# WMP Protocol Specification

## Intesis Software S.L.U.

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## Welcome

New WMP protocol will allow third party applications to get in touch with Intesis wireless devices through an IP connection using an ASCII protocol.

Among others, this protocol will allow control and monitoring of:

- On/Off

- Mode

- Set Point Temperature

- Room Temperature

- Fan Speed

- Vane Position.

## About this document

This document contains the basis of the WMP protocol for IntesisBox devices and assumes that the reader has deep knowledge on IP, ASCII, wireless and programming concepts.

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# 1   Description

IntesisBox WMP devices stablish a TCP connection (**Port 3310**) between the device itself and the BMS, smart hub, home control or any other controller (from now on client) with IP connection enabled. Communication is done through ASCII telegrams.

The IntesisBox device works as a server. That means that it just waits for the client to ask for specific data and it serves this data.

IntesisBox devices allow up to two simultaneous TCP connections using the WMP protocol.
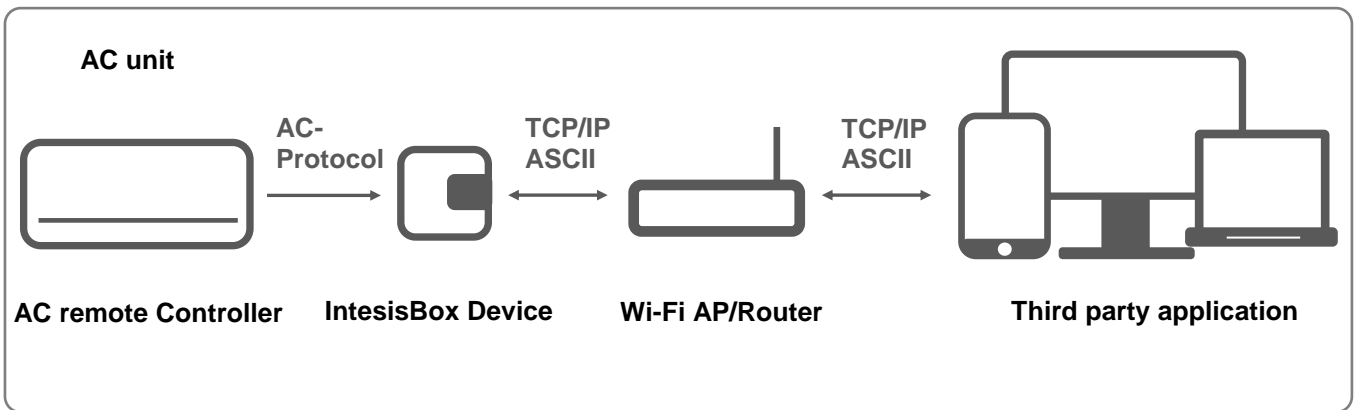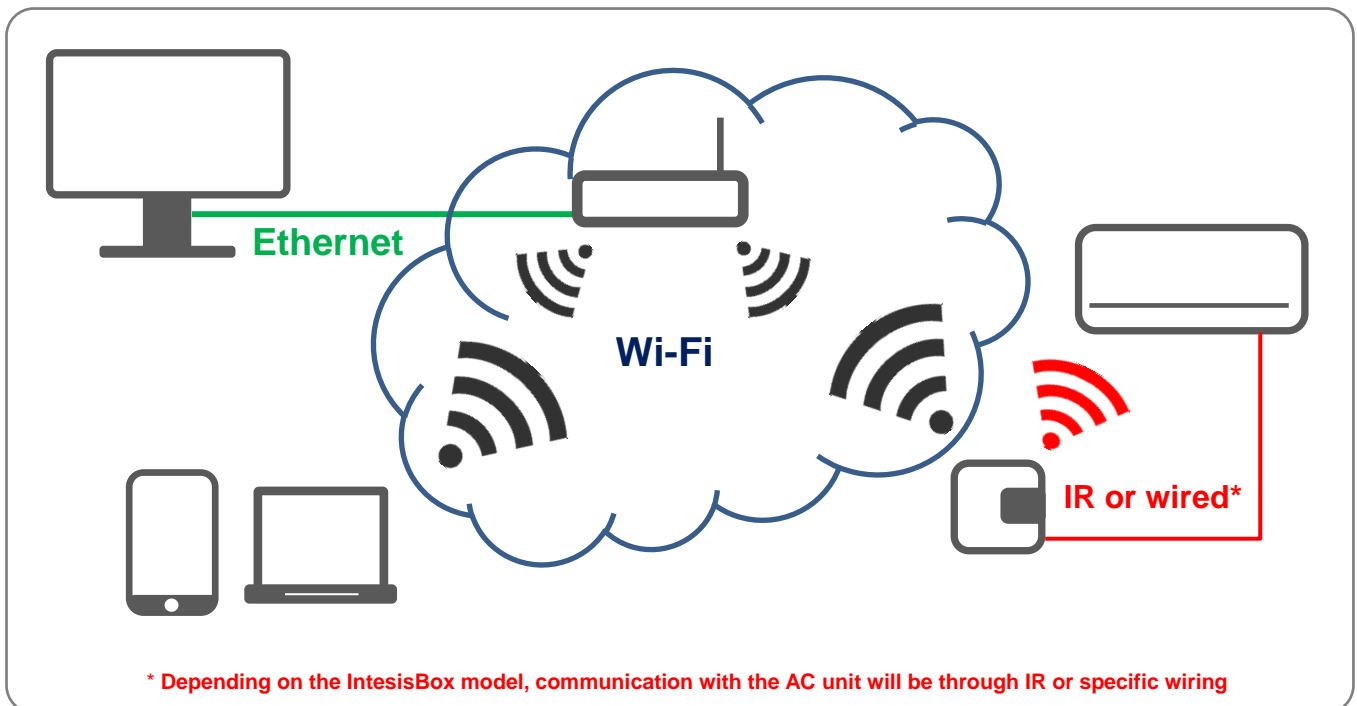


