Radar Wi-Fi Communication Interfacing Document

Format Description for MQTT Communication Topic

Ver.3.0

MicRadar Technology (Shenzhen) Co. ,LTD

Format Description for MQTT Communication Topic (V3.0)

This document describes mainly the format of radar MQTT protocol and helps the user to acquire and set radar data for easier development and application. Data is transmitted in json format. Product types in Topic: human presence radar (RadarHP), fall detection radar (RadarFL), and sleep radar (RadarSP). Corresponding identification shall be added to the product type during use.

Radar HP info

Online/offline state (read only)

Topic: /RadarHP/DeviceID/sys/online/post

Subscribe to this topic to receive online/offline state info of the radar. Variants of state: "0", offline state; and "1", online state;

```
{
        "version":   "1.0",

        "method":   "post",

        "params":   {

                    "online":     "0" //device offline

        }

}
```

Version Info (read only)

Topic: /RadarHP/DeviceID/sys/version/post

Subscribe to this topic to receive device properties of the radar: Radar ID (radarID), software version number (softwareVersion), firmware version number (firmwareVersion), and protocol version number. These properties are read only and beyond alteration.

```
{
        "version":   "1.0",

        "method":   "post",

        "params":   {

                    "radarID":   "3004004513834353",

                    "softwareVersion":        "G24VDA45D-210831-A",

                    "firmwareVersion":        "MR24D11B1D",

                    "protocolVersion":        "PVD2.0T"

        }

}
```

Topic of user acquiring version number actively:

Topic: /RadarHP/DeviceID/sys/property/set

By issuing the following command, the user acquires the version number actively:

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```
{
        "version":   "1.0",

        "method":   "get_version",

        "params":   {

        }

}
```

Format of response result data:

```
{
        "version":   "1.0",

        "opt":        "control_qos",

        "res":        "success" //either fail or success

}
{
        "version":   "1.0",

        "opt":"get_version",

        "params":   {

                        "radarID":   "3004004513834353",

                        "softwareVersion":       "G24VDA45D-210831-A",

                        "firmwareVersion":       "MR24D11B1D",

                        "protocolVersion":       "PVD2.0T"

        }
        "res":        "success"

}
```

Active report (read only)

Topic: /RadarHP/DeviceID/sys/active/post

Subscribe to this topic to receive device properties of the radar: Movement sign parameter, approaching/leaving away state, and environment state. These properties are read only and beyond alteration.

Attribute value of movement sign parameter (movementSigns) falls in 0 - 100 and is reported in real time every second.

```
{
        "version":   "1.0",

        "method":   "post",

        "params":   {
```

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```
                    "movementSigns":        "100"

        }

    }
```

Attribute value of approaching/leaving away (keepAway) comprises the following: 1 (none), 2 (approaching), 3 (leaving away), 4 (continuously approaching), and 5 (continuously leaving away). A report is given in real time when someone approaches/leaves away from the radar.

```
    {

        "version":   "1.0",

        "method":   "post",

        "params":   {

                    "keepAway":             "1"

        }

    }
```

Attribute value of environment state (environ) comprises the following: 0 (no people), 1 (static presence), and 2 (active presence).

```
    {

        "version":   "1.0",

        "method":   "post",

        "params":   {

                    "environ":   "2"

        }

    }
```

Passive report

Topic: /RadarHP/DeviceID/sys/passive/post

Subscribe to this topic to receive device properties of the radar: Scene mode, threshold gear (i.e. sensitivity), and force into unmanned gear.

1) Attribute value of scene mode (sceneMode) comprises 0 (default), 1 (area detection), 2 (bathroom), 3 (bedroom), 4 (living room), and 5 (office), 6 (hotel); and Gear 6 is the default value.

2) Attribute value of threshold gear (thresholdGear) falls in 0 - 9.

