UG-230-C User Manual

Content

1 Applicable scene

The crane system is generally used in large crane warehouses to determine the location of the materials to be lifted by distance measurement, which is convenient for the management of warehouse materials.

In the following descripiton,the UWB gateway(UG-230-C) is configured in anchor mode and the UWB Tag(UT-207-HO) is configured in tag mode.The gateway is installed on the line crane through mounting ears and configured to work mode through the RS485 port.

1.1 X、Y axis ranging

The system structure is shown in Figure 1. The black vertical line is the big traffic track, the blue horizontal line is the big traffic, the white box is the small traffic, and the red arrow is the direction coordinate system. When driving, the big crane moves along the Y-axis direction on the big crane track, while the small crane moves along the X-axis direction on the big crane. Take carriage 1 as an example. Tag1 is installed on small carriage 1, Anchor is installed on big carriage 1, and Tag4 (fixed equipment) is installed at the end of the big carriage track. During driving operation, X1 is obtained through mutual distance measurement between Anchor1 and Tag4, and Y1 is obtained through mutual distance measurement between Tag1 and Anchor·, then the coordinates of small driving vehicle 1 (X1, Y1). By analogy, the coordinates of car 2 (X2, Y2), and the coordinates of car 3 (X3, Y3). In general, Anchor transmits the coordinates to PLC (provided by the integrator) through the 485 bus, and the PLC transmits the data to the management platform.
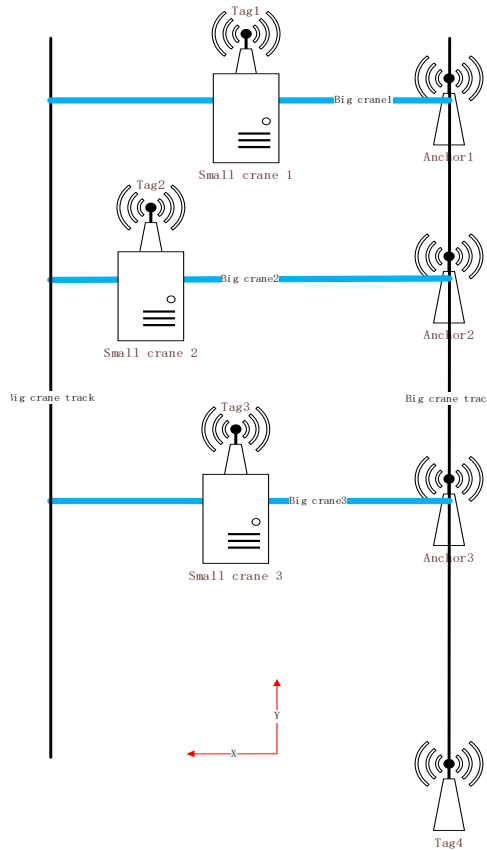

