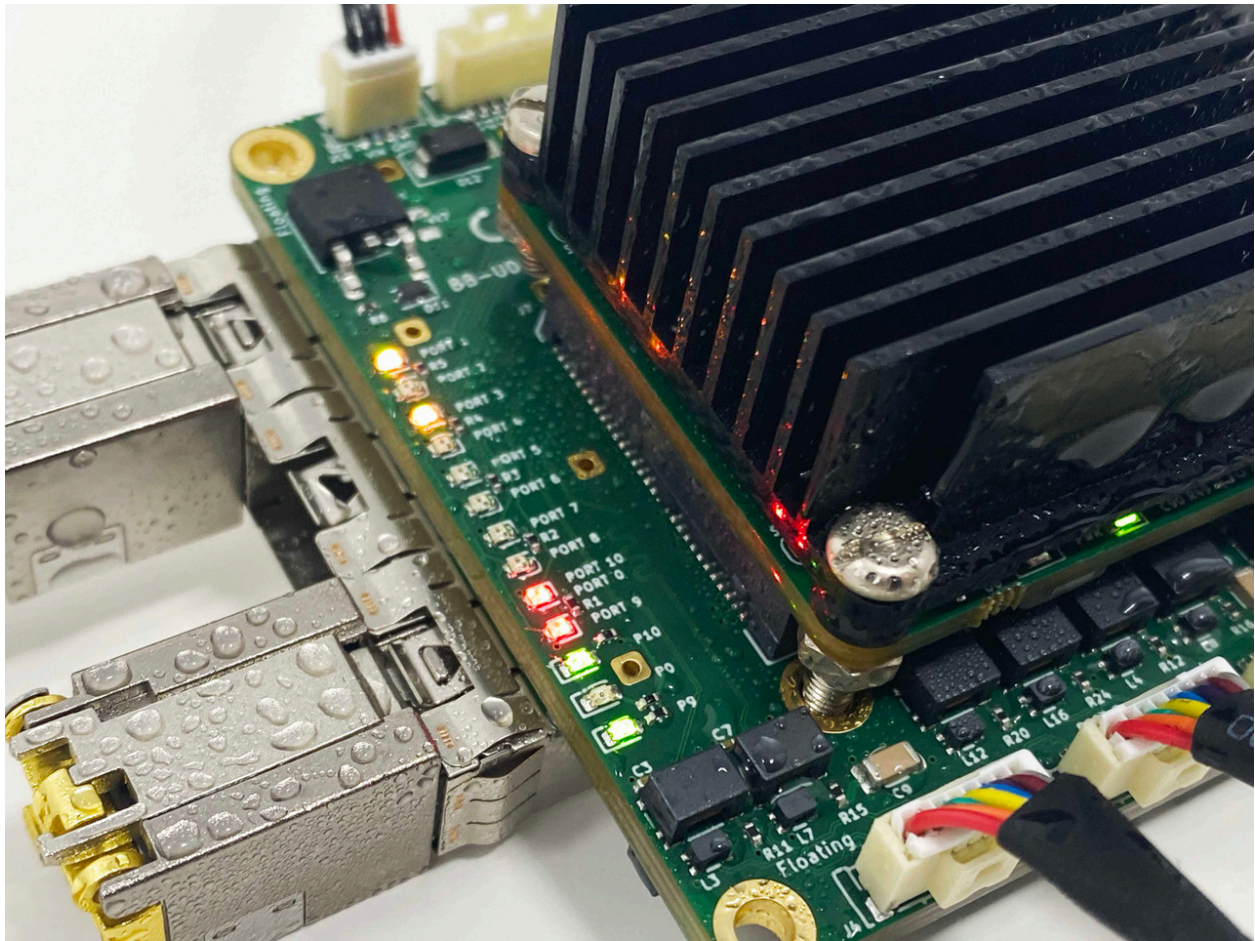## Why Use UbiSwitch?