3) Attribute value of force into unmanned gear (forceIntoUnmannedGear) comprises: 0 (disabled), 1 (10 s), 2 (30 s), 3 (1 min), 4 (2 min), 5 (5 min), 6 (10 min), 7 (30 min), and 8 (60 min).

```
    {

        "version":   "1.0",

        "method":   "post",

        "params":   {
```

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```
                    "thresholdGear":            "7",

                    "sceneMode":                "0",

                    "forceIntoUnmannedGear":            "0"

        }

    }
```

By setting the attribute value, you can issue a command through the topic below:

Topic: /RadarHP/DeviceID/sys/property/set

Subscribe to the topic below to acquire response result of setting:

Topic: /RadarHP/DeviceID/sys/property/set_reply

Format of setting data:

```
    {

        "version":    "1.0",

        "method":    "set",

        "params":    {

                    "sceneMode":            "2" //Change the scene mode as 2 (bathroom)

        }

    }
```

Upon setting success, scene mode and other attributes will be reported as updated; and if the setting fails, nothing will be reported. Response result data will always be reported whether it's a success or failure, format of which:

```
    {

        "version":    "1.0",

        "opt":        "set",

        "res":        "success"    //or fail if it's a failure

    }
```

Disabling or enabling report for data types of active report: set the corresponding value of the attribute as 1/0 to permit/forbid the report of the attribute. Attributes of active report include: movementSigns, keepAway, and environ.

```
    {

        "version":    "1.0",

        "method":    "control",

        "params":    {

                    "movementSigns":        "0",

                    "keepAway":            "0",

                    "environ":    "0"
```

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```
        }

    }
```

Format of response result data:

```
    {

        "version":    "1.0",

        "opt":        "control",

        "res":        "success" //either fail or success

    }
```

Qos quality of service

Topic setting of Qos is the same as the attributes:

Topic: /RadarHP/DeviceID/sys/property/set

The default value of Qos is Qos1. The value 0/1/2 indicates Qos0/Qos1/Qos2 respectively.

To set the function of Qos:

```
    {

        "version":    "1.0",

        "method":    "control_qos",

        "params":    {

                    "Qos_online":             "0",

                    "Qos_version":            "0",

                    "Qos_passive":            "0",

                    "Qos_set_reply":        "0",

                    "Qos_movementSigns":        "0",

                    "Qos_keepAway":            "0",

                    "Qos_environ":                "0"

        }

    }
```

Format of response result data:

```
    {

        "version":    "1.0",

        "opt":        "control_qos",

        "res":        "success" //either fail or success

    }
```

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Fall radar info

The fall radar incorporates fall detection switch (fallSwitch), fall warning time (fallWarningTime), fall sensitivity (fallSensitivity), fall alarm (fallAlarm), and residence alarm (residentAlarm) on the basis of human presence radar.

Online/offline state (read only)

Topic: /RadarFL/DeviceID/sys/online/post

Subscribe to this topic to receive online/offline state info of the radar. Variants of state: "0", offline state; and "1", online state;

```
{
        "version":    "1.0",

        "method":    "post",

        "params":    {

                "online":     "1" //The device is online

        }

}
```

Version Info (read only)

Topic: /RadarFL/DeviceID/sys/version/post

Subscribe to this topic to receive device properties of the radar: Radar ID (radarID), software version number (softwareVersion), firmware version number (firmwareVersion), and protocol version number. These properties are read only and beyond alteration.

```
{
        "version":    "1.0",

        "method":    "post",

        "params":    {

                "radarID":    "290410d51383530343339",

                "softwareVersion":        "G24FDA43D-210831-A",

                "firmwareVersion":        "MR24D11B1D",

                "protocolVersion":        "PVD2.0T"

        }

}
```

Active report (read only)

Topic: /RadarFL/DeviceID/sys/active/post

Subscribe to this topic to receive device properties of the radar: Movement sign parameter, approaching/leaving away state, and environment state. These properties are read only and beyond dlteration.

Attribute value of movement sign parameter (movementSigns) falls in 0 - 100 and is reported in real time every second.

```
{
```

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```
        "version":    "1.0",

        "method":    "post",

        "params":    {

                    "movementSigns":        "86"

        }

    }
```

Attribute value of approaching/leaving away (keepAway) comprises the following: 1 (none), 2 (approaching), 3 (leaving away), 4 (continuously approaching), and 5 (continuously leaving away). A report is given in real time when someone approaches/leaves away from the radar.