Figure 1

1.2 X、Y、Z axis ranging

The system structure is shown in Figure 2. The black vertical line is the large traffic track, the blue horizontal line is the large traffic, the white box is the small traffic, the red arrow is the direction coordinate system, and the purple pattern is the hook. When driving, the big crane moves along the Y-axis direction on the big crane track, and the small crane moves along the X-axis direction on the big crane. At the same time, the hook moves along the Z-axis defensive line (that is, moves up and down). Take carriage 1 as an example, install Tag1 on small carriage 1, Anchor1 on the big carriage, install Tag4 (fixed equipment) at the end of the big carriage track, and install Tag5 on the hook 1. During driving operation, X1 is obtained through mutual distance measurement between Anchor1 and Tag4, Y1 is obtained through mutual distance measurement between Tag1 and Anchor·, and Z1 is obtained through mutual distance measurement between Tag5 and Tag, then the coordinates of hook 1 (X1, Y1, Z1). By analogy, the coordinates of hook 2 (X2, Y2, Z2), and the coordinates of hook 3 (X3, Y3, Z3). In general, Anchor transmits the coordinates to PLC (provided by the integrator) through the 485 bus, and the PLC transmits the data to the management platform.
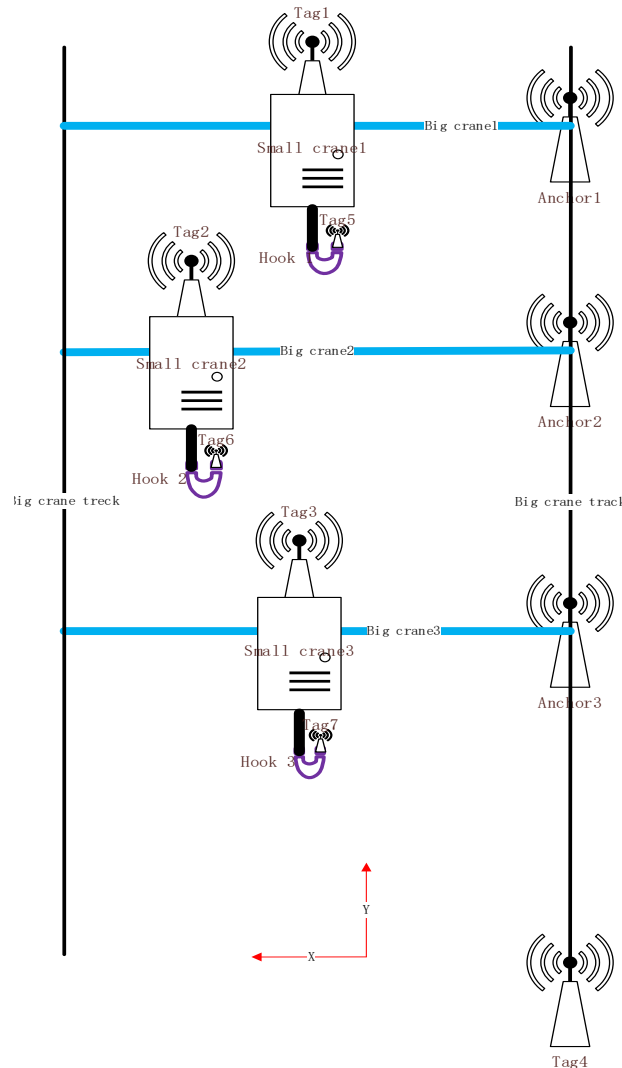

Figure 2

1.3 Z axis ranging

The system structure is shown in Figure 3. The white box is a small driving car and the purple pattern is a hook. When driving, the hook moves along the Z-axis direction (ie: moves up and down). Take drive 1 as an example, install Tag1 on trolley 1 and Tag4 on hook 1. During driving operation, Z1 is obtained by mutual distance measurement between Tag1 and Tag4, then the coordinate of hook 1 (Z1). By analogy, the coordinates of hook 2 (Z2), the coordinates of hook 3 (Z3). In general, Tag1 (Tag on the trolley) transmits the coordinates to the PLC (provided by the integrator) through the 485 bus, and the PLC then transmits the data to the management platform.
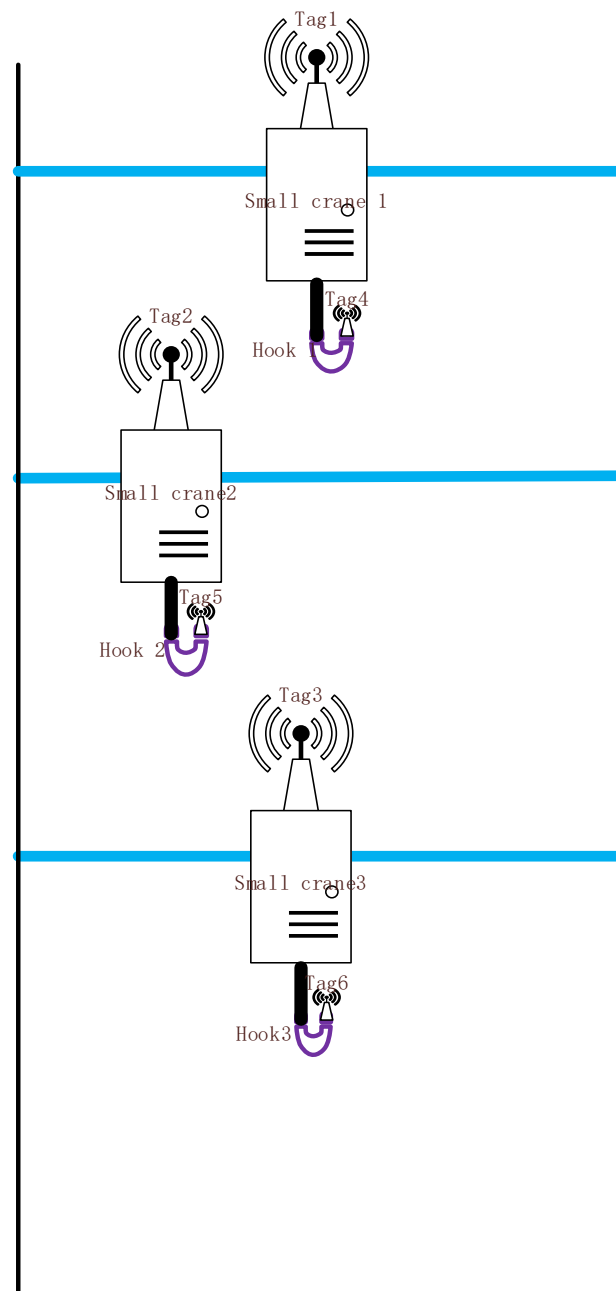
Figure 3