**Figure 1-1** System figure

# 2   Physical connection



**\* Depending on the IntesisBox model, communication with the AC unit will be through IR or specific wiring**

**Figure 2-1** Device description

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# 3 ASCII messages

Communication between the IntesisBox device and the client (third party control) is done though ASCII messages.

These messages are composed by a single line with '**\r'**, '**\n'** or '**\r\n'** at the end of each line. Capital and non-capital letters are accepted, making no distinction between them.

Each message comes with an example of use.

> **>** character indicates that the message in sent from the client (third party control).

> **<** character indicates that the message is sent from the server (IntesisBox).

Notice that these characters are only shown for a better understanding of the examples and communication procedure, but those are never sent between the IntesisBox and the third party control.

Next, you can find all different types of messages available.

## 3.1 ID

This command is used to obtain an identification from the IntesisBox device and is sent by the client.

**Command sent by the client:**

ID

**Answer from the IntesisBox:**

ID:Model,MAC,IP,Protocol,Version,RSSI

Where

- **Model** corresponds to the IntesisBox device model reference
- **MAC** corresponds to the 6 bytes of the MAC address
- **IP** corresponds to the IP address of the IntesisBox
- **Protocol** corresponds to the external protocol supported
- **Version** corresponds to the firmware version running in the device
- **RSSI** corresponds to the Received Signal Strength Indication for the Wi-Fi connection

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**Example:**

> > ID
>
> < ID:IS-IR-WMP-1,001DC9A2C911,192.168.100.246,ASCII,v0.0.1,-44

## 3.2 INFO

This command is used to obtain information from the IntesisBox device and is sent by the client.

This is not required for communication, but for troubleshooting or when contacting the support department.

**Command sent by the client:**

> INFO

**Answer from the IntesisBox:**

> > INFO
>
> < INFO:RUNVERSION,
>
> < INFO:CFGVERSION,
>
> < INFO:HASH,

Where

- **RUNVERSION** corresponds to the Runtime firmware version
- **CFGVERSION** corresponds to the Configuration firmware version
- **HASH** corresponds to internal information of the device

**Example:**

> > INFO
>
> < INFO:RUNVERSION,1.0.1
>
> < INFO:CFGVERSION,1.0.1
>
> < INFO:HASH,2000:0106:001F:0104:F4DE

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## 3.3 SET

This command is used to control the AC unit thought the IntesisBox device and is sent by the client.