```
    {

        "version":    "1.0",

        "method":    "post",

        "params":    {

                    "keepAway":            "2"

        }

    }
```

Attribute value of environment state (environ) comprises the following: 0 (no people), 1 (static presence), and 2 (active presence).

```
    {

        "version":    "1.0",

        "method":    "post",

        "params":    {

                    "environ":    "2"

        }

    }
```

Attribute value of fallAlarm comprises: 0 (suspected fall), 1 (fall), and 2 (no fall).

```
    {

        "version":    "1.0",

        "method":    "post",

        "params":    {

                    "fallAlarm":"0"

        }

    }
```

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Attribute value of residentAlarm comprises: 0 (none), 1 (first time, after 5 min.), 2 (second time, after 10 min.), 3 (third time, after 30 min.), and 4 (fourth time, after 60 min.).

```
{
        "version":    "1.0",

        "method":    "post",

        "params":    {

                "residentAlarm":            "1"

        }

}
```

Attributes of passive report (readable and settable)

Topic: /RadarFL/DeviceID/sys/passive/post

Subscribe to this topic to receive device properties of the radar: sceneMode, thresholdGear, forceIntoUnmannedGear, fallSensitivity, fallWarningTime, and fallSwitch. These attributes are settable.

1)	Attribute value of scene mode (sceneMode) comprises 0 (default), 1 (area detection), 2 (bathroom), 3 (bedroom), 4 (living room), and 5 (office), 6 (hotel); and Gear 6 is the default value.

2)	Attribute value of threshold gear (i.e. sensitivity) (thresholdGear) falls in 0 - 9.

3)	Attribute value of force into unmanned gear (forceIntoUnmannedGear) comprises: 0 (disabled), 1 (10 s), 2 (30 s), 3 (1 min), 4 (2 min), 5 (5 min), 6 (10 min), 7 (30 min), and 8 (60 min).

4)	Attribute value of fall sensitivity (fallSensitivity) falls in Gear 0 - 9. The default is 6. A greater gear indicates a greater sensitivity level.

5)	Attribute value of fall warning time (fallWarningTime) falls in 0 - 9, indicating (1 - 10 min) respectively.

6)	Attribute value of fall detection switch (fallSwitch) falls in 0 - 1: 0 to disable the function while 1 to enable it.

```
{
        "version":    "1.0",

        "method":    "post",

        "params":    {

                "thresholdGear":            "7",

                "sceneMode":              "0",

                "forceIntoUnmannedGear":              "0",

                "fallSwitch":              "1",

                "fallSensitivity":          "4",

                "fallWarningTime":        "2"

        }

}
```

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Setting attribute info

By setting the attribute value, you can issue a command through the topic below:

Topic: /RadarFL/DeviceID/sys/property/set

Subscribe to the topic below to acquire response result of setting:

Topic: /RadarFL/DeviceID/sys/property/set_reply

Format of setting data:

```
{
        "version":    "1.0",

        "method":    "set",

        "params":    {

                        "sceneMode":            "2" // Change the scene mode as 2 (bathroom)

        }

}
```

Upon setting success, scene mode and other attributes will be reported as updated; and if the setting fails, nothing will be reported. Response result data will always be reported whether it's a success or failure, format of which:

```
{
        "version":    "1.0",

        "opt":        "set",

        "res":        "success" // either fail or success

}
```

Disabling or enabling report for data types of active report: set the corresponding value of the attribute as 1/0 to permit/forbid the report of the attribute. Attributes of active report include: movementSigns, keepAway, and environ.

```
{
        "version":    "1.0",

        "method":    "control",

        "params":    {

                        "movementSigns":        "0",//Disable report of movement sign parameter

                        "keepAway":            "1",                //Enable keepAway report

                        "environ":    "1"            //Enable environment state report

        }

}
```

Format of response result data:

```
{
```

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```
        "version":    "1.0",

        "opt":        "control",

        "res":        "success" //either fail or success

    }
```

Qos quality of service (settable)

Topic setting of Qos is the same as the attributes:

Topic: /RadarFL/DeviceID/sys/property/set

The default value of Qos is Qos1. The value 0/1/2 indicates Qos0/Qos1/Qos2 respectively.