2 Equipment instructions

2.1 X、Y axis ranging

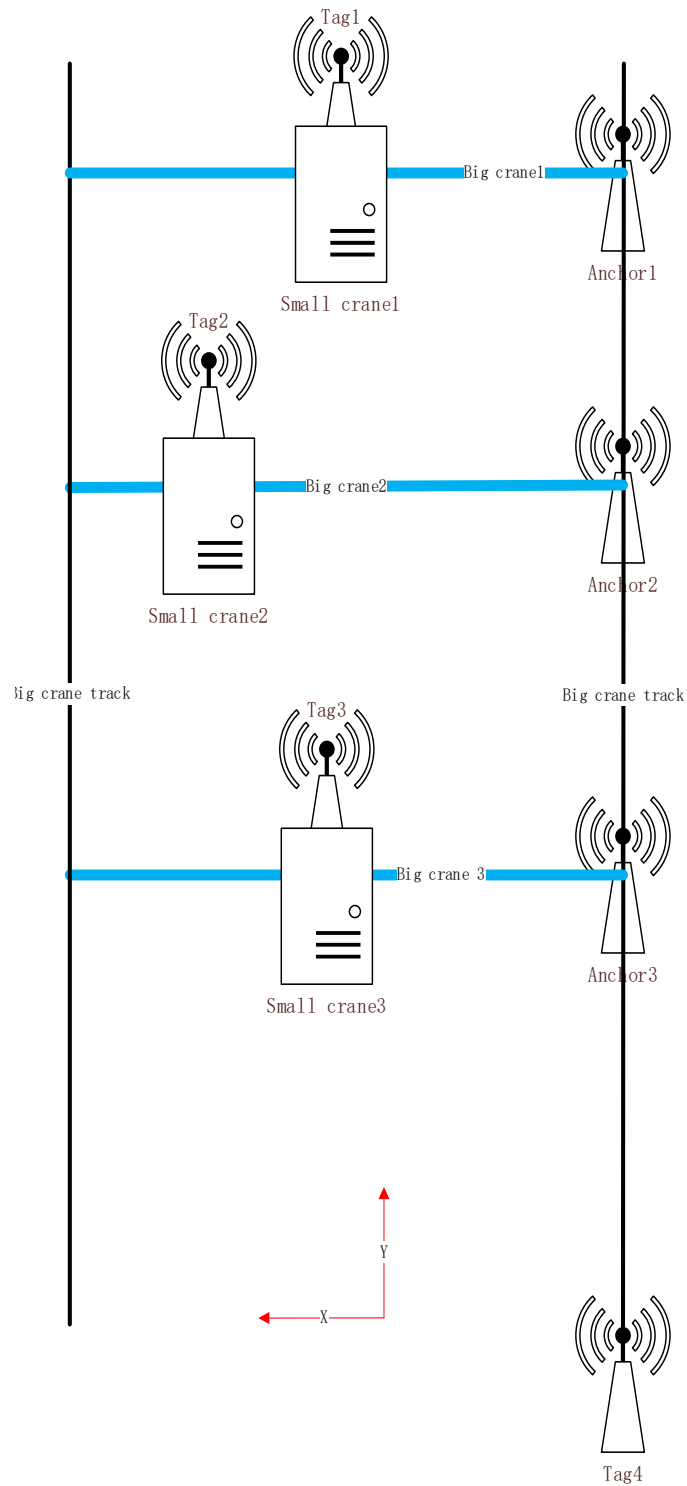### 2.1.1 Equipment configuration

Figure 4

As shown in the figure above, Tag1-Tag4 and Anchor1-Anchor3 are both UG-230-C and have the same firmware. When using, configure the role through the CLI command line, where:

Tag1-Tag4 configuration:

Set to tag mode: Set operator_mode 1

Anchor1-Anchor3 configuration

Set as the anchor mode: Set operator_mode 2

Set X-axis Tag ID: Set X_ID xxxx (xxxx is the Tag ID on the corresponding trolley)

Set Y-axis Tag ID: Set Y_ID xxxx (xxxx is Tag 4 ID)

Take small crane 1 as an example:

Tag1 and Tag4 configuration:

