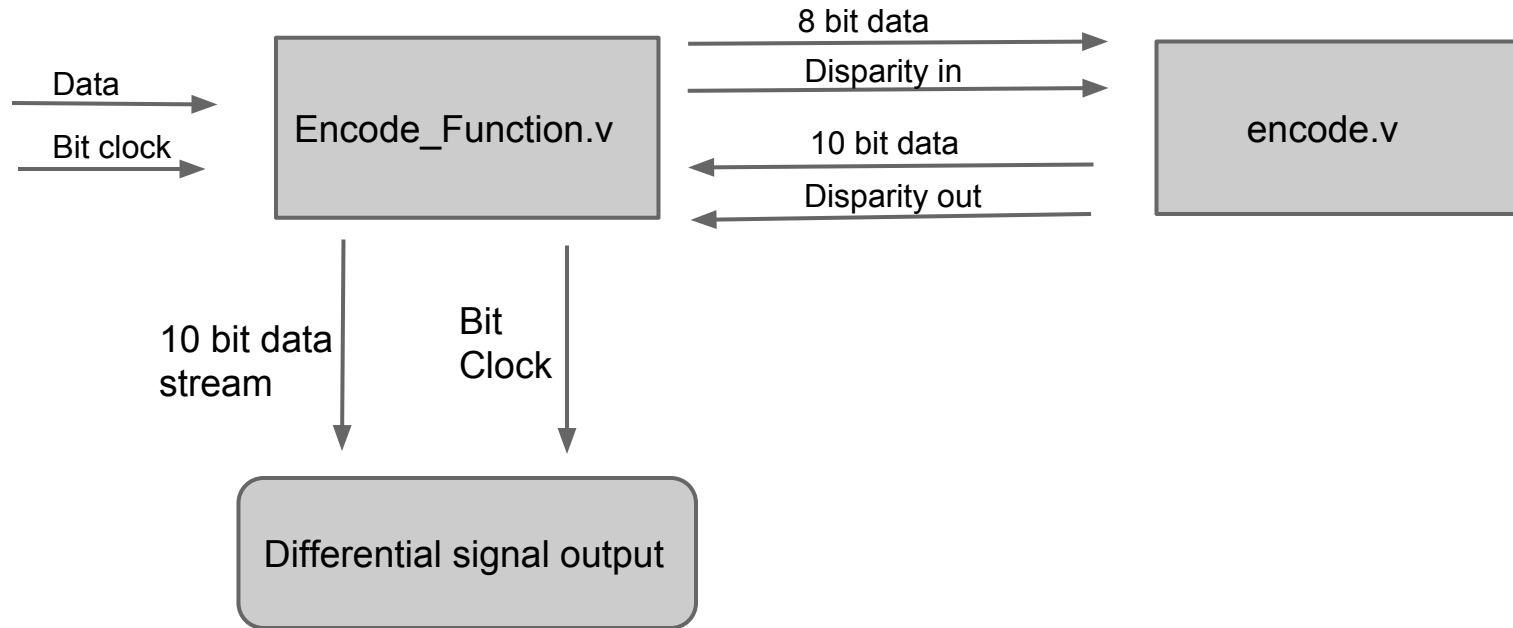


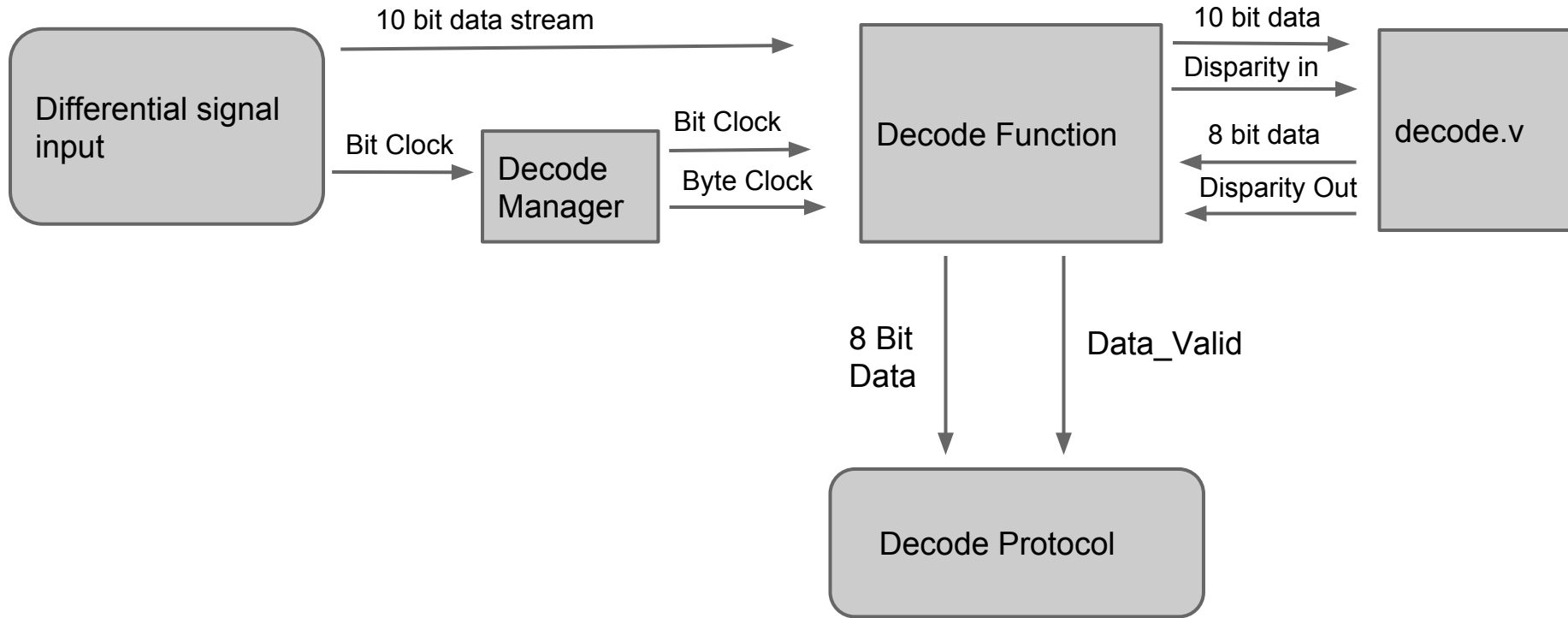
## 8b10b Encoding

- A code that maps 8-bit characters to 10-bit characters, such that the disparity between 1 and 0 is either 0 or  $\pm 2$ .
- Allows transmission of data with DC balance.
- Aligns data using special “comma” characters.

# Block Diagram of encode implementation



# Decode implementation



# Encode\_Function

Inputs bit clock and eight bytes of data.

Splits bit clock into 1/10th speed byte clock.

Encodes data through 8b10 at byte clock speed.

Transmits 10 bit data at bit clock speed.

Sends a special “comma” character after every eight bits.

# Decode Manager

Receives bit clock signal from LVDS buffer.

Creates 1/10th speed byte clock output for decode\_function instances.

# Decode Function

Two-State machine

## Unlinked

Loads data and checks for comma characters every tick of bit clock.

Stays unlinked until a comma is received.

## Linked

Loads data into a FIFO every tick of the bit clock, and sends 10 bit signals to decode every tick of the byte clock. Outputs eight bit decoded signals, and a one bit “valid” signal.

Stays linked until an invalid ten bit signal is recorded.