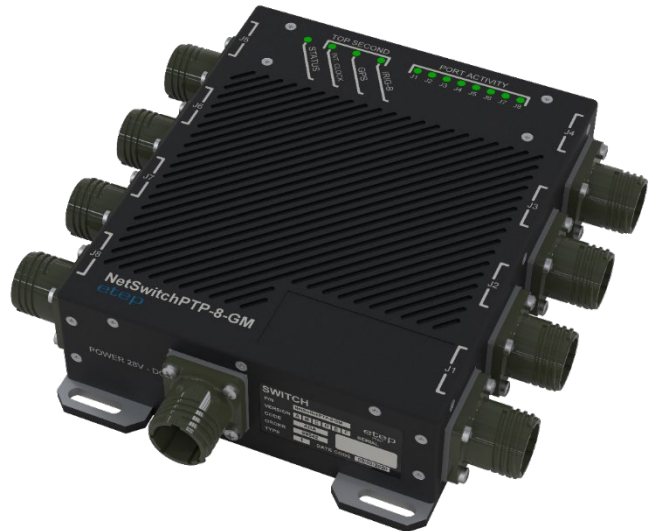


# NetSwitch 8/16/24 Ch.

Rugged Airborne Ethernet Switch

From 8 to 24 Ch. Gigabit Ethernet Rugged Airborne managed Switch with support of IEEE 1588v1 & 2 PTP or PTP Grandmaster (GPS & IRIG-B) in option for hardware time stamping for precise time synchronization.

Excellent for high-end airborne applications, the NetSwitch/GbE Managed Carrier Ethernet Switch is a highly reliable way to communicate with 10/100/1000 devices in an embedded system. Powered by the latest generation Carrier Ethernet Switch engine. Its embedded 416 MHz MIPS 32-bit CPU, 1Gb DDR2 external memory and DMA-based frame extraction and insertion support timing over packet, Ethernet OAM, and performance monitoring.



### Ethernet Connector Type

- PIN** Pin Contact MIL-38999 III
- RJ45** RJ45 MIL-38999 III

**NETSWITCH-PTPGM-16-RJ45-POE**

### Power Over Ethernet

- POE** 4x PoE+ ports (68W power budget)
- 0** None

### Function

- Unmanaged: **0** (or nothing)
- Managed PTP Support: **PTP**
- Managed PTP Grand Master: **PTPGM**

### Inputs

- 8** 8 ports Gigabit Ethernet
- 16** 16 ports Gigabit Ethernet
- 24** 24 ports Gigabit Ethernet

