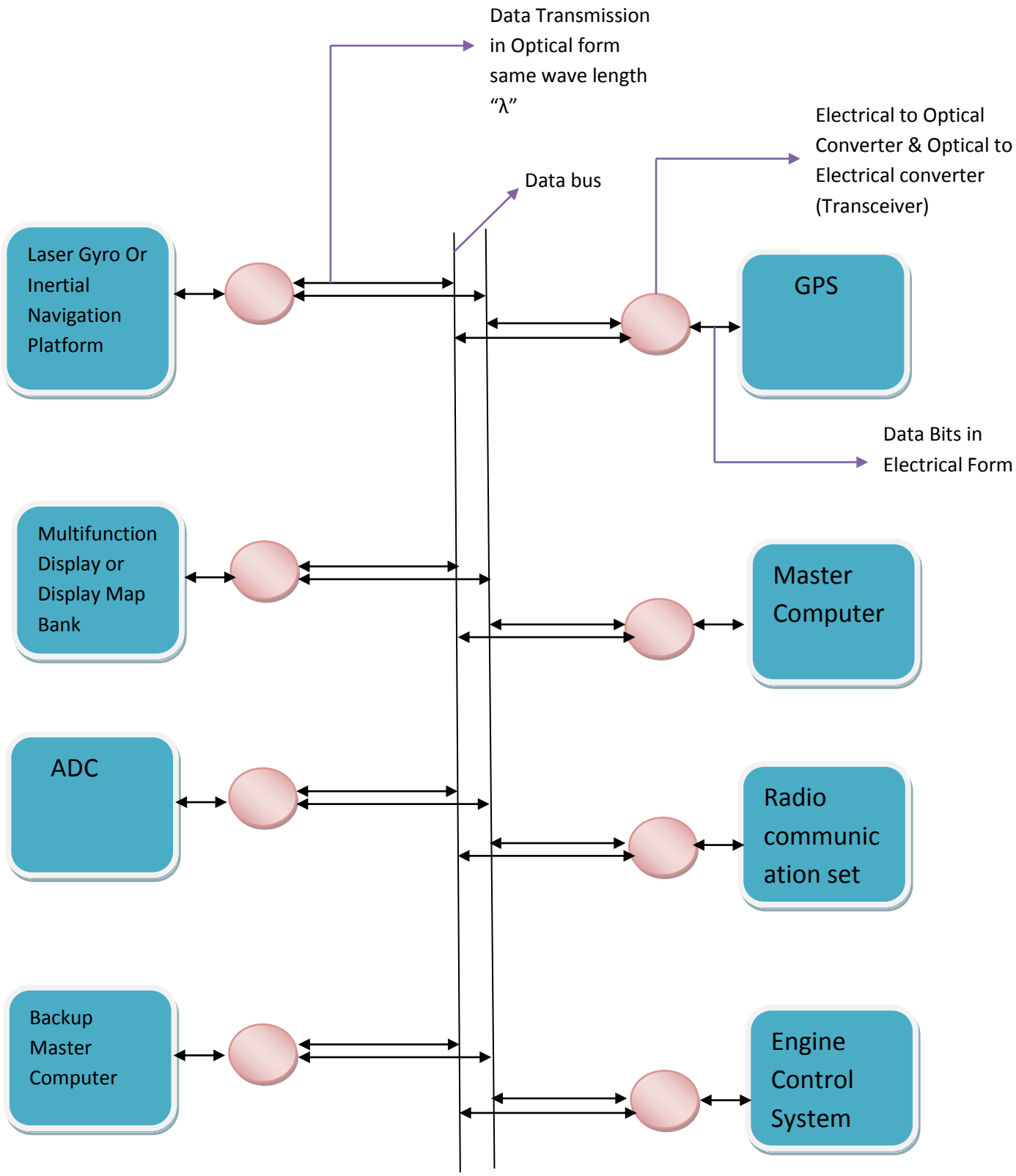
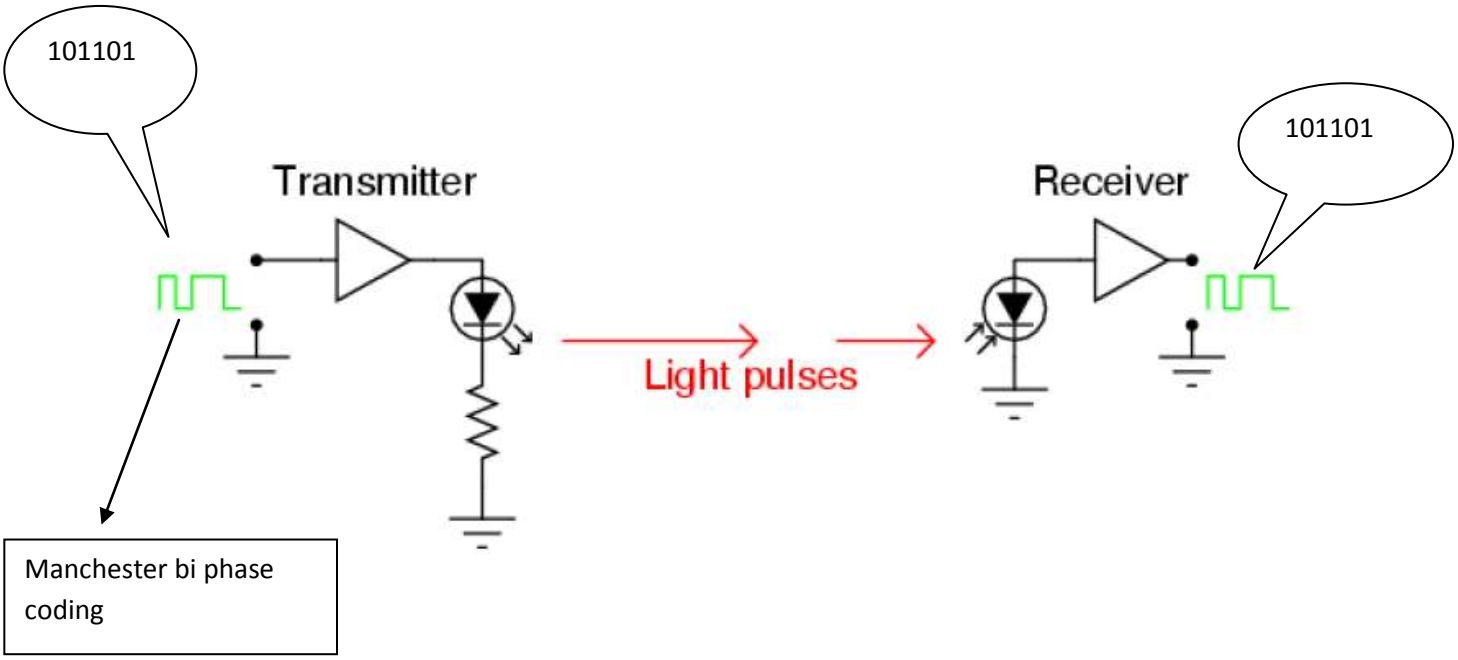


Fig :Proposed Optical Data Bus Architecture for a small aircraft

Electrical to Optical data conversion

For sending (binary) digital information instead of electric voltage signals we are using optical (light) signals. Electrical signals from digital circuits (high/low voltages) may be converted into discrete optical signals (light or no light) with LEDs or solid-state lasers. Likewise, light signals can be translated back into electrical form through the use of photodiodes or phototransistors for introduction into the inputs of gate circuits.



Characteristics of proposed data bus:

- All equipments generates electrical signal in binary (digital) form in Manchester bi phase code.
- Electrical to Optical converter covert the electrical data in optical form and transmit in data bus.
- It is a full duplex communication, transmit and receive in same optical fiber.
- Every equipment generates word consist of 16 bits.
- 4 bits for source identification.
- 4 bits for Recipient identification.
- 4 bits for word count.
- Proposed data bus can support 2^4 =16 equipments
- One equipment can talk max 2^4=16 words

Word format of our proposed data bus

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Command word

	Sender identification-4 bit		Recipient identification-4 bit	Data Word count 4 bit	

Extra bit 2 bit

Transmit/ Receive 1 bit

Parity-1 bit

Data Word

Parity/ Sync. 2 bit	DATA 14 bit