To set the function of Qos:

```
    {
        "version":    "1.0",

        "method":    "control_qos",

        "params":    {

                    "Qos_online":              "0",

                    "Qos_version":             "0",

                    "Qos_passive":             "0",

                    "Qos_set_reply":        "0",

                    "Qos_movementSigns":         "0",

                    "Qos_keepAway":            "0",

                    "Qos_environ":               "0",

                    "Qos_fallAlarm":        "0",

                    "Qos_residentAlarm":    "0"

        }
    }
```

Format of response result data:

```
    {
        "version":    "1.0",

        "opt":        "control_qos",

        "res":        "success" //either fail or success

    }
```

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Sleep radar info

The sleep radar incorporates sleep detection switch (sleepSwitch), breath rate (breathRate), detection signal (weakSignal), in-bed (getIntoBed), sleep assessment (sleepAssessment), awake duration (AwakeDuration), light sleep duration (LightSleepDuration), deep sleep duration (DeepSleepDuration), and sleep quality score (sleepScore) on the basis of human presence radar.

Online/offline state (read only)

Topic: /RadarSP/DeviceID/sys/online/post

Subscribe to this topic to receive online/offline state info of the radar. Variants of state: "0", offline state; and "1", online state;

```
{
        "version":    "1.0",

        "method":    "post",

        "params":    {

                     "online":      "0" //device offline

        }

}
```

Version Info (read only)

Topic: /RadarSP/DeviceID/sys/version/post

Subscribe to this topic to receive device properties of the radar: Radar ID (radarID), software version number (softwareVersion), firmware version number (firmwareVersion), and protocol version number. These properties are read only and beyond alteration.

```
{
        "version":    "1.0",

        "method":    "post",

        "params":    {

                     "radarID":    "3004004513834353",

                     "softwareVersion":        "G24VDA45D-210831-A",

                     "firmwareVersion":        "MR24D11B1D",

                     "protocolVersion":        "PVD2.0T"

        }

}
```

Active report (read only)

Topic: /RadarSP/DeviceID/sys/active/post

Subscribe to this topic to receive device properties of the radar: Movement sign parameter, approaching/leaving away state, environment state, breath rate, detection signal, in/out of bed, sleep assessment, awake duration parameter, and sleep quality parameter. These properties are read only and beyond alteration.

Attribute value of movement sign parameter (movementSigns) falls in 0 - 100 and is reported in real time every second.

```
{
        "version":   "1.0",
        "method":   "post",
        "params":   {
                "movementSigns":        "100"
        }
}
```

Attribute value of approaching/leaving away (keepAway) comprises the following: 1 (none), 2 (approaching), 3 (leaving away), 4 (continuously approaching), and 5 (continuously leaving away). A report is given in real time when someone approaches/leaves away from the radar.

```
{
        "version":   "1.0",
        "method":   "post",
        "params":   {
                "keepAway":            "1"
        }
}
```

Attribute value of environment state (environ) comprises the following: 0 (no people), 1 (static presence), and 2 (active presence).

```
{
        "version":   "1.0",
        "method":   "post",
        "params":   {
                "environ":   "2"
        }
}
```

Attribute value of breathRate, with the range: 0 - 30.

```
{
        "version":   "1.0",
        "method":   "post",
        "params":   {
                "breathRate":            "11"
        }
}
```

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Attribute value of weakSignal, with the range: 1 (abnormal), 2 (none), and 3 (normal).

```
{
        "version":   "1.0",

        "method":   "post",

        "params":    {

                    "weakSignal":               "11"

        }

}
```

Attribute value of getIntoBed, with the range: 1 (abnormal), 2 (none), and 3 (normal).

```
{
        "version":   "1.0",

        "method":   "post",

        "params":    {

                    "getIntoBed":               "0"

        }

}
```

Attribute value of sleepAssessment, with the range: 0 (awake), 1 (light sleep), 2 (deep sleep), and 3 (none).

```
{
        "version":   "1.0",

        "method":   "post",

        "params":    {

                    "sleepAssessment":           "6"

        }

}
```

Attribute value of AwakeDuration.

```
{
        "version":   "1.0",

        "method":   "post",

        "params":    {

                    " AwakeDuration":            "80"

        }

}
```