**Command sent by the client:**

> SET,acNum:function,value

> Where
> - **acNum** is the number of the AC unit to control.[1]
>
> - **function** is the name of the function we want to modify. It has to be one of the following:
>
>   - ONOFF: Turns the AC unit On or Off
>   - MODE: Sets the mode (heat, cool, fan, dry or auto)[2]
>   - SETPTEMP: Sets the set point temperature [3]
>   - FANSP: Sets the fan speed [2]
>   - VANEUD: Sets the Up/Down vane position [2]
>   - VANELR: Sets the Left/Right vane position [2]
>
> - **value** is the value that you want to apply to each function (check section 4 for detailed values).

**Answer from the IntesisBox (only if change is applied):**

> < CHN,acNum:function,value

> Where
> - **CHN** corresponds to the change message identifier
> - **acNum** corresponds to the AC unit we are controlling
> - **function** corresponds to the function controlled
> - **value** corresponds to the value applied (check section 4 for detailed values)

**Example:**

```
< SET,1:ONOFF,ON
< ACK
< CHN,1:ONOFF,ON
```

**NOTE:** The "<CHN, 1:ONOFF,ON" message will only appear if the status really changes.

---

[1] Currently only 1 is enabled.

[2] Availability for each mode will depend on your AC unit. Please check your AC user manual for more information.

[3] Valid temperature values may depend on your AC unit. Please check your AC user manual for more information.

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## 3.4 CHN

This command is used to get notifications of changes in the current status of a specific function of the IntesisBox device. This message is sent spontaneously by the IntesisBox itself.

**Message sent from the IntesisBox (only if change is applied)**:

< CHN,acNum:function,value

Where

- **acNum** corresponds to the AC unit we are controlling
- **function** corresponds to the function monitored. It has to be one of the following:

  o ONOFF: Shows the AC unit On or Off

  o MODE: Shows the mode (heat, cool, fan, dry or auto)[4]

  o SETPTEMP: Shows the set point temperature

  o FANSP: Shows the fan speed [4]

  o VANEUD: Shows the Up/Down vane position [4]

  o VANELR: Shows the Left/Right vane position [4]

  o AMBTMP: Shows the ambient temperature

  o ERRSTATUS: Shows if any error occurs. Responds is "OK" if there is not error, "ERR" if any error ocurrs. (Not available for IS-IR-WMP-1)

  o ERRCODE: Shows the error code. (Not available for IS-IR-WMP-1)

- **value** corresponds to the current value (check section 4 for detailed values)

**Example:**

< CHN,1:AMBTEMP,275

---

[4] Availability for each mode, fan speed or vane positions will depend on your AC unit. Please check your AC user manual for more information.

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## 3.5 GET

This command is used to get the current status of a specific function. It is sent by the client.

**Command sent by the client:**

GET,acNum:function

**Answer from the IntesisBox:**

> GET,acNum:function
< CHN,acNum:function,value

Where

- **acNum** corresponds to the AC unit we are controlling
- **function** corresponds to the function monitored. It has to be one of the following:

    o ONOFF: Shows the AC unit On or Off

    o MODE: Shows the mode (heat, cool, fan, dry or auto)5

    o SETPTEMP: Shows the set point temperature

    o FANSP: Shows the fan speed 7

    o VANEUD: Shows the Up/Down vane position 7

    o VANELR: Shows the Left/Right vane position 7

    o AMBTMP: Shows the ambient temperature

    o ERRSTATUS: Shows if any error occurs. Responds is "OK" if there is not error, "ERR" if any error ocurrs. (Not available for IS-IR-WMP-1)

    o ERRCODE: Shows the error code. (Not available for IS-IR-WMP-1)

    o * : Show all previous function status

- **value** corresponds to the current function value (check section 4 for detailed values)

**Example:**

> GET,1:MODE
< CHN,1:MODE,AUTO

---

5 Availability for each mode will depend on your AC unit. Please check your AC user manual for more information.

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## 3.6 LOGIN

This command is used to start secure communication between the IntesisBox interface and the client and it is sent by the client.

Notice that secure communication is **only required** if an extra security encryption mode is required apart from the Wi-Fi standard encryption used by the Wi-Fi Access Point or Router.

**Command sent by the client:**

LOGIN:password

> **Where**

- **password** stands for a 128 bits number expressed in hex mode.

**Answer from the IntesisBox:**

> LOGIN:3B673FB91600D7E42FB5A59BA3DDB5F8
< M0:858AB0E03E80BC069E292A78047575FF
> M1:56435713ECA6546A7E250504BEE059D5
< OK

For more information about encryption and security levels, please contact us through support@intesisbox.com

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## 3.7 LOGOUT

This command is used to close the secure session opened between the IntesisBox device and the client. It is sent by the client.