Engineers use UbiSwitch when they need a lot of networking bandwidth in a very small package. Essentially, there really isn't anything on the market that has 8 x 1G ports and 3 x 10G ports in such a small (42mm x 42mm) light, low-power package.

Ruggedness

UbiSwitch is tested for operation between -70 to +110°C, which makes it highly optimized for tough environments. This temperature range is achieved using automotive and military-grade parts and fully tested to MIL-STD-810H standard (these test results are fully available).

In addition to temperature, UbiSwitch is fully tested to withstand:
- Temperature shock (-70 to +110°C in 5 seconds)
- Mechanical Shock (up to 90G for repeated 6ms impulse)
- Low Pressure (30000 feet altitude)
- High Pressure (6000 PSI)

- Humidity (RH 95% for 1 hour)

These were not storage tests but operational tests; in other words, UbiSwitch was powered on doing networking tests while undergoing these conditions.

Network Management Features

```
ubiswitch:~$ vlan help
vlan - VLAN commands:
Subcommands:
  add    :Set VLAN:
          Required:
          port <int> - port to add to vlan group
          vid <int> - vlan id
          -
          Optional:
          <'pvid'> - set default port vid to vid given ('pvid')
          <'untagged'> - pass egress packets untagged from port ('untagged')
          -
          Example: vlan add port 1 vid 100 pvid untagged - add vlan 100 to port
          1 with pvid=vid, untagged=true

  del    :Delete VLAN:
          Required:
          port <int> - port to add to vlan group
          vid <int> - vlan id
          -
          Example: vlan del port 1 vid 100 - delete vlan 100 from port 1

  save   :Save VLAN configuration to EEPROM
          Example: vlan save

  show   :Show VLAN configuration:
          Example: vlan show

  clear  :Clear saved VLAN configuration from EEPROM:
          Example: vlan clear

ubiswitch:~$
```

Along with its ruggedness and compact size, UbiSwitch also runs management software which allows port management, VLAN, and port mirroring to be achieved over a UART Command Line Interface. Such management in such a small form factor allows more complex networks to be achieved in drones, leading to increased reliability and functionality.

A commonly used example is using VLANs to logically segregate sections of the switch. This can be very useful in segregating high throughput image data from safety-critical control data (you don't want the image data clogging up critical control data!)

