

Bluecomm 5000 optical modem – integration into host systems

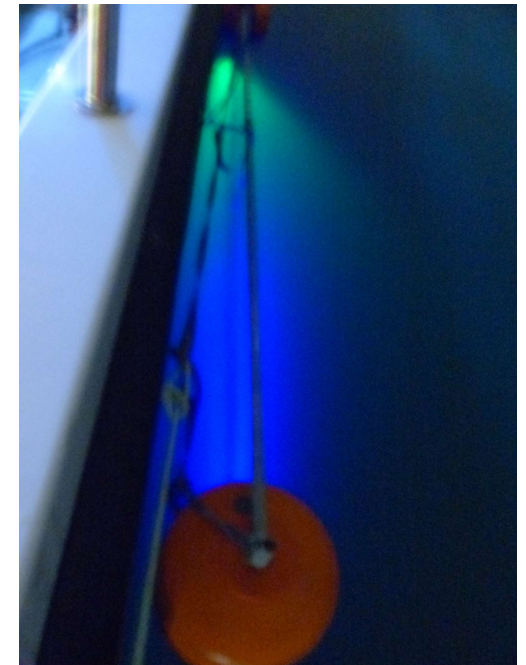
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2021-08-09

Bluecomm 5000 general info

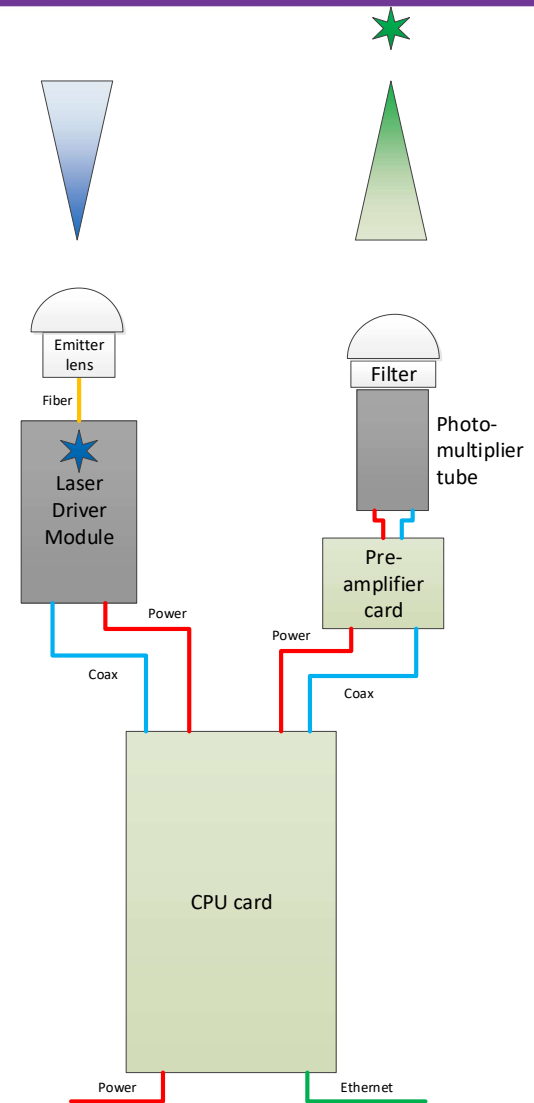
- Asymmetrical data link:-
 - 500 Mbps payload data transfer speed using blue laser
 - 100 Mbps payload data transfer speed using green laser
- Range: 5 m $\pm$ 0.5 m, with 1 m diameter area ($\pm$ 6° beam angle)
- Power required: 12-32 V, 14 W peak
- Interface to host: 100/1000 Base-T Ethernet, static IP, Cat 6
- Data transfer uses standard ftp protocol
- Link metrics updated every 1 second, via UDP-based command and control interface
- Laser safety:
 - Class 3B, 30 mW radiated light
 - 20 cm Nominal Occular Hazard Distance, blink response