**Command sent by the client:**

```
LOGOUT
```

**Answer from the IntesisBox:**

If there was an opened session, device will ask with an OK. Otherwise it will answer with an ERR.

```
> LOGOUT
< OK
```

If the logout has been successful, communications will be again on a non-secure mode.

**Example:**

```
> LOGOUT
< OK
```

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## 3.8 CFG

This command is used to get or modify configuration parameters. It is sent by the client.

**Command sent to modify a configuration parameter is:**

CFG:configItem,value

Where

- **configItem** corresponds to the configuration item.

- **value** corresponds to the current value on the configuration item.

**Command sent by the client to get a configuration parameter:**

CFG:configItem

| Item | Value | Description |
|---|---|---|
| RDOMAIN [6] | FCC | FCC Regulation Domain. Channels 1 to 11. |
| | ETSI | ETSI v1.8.1 Regulation Domain. Channels 1 to 13. |
| | JAPAN | Japan Regulation Domain. Channels 1 to 14. |
| | Default | FCC Regulation domain. |
| PIN | Any 8 decimal digit combination | PIN to be used when starting the session. |
| | * | Special value to stablish the default PIN. |
| SECURITYLEVEL | NONE | Security not enabled. |
| | CFGONLY | Security enabled only for configuration messages. |
| | ALL | Security enabled for all messages |
| DATETIME | DD/MM/YYYY HH:NN:SS | Current date and time, without time zone. |

---

[6] IntesisBox device needs to be reset in order to apply this setting. Simply unplug and plug the device so the new settings apply.

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**Examples:**

Setting a new PIN

```
> CFG:PIN,12345678
< OK
```

Setting the default PIN

```
> CFG:PIN,*
< ACK
```

Getting the current Regulation Domain

```
> CFG:RDOMAIN
< CFG:RDOMAIN,ETSI
```

Getting the current time stamp

```
> CFG:DATETIME
< CFG:DATETIME,17/07/2015 09:38:44
```

**NOTE:** Default PIN is provided along with the device and is individual for each device.

**IMPORTANT:** Changing the security level implies having a secure communication stablished by the login procedure (see section 3.6).

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## 3.9 LIMITS

This command is used to get or modify the data point ranges. It is sent by the client.

**Command for modifying the ranges:**

```
LIMITS:function,range
```

**Command for getting the ranges:**

```
LIMITS:function
```

Where
- **function** corresponds to the function to limit
- **range** corresponds to limit value for each function

| Function | Type | Example | Description |
|----------|------|---------|-------------|
| ONOFF | ENUM | [OFF,ON] | ON and OFF values |
| MODE | ENUM | [AUTO,HEAT,COOL] | AUTO,HEAT and COOL values |
| FANSP | ENUM | [AUTO,1,2] | AUTO,1 and 2 values |
| VANEUD | ENUM | [AUTO,SWING] | AUTO and SWING values |
| VANELR | ENUM | [AUTO,SWING] | AUTO and SWING values |
| SETPTEMP | SCALAR | [160,280] | Inferior limit (16ºC) and superior limit (28ºC), both included |

**Answer from the IntesisBox:**

```
LIMITS:function,range
```

**Examples:**

Set point limitation between 18ºC and 28ºC

```
> LIMITS:SETPTEMP,[180,280]
< ACK
```

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Horizontal vanes can only be set from 1 to 5 positions, with Swing and Auto

> LIMITS:VANELR,[AUTO,1,2,3,4,5,SWING]

< ACK

Find out the horizontal vanes limits

> LIMITS:VANELR

< LIMITS:VANELR,[AUTO,1,2,3,4,5,SWING]

## 3.10   DISCOVER

This command is used to discover IntesisBox gateways in the same network. Notice that this command uses UDP, so UPD ports should be enabled. The specific port where the IntesisBox device is listening to is the 3310, so messages need to be sent into that port.
The discover message is sent by the client.

