

SK202

GigE contactless connectivity

1. Overview

SK202 is a pair of RF modules with H&V horn antenna and G-PHY to achieve 1Gbps data rate Ethernet to 60GHz millimeter Wave RF signal conversion. The input of SK202 is an RJ45 Gigabit Ethernet Connector supporting 10/100/1000Base-T. SK202 modules are based on leading edge ST60A2 mmW RF transceiver and the output consist in an RF transmission of the corresponding SGMII signal over several centimeter.

2. Features

- 60GHz V-Band transceiver with ST60A2
- Gigabit Ethernet short range contactless connectivity, preferred 3cm
- Full duplex, horizontal transmission, Controlled Auto negotiation
- RJ45 MDI interface Ethernet input
- Used in pairs

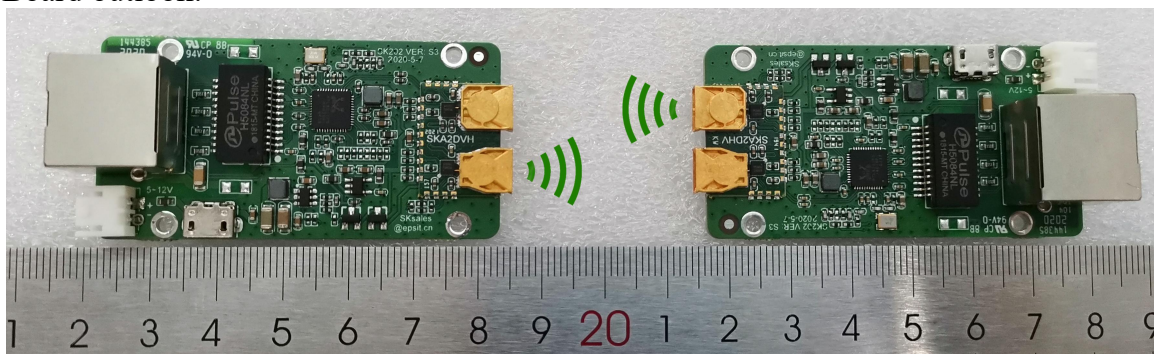
3. Application

- LED panels for modular display walls
- Video surveillance camera and robotics
- Contactless Ethernet applications

4. Block diagram

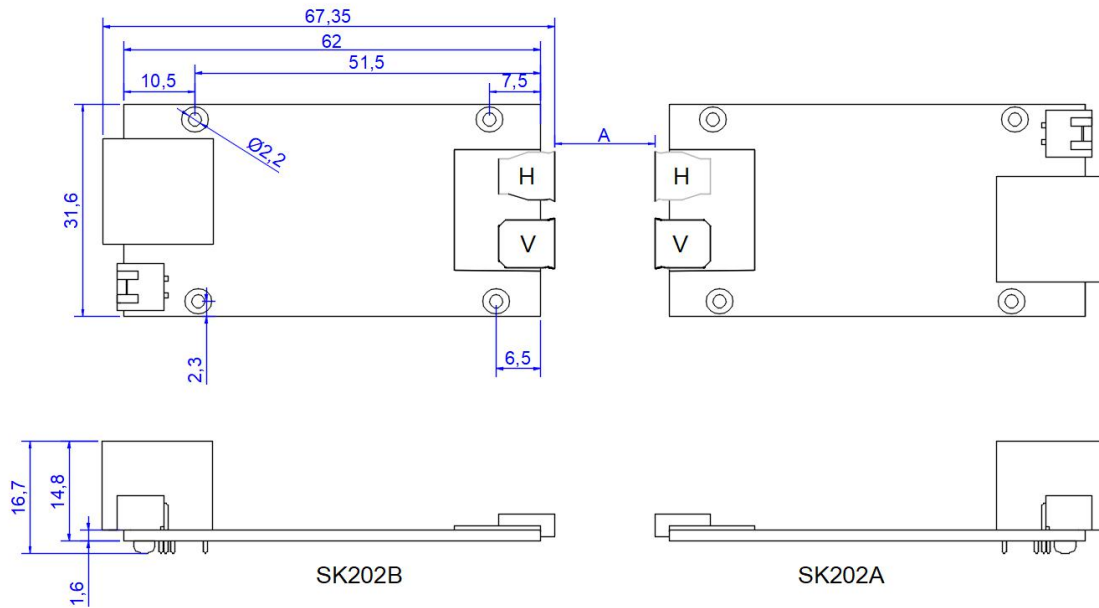


Board outlook:



5. Assembly

PCB installation:



Unit: mm

Note:

- (1) If a metal cover is used, a window should be added for microwave signal. Plastic or other microwave insensitive materials can be used to fill the window.
- (2) The DC socket and the USB MICRO-B socket are connected together. The USB MICRO-B socket is only used to supply the power. Please do not connect them both at the same time.
- (3) It is recommended that the installation distance ('A') is at least 1 cm, the typical value is 2 cm, and the maximum is 5 cm (-40~50°C, High temperature will affect the max working distance).

6. Characteristics

Recommended operating conditions and electrical characteristics

| Symbol | Description | Minimum | Typical | Maximum | Unit |
|------------------|---|---------|---------|---------|------|
| V _{IN} | Power supply | 4.4 | 12 | 16 | V |
| C _{IN} | Input current(*) | - | 50 | 80 | mA |
| P | Total Power consumption | - | 0.6 | - | W |
| T _A | Ambient Operating Temperature, for SK202A/B | 0 | - | 70 | °C |
| T _J | Maximum Junction Temperature | - | - | 125 | °C |
| T _{STG} | Storage Temperature | -40 | | 105 | °C |
| Fosc | Carrier Frequency | 60.3 | 60.4 | 60.5 | GHz |

* when power supply is 12V and Ethernet is active.

7. Auto-negotiation

The Ethernet PHY supports 1Gbps, 100Mbps and 10Mbps speeds. In order for two Ethernet modules to communicate correctly, care must be taken that the PHY on both modules negotiate the same speed. The auto-negotiation is always enabled on the Realtek PHY. It takes place independently between a module and the device connected on its RJ45 port. It is the responsibility of the application to ensure the auto-negotiation result is the same for both Ethernet modules.

For example, if one module is connected to a 100Mbps modem, the PC connected on the other module should be configured to guarantee the auto-negotiation result is also 100Mbps.

More details are available in the User Manual.

8. Order Information

| Part number | Description |
|-------------|--|
| SK202A | GigE contactless module with Realtek RTL8211FS, Port A |
| SK202B | GigE contactless module with Realtek RTL8211FS, Port B |

NOTE:

Port A: with vertical polarized horn antenna for transmitting and horizontal polarized horn antenna for receiving.

Port B: with horizontal polarized horn antenna for transmitting and vertical polarized horn antenna for receiving.

FCC Part 15:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generate, 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 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.

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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

RF exposure warning

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This product may not be collocated or operated in conjunction with any other antenna or transmitter

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be collocated or operating in conjunction with any other antenna or transmitter.

Revision History

| Date | Version | Changes |
|-------------|---------|--|
| FEB 25 2021 | 2.2 | DEL SK202AC/AI,SKA202BC/BI |
| NOV 25 2020 | 2.1 | Add FCC parts |
| OCT 28 2020 | 2.0 | Update electrical characteristics |
| NOV 11 2019 | 1.6 | First Draft, based on SK20x_SPEC 1.3 version |