Block Diagram



Bluecomm 5000 main components and cabling

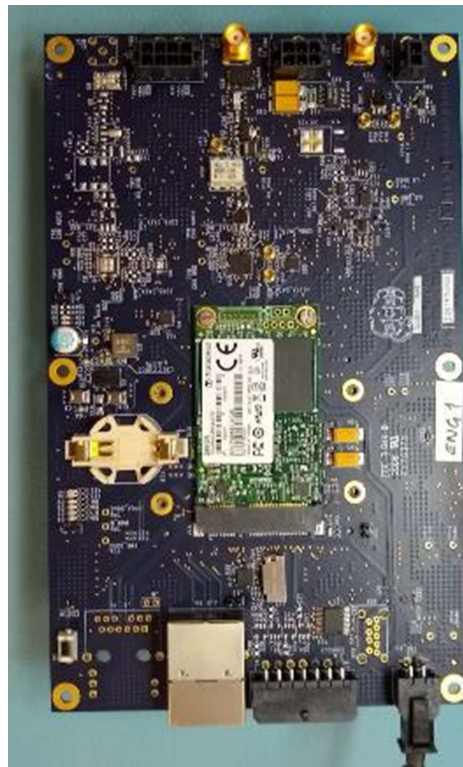


Block Diagram

Bluecomm 5000 main components and cabling



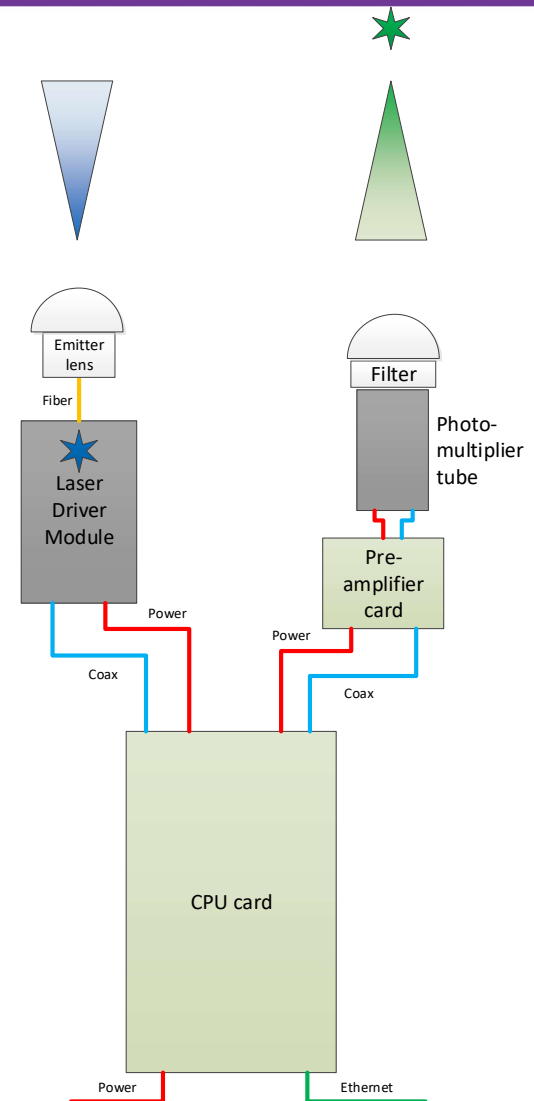
LDM: 135 x 49 x 30 mm



CPU: 165 x 101 x 22.5 mm



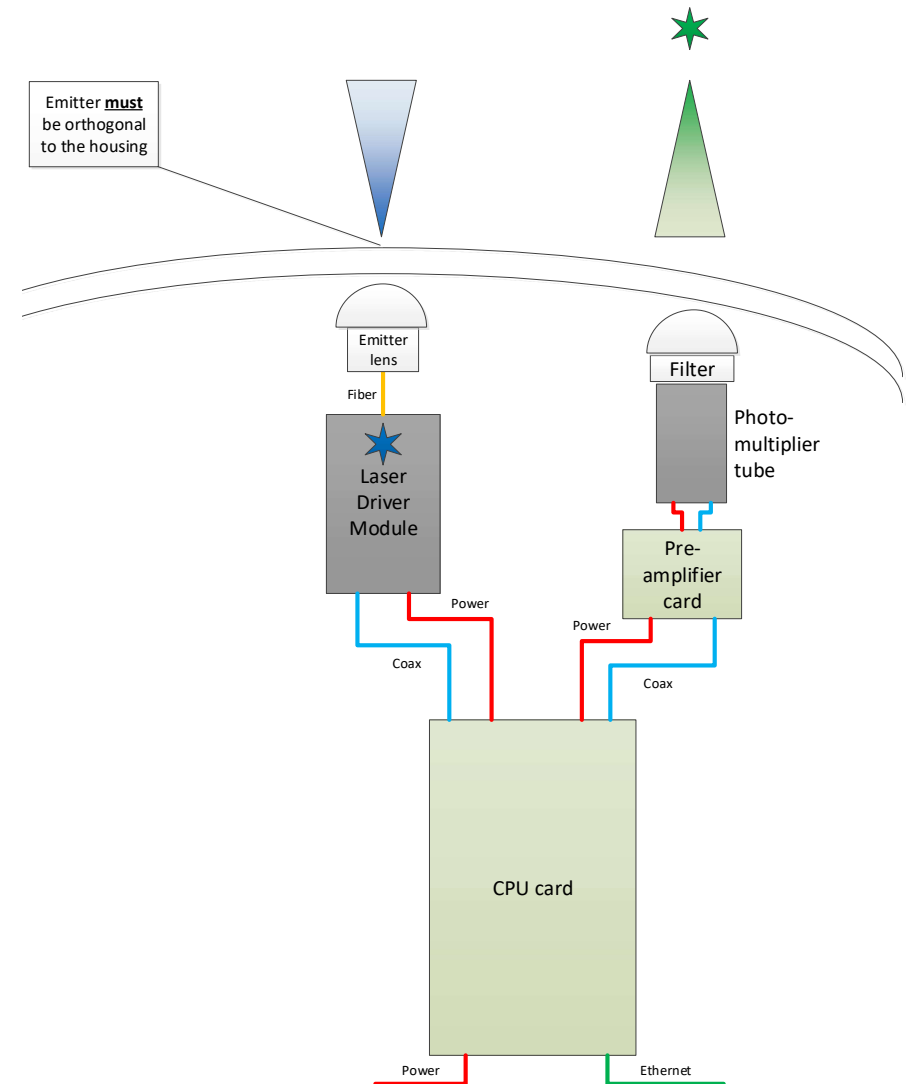
PMT: 50 x 22 x 22 mm
PCB: 37 x 25 x 14 mm



Block Diagram

Bluecomm 5000 main components and cabling

- The host housing must accommodate all the component parts of the Bluecomm 5000 modem.
- Optical design must include the path through the housing wall.
 - The emitter must be orthogonal to the housing to avoid internal reflections.
 - The receiver is more tolerant of being off axis.



Housed, green laser unit



- Green laser
- 3000 m rated housing
- High-speed photo-multiplier
- DC power and Ethernet via 16 way connector

Bluecomm 5000 – quick test



Green laser housed unit.

Optical filter fitted over laser window to reduce the output intensity.

Diffusing paper added over receiver window.