Stock Availability and Lifetime

Along with all these features, UbiSwitch is actively managed and typically available within 3-4 days from BotBlox with no MoQ and a minimum 5-year lifetime.
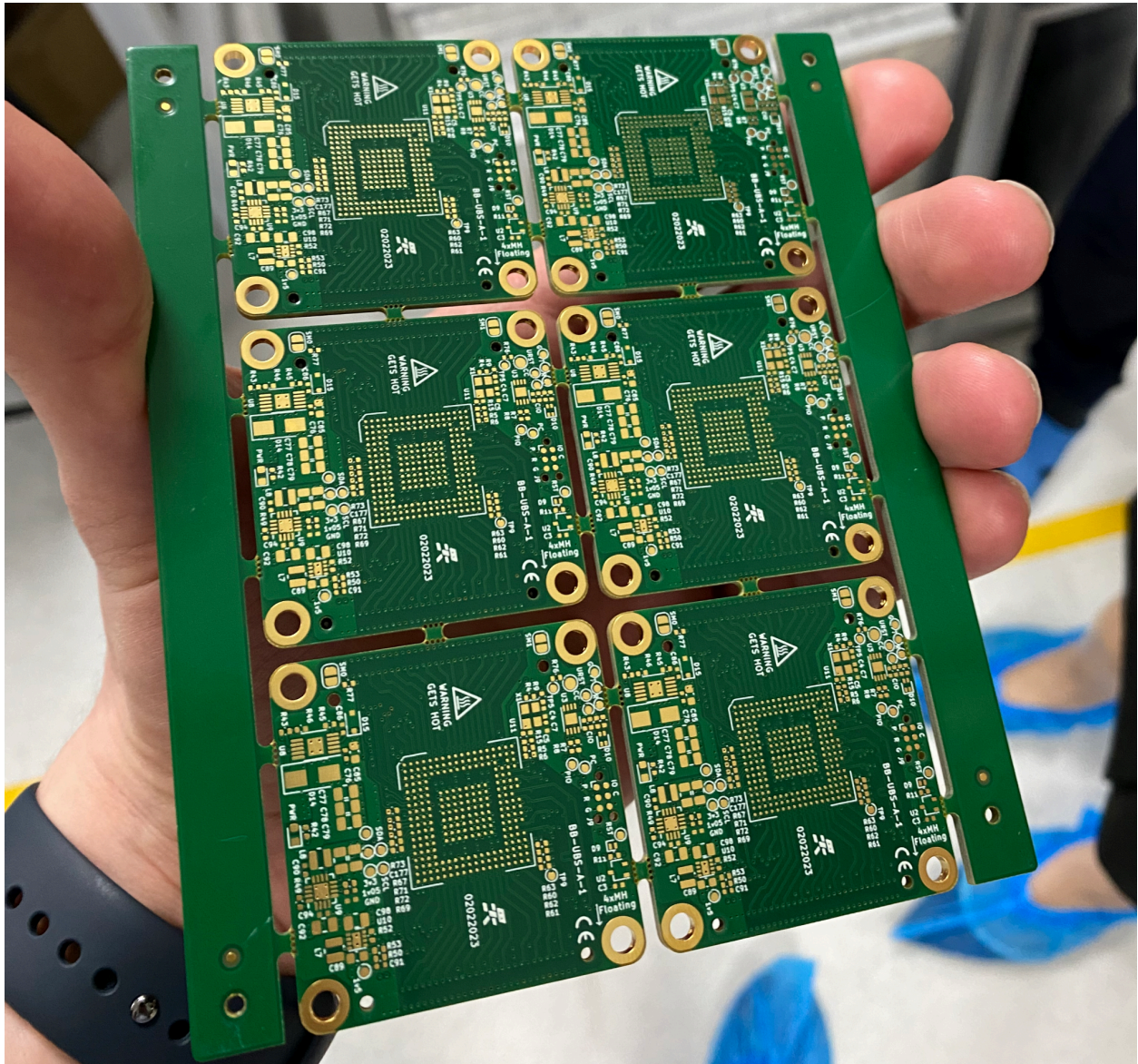
Modular Form Factor for Customer Integration

Finally, UbiSwitch has the form factor of an embeddable module, meaning customers can integrate the module directly into their baseboard, further reducing size and weight, and providing complete customization over connector type. BotBlox releases the design files to assist with this and provides a free design review service for customers.

All this functionality and these features make UbiSwitch the premier choice for rugged high bandwidth networking in space-limited harsh environments while remaining reasonably priced (less than $500 per module).

Should I Use UbiSwitch?

The first thing to consider is whether you actually need such networking capability. Do you need 10G connectivity, or will 1G or even 100M Ethernet work? It's always preferable to use a lower data rate if possible (it's cheaper), but the more advanced drones need 1G and 10G when you consider the kind of camera feeds they will be handling.

If a lower data rate can be used, then BotBlox's smaller, cheaper rugged boards can be used. Most have the same temperature range (around -40°C to 100°C) and some are significantly cheaper than UbiSwitch. UbiSwitch is a premium product and suits high-performance mission-critical drones!

If you care a lot about minimizing weight and maximizing the payload size, then the BotBlox range is pretty ideal. UbiSwitch specifically is attractive since it can be integrated into their existing PCB design. This means they no longer need to worry about the network management side of things.

In general, using BotBlox products is probably a win for most drone developers, as it allows them to quickly and easily build Ethernet-enabled drones without having to deal with the actual work of designing rugged network infrastructure. BotBlox's offering is smaller, lighter, and more rugged than nearly everything on the market while being reasonably priced. Ultimately, UbiSwitch is the right approach if they need high network bandwidth, proven ruggedness, and network manageability all in a super compact form factor.