Datasheet for Infrared Transceiver

Functional Description
The Infrared Transceiver consists of pair of an encoder and a decoder for infrared remote control signals. It uses the Phillips RC6 IRDA protocol. The interface can be configured to operate on different protocol. User can also configure the number of command and address bits to be used for remote control applications.

Encoder (IR Transmitter):
The encoder accepts the address and command data and encodes them using RC6 protocol and output to the IR LED. One IR transmission bit stream of 21 bits consists of a ten bit device ID followed by a five bit address and a six bit command.

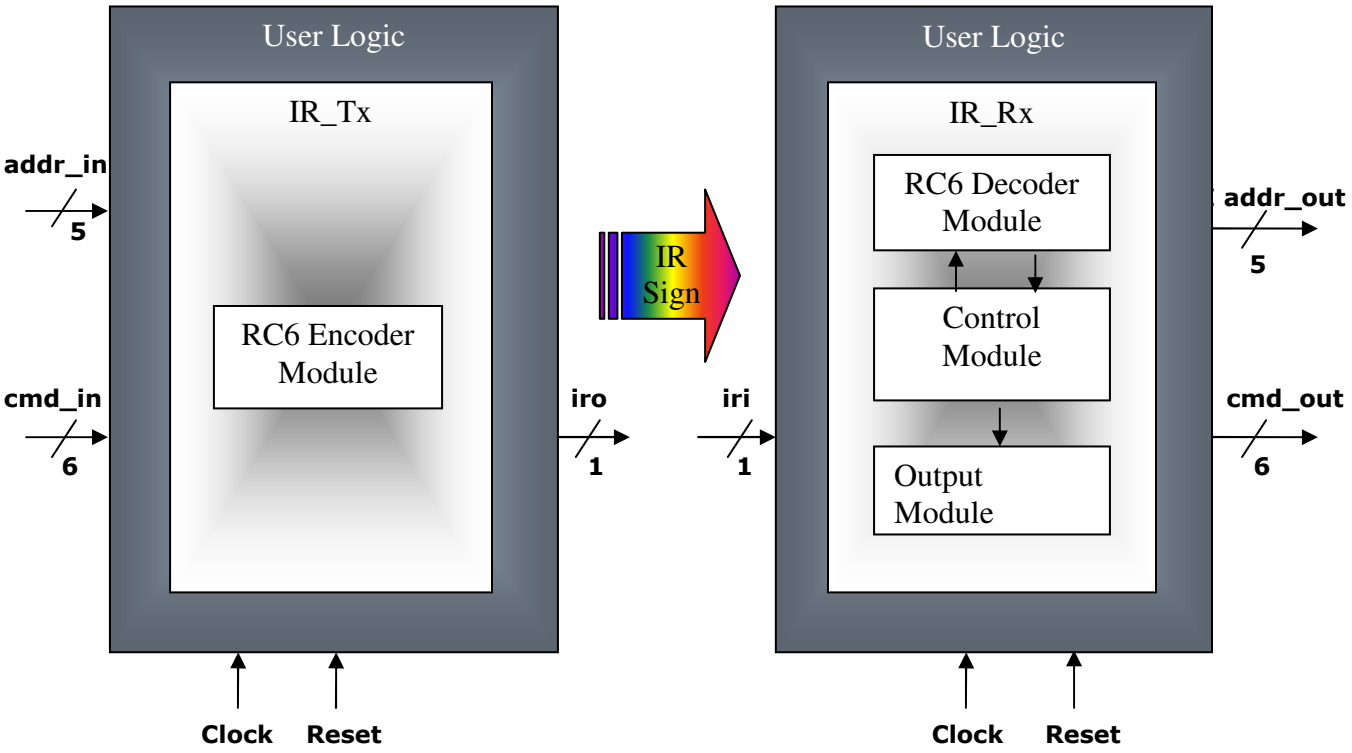
Decoder (IR Receiver):
The decoder receives the data from an IR photo-receiver. The core decodes the input data and verifies the device ID. If the device ID matches then it outputs the address and command signals. The ten bit device ID mechanism avoids interference form other RC6 IR transmitters.

Features
Fully programmable IR protocol, user can define his own IR protocol by configuring:

- Number of command bits
- Number of address bits
- Unique device Id bits
- Number of data bytes to be transferred (for data communication)
- IR signal transmission at 1.124 KHz frequency (standard 890us bit time)

Applications:
It can be used in wireless controlling of the devices like TV, DVD players, video game consoles etc. It can also be used for low speed wireless data communication between the two devices.

Block Diagram:



Performance:

Device	Slice Count	Frequency
Spartan-3A (xc3s700a-4fg484)	326	140.12 MHz
Virtex-4 (xc4vlx25-ff668)	326	201.45 MHz

Verification:

The IR Transceiver module has been verified with following approaches:

- Accuracy of data sampling
- Exhaustive Functional simulation
- Prototyped on Xilinx Spartan-3A development board

Deliverables:

- VHDL RTL source code
- Test benches
- Detailed user documentation, including RTL source code documentation