

AD9361x4 Circuit Board Specification Sheet

一、 Basic Indicator Requirements

1. Number of RF transmit/receive channels: 8 receive, 8 transmit;
2. AD9361 Quantity: 4 units;
3. Optical module requirements: fiber optic cable with a bandwidth of 10 Gbps or higher; 4 transmit/4 receive configuration;
4. FPGA requirement: Use an XC7Z100 FPGA;
5. Ethernet requirements: one Gigabit Ethernet connection;
6. Other external interfaces: one RS485 interface, one UART interface, and one FPGA debugging and download port;
7. RF receive chain gain: Use the original gain setting of the AD9361;
8. RF transmission chain gain: Utilizes the original transmission power of the AD9361;
9. RF reception chain characteristics: Consistent with the reception channel characteristics specified in the AD9361 official datasheet;
10. RF transmission chain characteristics: Consistent with the transmission channel characteristics specified in the AD9361 official datasheet;
11. RF channel isolation: >50 dB. Each channel is isolated from the others using an RF isolation wall cavity;
12. The board utilizes a composite manufacturing process featuring a surface layer of Rogers 4350B and an intermediate layer of FR4;
13. The RF signal input/output interface utilizes a microstrip line extending to the board edge, facilitating the SMA through-wall connection from the external structure to the PCB;
14. Power input: DC 12V $\pm$ 2V / 3A;
15. Baseband synchronization (Analog synchronization – this hardware version does not currently support this feature)
16. Software Driver Requirements:
 - (1) PS Network Port LWIP Routine
 - (2) UART Communication Routine
 - (3) SFP IBERT Eye Diagram Routine
 - (4) Eight-channel DDS phase modulation with initial value adjustment via the AD9361 transmission routine. Additionally, the local oscillator frequency, sampling rate, attenuation, bandwidth, and other parameters for four AD9361 devices can be independently configured over the serial port.
 - (5) The 8-channel reception is displayed via ILA, while DMA is used for

processing on the PS.

二、 External interface socket and dimensions

17. RF input/output: SMA-K. An SMA-KFD flanged socket is used to connect the cavity to the PCB via lap welding;
18. Optical port socket: SFP;
19. Ethernet socket: RJ45;
20. Power socket: Through-hole capacitor;
21. RS485, UART, FPGA debugging and download port socket: J30J-15.
22. External dimensions: Must feature a metal outer structure with overall dimensions <200×90×45 mm; sockets may be provided on three sides, but not on one side.

三、 environmental character istics

23. Temperature: Operating temperature: -40°C to +70°C; Storage temperature: -10°C to +50°C;
24. Relative humidity: Operating relative humidity: ≤80% RH (no condensation); Storage humidity: ≤85% RH (no condensation);
25. Waterproofing: None;
26. Vibration characteristics: Complies with the GJB 8481-2015 standard;
27. Electromagnetic compatibility requirements: Under operating conditions, the equipment's electromagnetic emissions and conducted emissions shall comply with the requirements specified in Group 1 of GB 4824-2013 "Industrial, Scientific and Medical (ISM) Radio Frequency Equipment – Interference Characteristics – Limits and Measurement Methods"; furthermore, the equipment's electromagnetic emissions and conducted emissions under these operating conditions shall not interfere with the normal operation of the product under test, nor shall the equipment be affected by the product under test or other surrounding equipment.