**Command sent is:**

DISCOVER

**Answer is:**

> DISCOVER

< Model,MAC,IP,Protocol,Version,RSSI

Where

- **Model** corresponds to the IntesisBox device model reference
- **MAC** corresponds to the 6 bytes of the MAC address
- **IP** corresponds to the IP address of the IntesisBox
- **Protocol** corresponds to the external protocol supported
- **Version** corresponds to the firmware version running in the device
- **RSSI** corresponds to the Received Signal Strength Indication for the Wi-Fi connection

**Example:**

> DISCOVER

< IS-IR-WMP-1,001DC9A2C911,192.168.100.246,ASCII,v0.0.1,-44

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# 4  Functions and Values

| Function | Value | Description |
|---|---|---|
| ONOFF | ON | AC unit ON |
| | OFF | AC unit OFF |
| MODE | AUTO | AUTO mode |
| | HEAT | HEAT mode |
| | DRY | DRY mode |
| | FAN | FAN mode |
| | COOL | COOL mode |
| SETPTEMP | See note [7] | Set Point Temperature (Temp values are multiplied by 10) |
| FANSP | AUTO | Fan Speed AUTO |
| | 1 | Fan Speed 1 |
| | 2 | Fan Speed 2 |
| | 3 | Fan Speed 3 |
| | 4 | Fan Speed 4 |
| | 5 | Fan Speed 5 |
| | 6 | Fan Speed 6 |
| | 7 | Fan Speed 7 |
| | 8 | Fan Speed 8 |
| | 9 | Fan Speed 9 |
| VANEUD | AUTO | Vertical Vane Position AUTO |
| | 1 | Vertical Vane Position 1 |
| | 2 | Vertical Vane Position 2 |
| | 3 | Vertical Vane Position 3 |
| | 4 | Vertical Vane Position 4 |
| | 5 | Vertical Vane Position 5 |
| | 6 | Vertical Vane Position 6 |
| | 7 | Vertical Vane Position 7 |
| | 8 | Vertical Vane Position 8 |
| | 9 | Vertical Vane Position 9 |
| | SWING | Vertical Vane Position Swing |
| VANELR | AUTO | Horizontal Vane Position Auto |
| | 1 | Horizontal Vane Position 1 |
| | 2 | Horizontal Vane Position 2 |
| | 3 | Horizontal Vane Position 3 |
| | 4 | Horizontal Vane Position 4 |
| | 5 | Horizontal Vane Position 5 |
| | 6 | Horizontal Vane Position 6 |
| | 7 | Horizontal Vane Position 7 |
| | 8 | Horizontal Vane Position 8 |
| | 9 | Horizontal Vane Position 9 |
| | SWING | Horizontal Vane Position Swing |
| AMBTEMP | See note [8] | Ambient Temperature (Temp values are multiplied by 10) |

[7] Valid temperature values may depend on your AC unit. Please check your AC user manual for more information.

[8] This is a read only register.

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# 5 FAQS and Troubleshooting

## 5.1 What if a non-existing command is sent to the IntesisBox device?

If a non existing command is sent or if there is a mistake on the syntaxis, the IntesisBox will discard this command and will no notify this error.

## 5.2 What if a non valid value is sent to the IntesisBox device?

If a non valid value is sent, the IntesisBox will discard this command and will report an error message.

Example:

```
> SET,1:ONOFF,Hello
< ERR
```

## 5.3 Which is the meaning of the RSSI values?

The RSSI value will provide information about the signal level at the IntesisBox device location. If RSSI is lower thatn "Good", we would recommend you to change the IntesisBox location or to improve the Wi-Fi signal with a Wi-Fi repeater.

| RSSI Value | Meaning |
|---|---|
| <-96 | Bad |
| -86 to -95 | Weak |
| -81 to -85 | Good |
| -71 to -81 | Very Good |
| > -70 | Excelent |

## 5.4 What if a write request is sent to a read only function?

If a write request is sent to a read only function the IntesisBox will answer as if it was a non valid value sent.

Example:

```
> SET,1:AMBTEMP,210
< ERR
```

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## 5.5 Is it possible to set multiple commands at the same time?

No, currently you need to set each command individually. That means that if you want to set the AC unit ON at 21ºC you need to send one command to turn the AC unit ON and another one to set the Set Point temperature at 21ºC.

## 5.6 Is it possible to disable the spontaneous messages sent from the IntesisBox?

No, currently the spontaneous messages generated by the IntesisBox can't be disabled. That means that all changes on the AC unit will always be reported from the IntesisBox to the client.

## 5.7 Do I need to set the limits everytime the device losts connection or power?

No, limit values are stored in a non volatile memory, so no need of setting them again after a power failure is required.

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