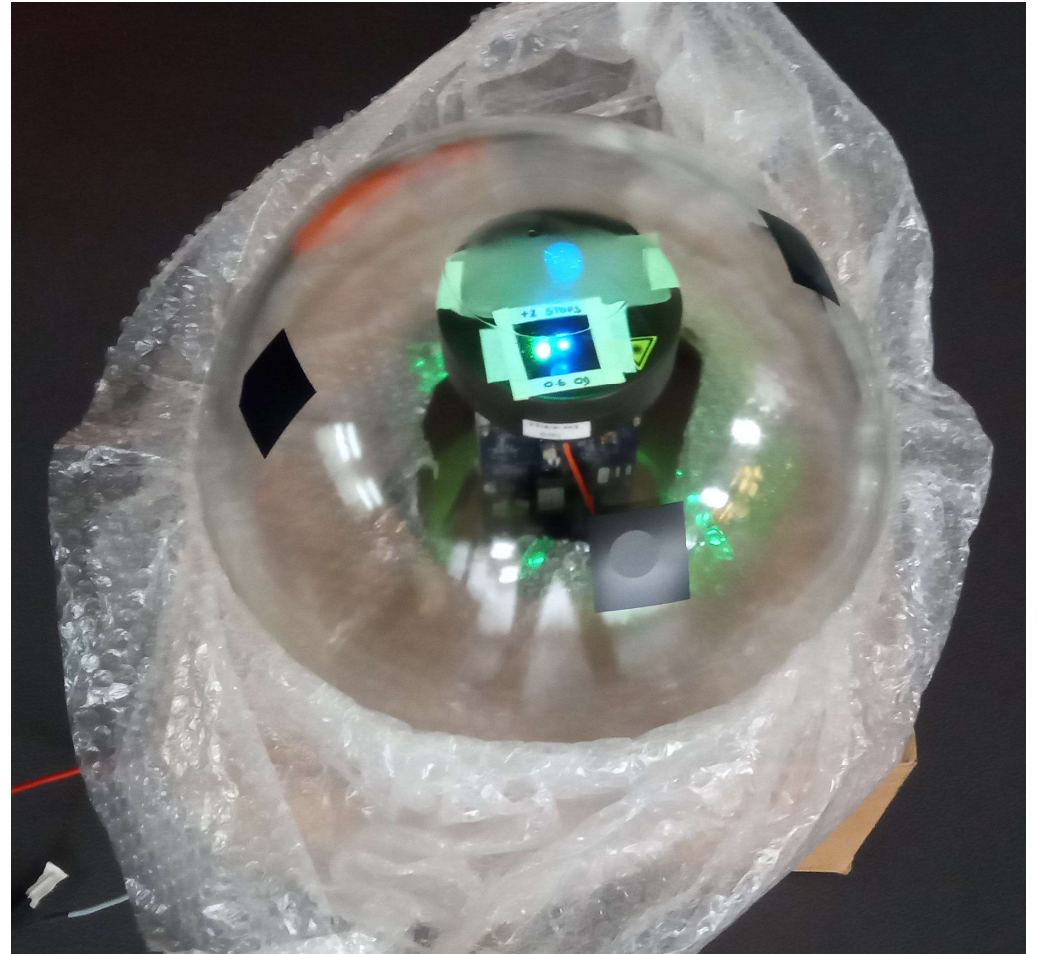
Bluecomm 5000 – quick test



Blue laser components mounted under a 17" glass hemisphere (3000m rated).

Optical filter added to reduce laser output intensity.

Diffusing paper added over receive window.



Bluecomm 5000 – quick test



2.5 m separation.

Link established successfully.

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Terminal 10 Aug 13:36
sonardyne@L005473-L: ~

VEH
Status:

NODE_STATUS received [id=356]
State: 4, Uptime: 00435, TX Mbps 625, RX Mbps 157, TX Bytes/Sec: 9256, RX Bytes/Sec: 9384
Rssi: 3510.6, Est_pwr: 0.45, Rx_corr: 3749.8, Rx_faild: 1.8, Align_lock: 1.0
Laser cur: 49.1, PMT cur: 53.7, T100 Temp: 37.7, PCB Temp: 38.3, Laser Temp: 37.6, Sys Error: 0
Transfer State: 1, Tx Total MB: 0, Tx MB Sent: 0, Rx Total MB: 0, Rx MB Rec: 0

VEH_STATUS received [id=355]
State: 4, Uptime: 00927, TX Mbps 157, RX Mbps 625, TX Bytes/Sec: 9384, RX Bytes/Sec: 9256
Rssi: 3296.7, Est_pwr: 2.07, Rx_corr: 0.0, Rx_faild: 0.0, Align_lock: 1.0
Laser cur: 49.8, PMT cur: 38.9, T100 Temp: 43.3, PCB Temp: 44.2, Laser Temp: 43.6, Sys Error: 0
Transfer State: 1, Tx Total MB: 0, Tx MB Sent: 0, Rx Total MB: 0, Rx MB Rec: 0

Received:
```

Thank you for your time today
Any questions?

Contact: Nick Street
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