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Attribute value of LightSleepDuration, the length of light sleep.

```
{
        "version":    "1.0",

        "method":     "post",

        "params":     {

                    " LightSleepDuration":        "20"

        }

}
```

Attribute value of DeepSleepDuration.

```
{
        "version":    "1.0",

        "method":     "post",

        "params":     {

                    " DeepSleepDuration":        "50"

        }

}
```

Attribute value of sleepScore, with the range of 0 - 100.

```
{
        "version":    "1.0",

        "method":     "post",

        "params":     {

                    "sleepScore":                "60"

        }

}
```

Passive report (readable and settable)

Topic: /RadarSP/DeviceID/sys/passive/post

Subscribe to this topic to receive device properties of the radar: sceneMode, thresholdGear (i.e. sensitivity), forceIntoUnmannedGear, and sleepSwitch.

1) Attribute value of scene mode (sceneMode) comprises 0 (default), 1 (area detection), 2 (bathroom), 3 (bedroom), 4 (living room), and 5 (office), 6 (hotel); and Gear 6 is the default value.

2) Attribute value of threshold gear (thresholdGear) falls in 0 - 9.

3) Attribute value of force into unmanned gear (forceIntoUnmannedGear) comprises: 0 (disabled), 1 (10 s), 2 (30 s), 3 (1 min), 4 (2 min), 5 (5 min), 6 (10 min), 7 (30 min), and 8 (60 min).

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4) Attribute value of sleep detection switch (sleepSwitch), with the range: 0 - function disabled, and 1 - function enabled.

```
{
        "version":  "1.0",

        "method":  "post",

        "params":  {

                    "thresholdGear":            "7",

                    "sceneMode":                "0",

                    "forceIntoUnmannedGear":            "0",

                    "sleepSwitch":            "1"

        }

}
```

By setting the attribute value, you can issue a command through the topic below:

Topic: /RadarSP/DeviceID/sys/property/set

Subscribe to the topic below to acquire response result of setting:

Topic: /RadarSP/DeviceID/sys/property/set_reply

Format of setting data:

```
{
        "version":  "1.0",

        "method":  "set",

        "params":  {

                    "sceneMode":            "2" //Change the scene mode as 2 (bathroom)

        }

}
```

Upon setting success, scene mode and other attributes will be reported as updated; and if the setting fails, nothing will be reported. Response result data will always be reported whether it's a success or failure, format of which:

```
{
        "version":  "1.0",

        "opt":      "set",

        "res":      "success"    //or fail if it's a failure

}
```

Disabling or enabling report for data types of active report: set the corresponding value of the attribute as 1/0 to permit/forbid the report of the attribute. Attributes of active report include: movementSigns, keepAway, and environ.

```
{
```

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```
        "version":   "1.0",

        "method":   "control",

        "params":   {

                "movementSigns":        "0",

                "keepAway":             "0",

                "environ":   "0"

        }

    }
```

Format of response result data:

```
    {

        "version":   "1.0",

        "opt":        "control",

        "res":        "success" //either fail or success

    }
```

Qos quality of service (settable)

Topic setting of Qos is the same as the attributes:

Topic: /RadarSP/DeviceID/sys/property/set

The default value of Qos is Qos1. The value 0/1/2 indicates Qos0/Qos1/Qos2 respectively.

To set the function of Qos:

```
    {

        "version":   "1.0",

        "method":   "control_qos",

        "params":   {

                "Qos_online":                   "0",

                "Qos_version":                  "0",

                "Qos_passive":                  "0",

                "Qos_set_reply":         "0",

                "Qos_movementSigns":            "0",

                "Qos_keepAway":                 "0",

                "Qos_environ":                      "0",

                "Qos_breathRate":        "0",
```

```
                "Qos_weakSignal":        "0",

                "Qos_getIntoBed":        "0",

                "Qos_sleepAssessment": "0",

                "Qos_AwakeDuration":  "0",

                "Qos_LightSleepDuration":          "0",

                "Qos_DeepSleepDuration":           "0",

                "Qos_sleepScore":        "0"

        }

    }
```

Format of response result data:

```
    {

        "version":    "1.0",

        "opt":        "control_qos",

        "res":        "success" //either fail or success

    }
```

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