Set operator_mode 1

Anchor1 configuration

Set operator_mode 2

Set X_ID xxxx （xxxx is Tag1 ID）

Set Y_ID xxxx （xxxx is Tag4 ID）

2.1.2 Equipment output

Anchor terminal output ranging information: X: 100cm, Y: 200cm

Format description: X:AAAAcm, Y:BBBBcm

X: Ranging coordinates

AAAA: X-axis ranging distance

Y: Ranging coordinates

BBBB：Y-axis ranging distance

cm: unit

Note: The comma "," is followed by a space "" character

2.2 X, Y, Z axis distance measurement
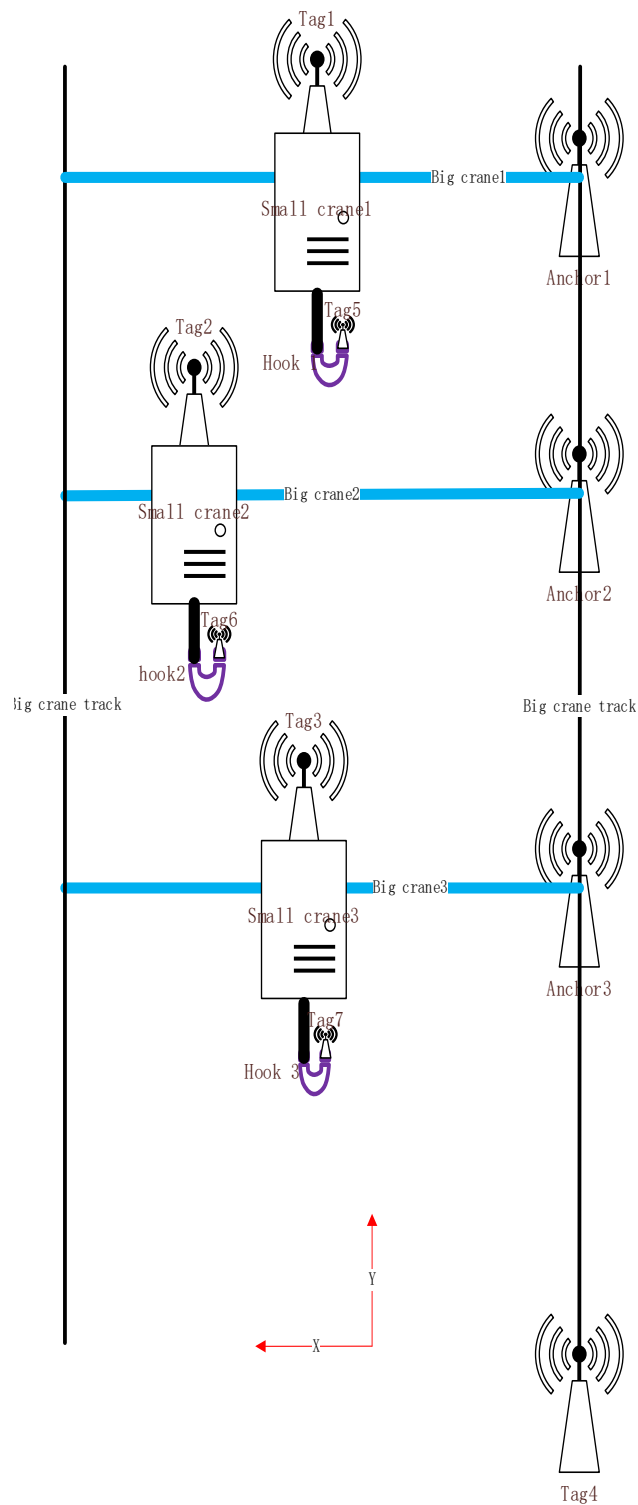
2.2.1 Equipment configuration

Figure 5

As shown in the figure above, Tag1-Tag4 and Anchor1-Anchor3 are both UG-230-C and have the same firmware. When using, configure the role through the CLI command line; Tag5-Tag7 is

UT-207H, which is configured through the CLI command line. among them:

Tag1-Tag3 configuration

Set to tag mode: Set operator_mode 1

Set Z-axis Tag ID: Set Z_ID xxxx (xxxx is the Tag ID on the hook)

Tag4 configuration

Set to tag mode: Set operator_mode 1

Tag5-Tag7 configuration

Set the ranging Tag ID: AnchorListSet 0 xxxx (xxxx is the tag ID on the trolley corresponding to the hook)

Anchor1-Anchor3 configuration

Set to anchor mode: Set operator_mode 2

Set X-axis Tag ID: Set X_ID xxxx (xxxx is the Tag ID on the corresponding trolley)

Set Y-axis Tag ID: Set Y_ID xxxx (xxxx is Tag4 ID)

Set Z-axis Tag ID: Set Z_ID xxxx (xxxx is the Tag ID on the trolley corresponding to the hook)

Take small crane 1 as an example:

Tag1 configuration:

Set operator_mode 1

Set Z_ID xxxx （xxxx is Tag 5 ID）

Tag5 configuration:

AnchorListSet 0 xxxx （xxxx is Tag1 ID）

Tag4 configuration:

Set operator_mode 1

Anchor1 configuration:

