

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

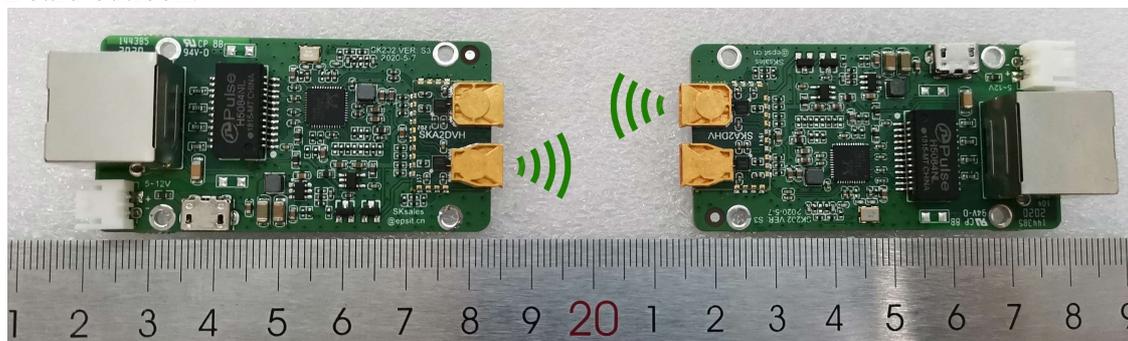
3. Application

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

4. Block diagram

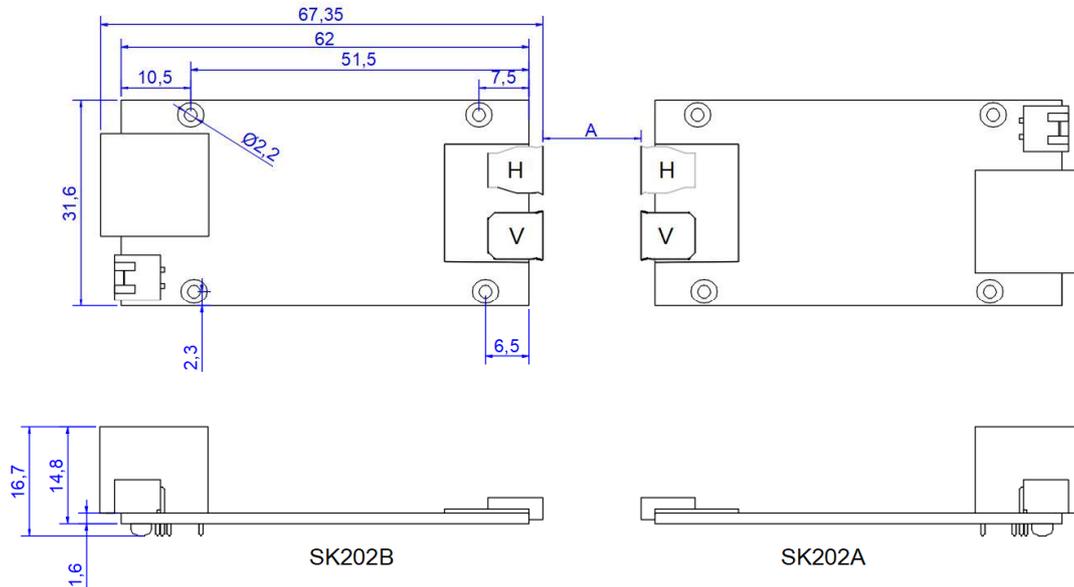


Board outlook:



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 SK202AC/BC	0	-	70	°C
T_A	Ambient Operating Temperature, for SK202AI/BI	-40	-	85	°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
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* 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; Original version
SK202B	GigE contactless module with Realtek RTL8211FS, Port B; Original version
SK202AC	GigE contactless module with Realtek RTL8211FS, Port A; Commercial version
SK202BC	GigE contactless module with Realtek RTL8211FS, Port B; Commercial version
SK202AI	GigE contactless module with Realtek RTL8211FSI, Port A; Industrial version
SK202BI	GigE contactless module with Realtek RTL8211FSI, Port B; Industrial version

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.

Revision History

Date	Version	Changes
OCT 28 2020	2.0	Update electrical characteristics
NOV 11 2019	1.6	First Draft, based on SK20x_SPEC_1.3 version