001]Number of data items": 1,
    "[01]Location data type ": "blind area report(1)",
    "Location report data item": [
      {
        "[00000042]Location reports the length of the data body": 66,
        "
[00010000000000001015881C906CA8E0500000000000023072707091430011F31010051080000000000000000056023100570800020000000000063020000FD020026]Location Reporting Data Volume": {
          "[00010000]Alarm sign": 65536 {
            "[bit31]illegal open the door alarm (terminal does not set the area, do not judge the illegal open the door)": "0",
            "[bit30]rollover warning": "0",
            "[bit29]collision warning": "0",
            "[bit28]illegal displacement of vehicles": "0",
            "[bit27]illegal ignition of the vehicle": "0",
            "[bit26]vehicle stolen (through vehicle anti-theft device)": "0",
            "[bit25]vehicle oil is abnormal": "0",
            "[bit24]Vehicle VSS failure": "0",
            "[bit23]The route is off the alarm": "0",
            "[bit22]The road travel time is insufficient / too long": "0",
            "[bit21]out of the route": "0",
            "[bit20]out of the area": "0",
            "[bit19]timeout parking": "0",
            "[bit18]the cumulative driving overtime on that day": "0",
            "[bit17]Magnetic inductive alarm": "0",
            "[bit16]Light alarm": "1",
            "[bit15]Vibration alarm": "0",
            "[bit14]fatigue driving warning": "0",
            "[bit13]speeding warning": "0",
            "[bit12]road transport card IC card module failure": "0",
            "[bit11]camera failure": "0",
            "[bit10]TTS module is faulty": "0",
            "[bit9]Terminal LCD or monitor failure": "0",
            "[bit8]The terminal main power is powered down": "0",
            "[bit7]terminal main power undervoltage": "0",
            "[bit6]GNSS antenna short circuit": "0",
            "[bit5]The GNSS antenna is not connected or cut": "0",
```

```
    "[bit4]GNSS module has failed": "0",
    "[bit3]dangerous warning": "0",
    "[bit2]fatigue driving": "0",
    "[bit1]speed alarm": "0",
    "[bit0]emergency alarm, trigger the alarm switch after the trigger": "0"
  },
  "[00000000000000000000000000000001]status ": 1{
    "[bit22~bit31]Reserved": "0000000000",
    "[0]bit21": "not used Galileo satellite positioning",
    "[0]bit20": "not using GLONASS satellites",
    "[0]bit19": "not using the Beidou satellite positioning",
    "[0]bit18": "GPS GPS is not used for positioning",
    "[0]bit17": "door 5 off",
    "[0]bit16": "door 4 off",
    "[0]bit15": "door 3 off",
    "[0]bit14": "door 2 off",
    "[0]bit13": "door 1 off",
    "[0]bit12": "unlock the door",
    "[0]bit11": "vehicle circuit is normal",
    "[0]bit10": "vehicle oil line is normal",
    "[00]bit8~bit9": "empty",
    "[bit6~bit7]Reserved": "00",
    "[0]bit5": "latitude and longitude without confidentiality plug-in encryption",
    "[0]bit4": "operating status",
    "[0]bit3": "East",
    "[0]bit2": "latitude",
    "[0]bit1": "not positioned",
    "[1]bit0": "ACC on"
  },
  "[015881C9]latitude": 22577609,
  "[06CA8E05]longitude": 113937925,
  "[0000]Elevation": 0,
  "[0000]speed": 0,
  "[0000]direction": 0,
  "[230727070914]time": "2023-07-27 07:09:14",
  "Location list of additional information items": [
    {
      "[30]Additional information ID": 48,
      "[01]Additional information length": 1,
      "[1F]extra information": "wireless communication network signal strength(31)"
    },
    {
      "[31]Additional information ID": 49,
      "[01]Additional information length": 1,
      "[00]extra information": "GNSS positioning satellite number(0)"
    },
    {
      "[51]Additional information ID": 81,
      "[08]Additional information length": 8,
      "[0000000000000000]extra information": "temperature(0 0 0 0)"
      05DB 03E7 0000 010A
    },
    {
      "[56]Additional information ID": 86,
      "[02]Additional information length": 2,
      "[3100]extra information": "Power expansion(31%)"
    },
    {
      "[57]Additional information ID": 87,
      "[08]Additional information length": 8,
      "[0002000000000000]extra information": "Demolition alarm"
    },
    {
      "[63]Additional information ID": 99,
      "[02]Additional information length": 2,
      "[0000]extra information": "Number of wake-ups in wireless mode(0)"
    },
    {
      "[FD]Additional information ID": 253,
      "[02]Additional information length": 2,
```

```
                "[0026]extra information": "Car battery voltage(2.6V)"
              }
            ]
          }
        }
      ]
    }
  "[10]Check code": 16,
  "[7E]identification": 126
}
```