Set operator_mode 2

Set X_ID xxxx （xxxx is Tag1 ID）

Set Y_ID xxxx （xxxx is Tag4 ID）

Set Z_ID xxxx （xxxx is Tag1 ID）

2.2.2 Equipment output

Anchor terminal outputs ranging information: X:100cm, Y:200cm, Z:80cm, Vol:80%

Format description: X:AAAAcm, Y:BBBBcm, Z:CCcm, Vol:DD%

X: Ranging coordinates

AAAA: X-axis ranging distance

Y: Ranging coordinates

BBBB: Y-axis ranging distance

Z: Ranging coordinates

CC: Z-axis ranging distance

Vol: hook small tag power

Cm: unit

%: Percent sign

Note: The comma "," is followed by a space "" character

2.3 Z axis ranging distance
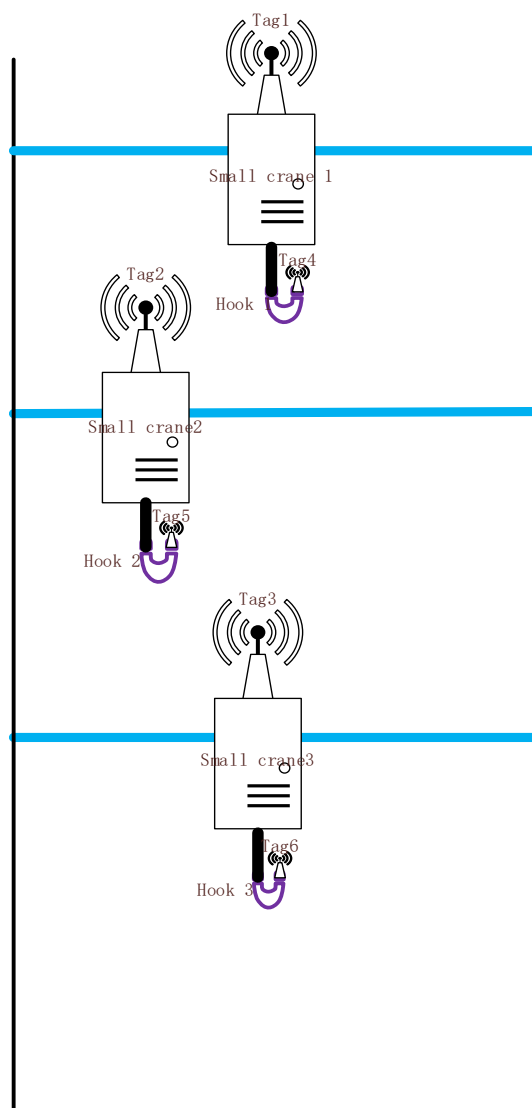
2.3.1 Equipment configuration

Figure 6

As shown in the figure above, Tag1-Tag3 is UG-230-C, when used, it is configured through CLI command line; Tag4-Tag6 is UT-207H, which is configured through CLI command line. among them:

Tag1-Tag3 configuration

Configure to tag mode ： Set operator_mode 1

Configure Z-axis Tag ID: Set Z_ID xxxx (xxxx is the Tag ID on the corresponding hook)

Configure Z-axis ranging output: Set Z_PRINT 1

Tag4-Tag6 configuration

Configure the ranging Tag ID: AnchorListSet 0 xxxx (xxxx is the Tag ID on the corresponding trolley)

Take small crane 1 as an example

Tag1 configuration:

Set operator_mode 1

Set Z_ID xxxx （xxxx is Tag4 ID）

Set Z_PRINT 1

Tag4 configuration:

AnchorListSet 0 xxxx （xxxx is Tag1 ID）

2.3.2 Equipment output

The tag terminal on the small driving car outputs ranging information: Z: 100cm, Vol: 80%

Format introduction: Z: CCcm, Vol:DD%

Z： Ranging coordinates

CC: Z-axis ranging distance

Vol: hook small tag power

cm： unit

%: Percent sign

Note: The comma "," is followed by a space "" character

3 Precautions

1、When UG-230-C is installed on site, it is necessary to keep the equipment on the same horizontal line, and the line of sight between the equipment must be without any obstruction. They will be installed at fixed locations in the warehouse.

2、For driving close to the wall, the UG-230-C at the corner can be installed away from the wall, and the distance can be measured diagonally.

3、In X, Y and X, Y, and Z scenarios, you must turn off debugging information printing and Z-axis output printing, that is, ensure that the command SHJS_DEBUG is "0" and Z_PRINT is "0". UG-230-C sends a message to the receiver only when the associated receiver is turned on; UG-230-C will not send messages when the associated receiver is turned off.

4、In the Z-axis mode, the minimum probability output value is "0".

5、UG-230-C antennas need to be installed by professionals in specific application scenario.

FCC Caution:

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.4

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IMPORTANT NOTE:

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to

radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

Note: The operators should cease operation when the harmful Interference occurs to other users.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment .This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body.

This equipment only be operated indoors. Operation outdoors is in violation of 47 U.S.C. 301 and could subject the operator to serious legal penalties.

The UG-230-C meets general requirements specified in FCC §15.517(a)

(1) The UG-230-C is indoor use only, it is powered by the DC port from the adapter which connects

indirectly to the AC power line. Please refer to details in the user manual.

(2) The UG-230-C is not outdoor use, it can only be used in large crane warehouses.

 Please refer to the user manual.

(3) The UG-230-C is already equipped with two antennas, which is not outdoor mounted antenna.

(4) The UG-230-C is not a field disturbance sensor.

(5) The UG-230-C sends a message to the receiver only when the associated receiver is turned on, The UG-230-C will not send messages when the associated receiver is turned off.

This device may not be employed for the operation onboard an aircraft, a ship or a satellite is prohibited.

To avoid any installation mistake or any harm to user since lack of technical knowledge, it has to be installed by professional person.

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