## Hardware Specifications

|   |  |   |           |                 |   |           |                 |   |         |
|---|--|---|-----------|-----------------|---|-----------|-----------------|---|---------|
| Ethernet Switch Engine                    | Carrier Grade Ethernet Switch Chipset (NetSwitch 8Ch/16Ch/24Ch.)<br>A powerful embedded 416 MHz RISC 32-bit CPU, with DDR2 external memory and DMA-based frame extraction and insertion supports timing over packet, Ethernet OAM, and performance monitoring. |   |           |                 |   |           |                 |   |         |
| Port Type                                 | 8 to 24 Gigabit Ethernet (10/100/1000 Mbps)  |   |           |                 |   |           |                 |   |         |
| GPS/IRIG B Input Connectors               | SMA Serial: R.125.680.000 (PTP Grandmaster Option)   |   |           |                 |   |           |                 |   |         |
| IRIG B Output Connector                   | SMA Serial: R.125.680.000 (PTP Grandmaster Option)   |   |           |                 |   |           |                 |   |         |
| Ethernet Connectors                       | MIL-DLT-38999 Series III Pins or RJ45  |   |           |                 |   |           |                 |   |         |
| Power Connector                           | MIL-DLT-38999 Series III (TV POO RW 0998 PN)   |   |           |                 |   |           |                 |   |         |
| Time Precision Protocol                   | IEEE 1588 v2 – Grandmaster (Managed GM option) or Transparency mode  |   |           |                 |   |           |                 |   |         |
| Management Access                         | Web Interface HTTP/HTTPS (Managed)   |   |           |                 |   |           |                 |   |         |
| Input voltage                             | Wide input range: +16V to +36V DC with Reverse Polarity Protection   |   |           |                 |   |           |                 |   |         |
| Power Consumption                         | About 10Watts (8 ports), 15 Watts (16 ports), 25 Watts (24 ports) / Add 8W for GM  |   |           |                 |   |           |                 |   |         |
| Power Over Ethernet (PoE+)                | IEEE 802.3at (PoE+) Option, 4 ports with 68W power budget max (30W max by port)  |   |           |                 |   |           |                 |   |         |
| Vibration, Shock, Acceleration            | D0-160/MIL-STD-810 Qualified   |   |           |                 |   |           |                 |   |         |
| Operating Temperature                     | -40°C to +85°C   |   |           |                 |   |           |                 |   |         |
| Dimensions in mm.<br>(without connectors) | NetSwitch 8ch.   |   |           | NetSwitch 16ch. |   |           | NetSwitch 24ch. |   |         |
|   | L  | W | H         | L               | W | H         | L               | W | H       |
| Weight ~ Kg [lbs]                         | 0/PTP  |   | PTPGM     | 0/PTP           |   | PTPGM     | 0/PTP           |   | PTPGM   |
|   | 1.1 [2.5]  |   | 1.3 [2.9] | 1.5 [3.3]       |   | 1.7 [3.7] | 1.8 [4]         |   | 2 [4.4] |

## NetSwitch 8/16/24 Ch.

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## Key Features

- Eight to Twenty-Four 1000/100/10 Mbps Ethernet port (MIL-DTL 38999 Independent connector for each inputs)
- PTP (IEEE 1588 v2) Grandmaster (option) or Transparency mode
- LED for each Ethernet Port status
- Fully managed Layer 2 Ethernet Switch with Layer 3-aware packet processing
- Support for all major Enterprise switching features such as VLANs, Spanning Tree, QoS, and SNMP
- Manageable via web GUI interface, SSH, Telnet [Managed switch]
- PoE+ in option
- Passive heat sink included
- Low power consumption

## Additional Technical Details

### Vitesse VSC7428XJG [Managed]

- Integrated 416MHz MIPS CPU
- 4Mbit Packet Memory
- 8K MAC and 4K VLAN Table
- Multistage TCAM Engine

### Port Control:

- Speed/Duplex settings
- Jumbo Frame Support (1518-9600 bytes)
- Port Status and Statistics

### Quality of Service (QoS)

- Up to 8 traffic classes
- Shaping/policing per queue and per port
- Hierarchical MEF compliant policing and scheduling

### Layer 2 Switching:

- VLAN support, IEEE 802.1Q
- Spanning Tree Protocol (STP), IEEE 802.1D
- Rapid Spanning Tree (RSTP), IEEE 802.1w
- Multiple Spanning Tree (MSTP), IEEE 802.1s
- Loop Guard
- Link Aggregation (Static and LACP), IEEE 802.3ad
- BPDU Guard
- Error Disable Recovery
- IGMP snooping
- DHCP snooping
- Port Mirroring

### Layer 3 Aware

- DHCP Option 82 Relay
- UPNP
- IPv4 Static Routing (Unicast)
- IPv6 Static Routing (Unicast)

### OAM and Test:

- Y.1731
- IEEE 802.1ag
- G.8021

### Security:

- Port-based access control based on IEEE 802.1X
- MAC-Based Authentication
- VLAN Assignment for authenticated users/devices
- QoS Assignment for authenticated users/devices
- Guest VLAN for unauthenticated users/devices
- RADIUS Authentication, Authorization, and Accounting
- Limit number of MAC Addresses per port
- IP-MAC binding restrictions
- TACACS+ Authentication, Authorization, and Accounting
- User Authentication for Web and CLI interfaces
- 15 User Authorization Levels for Web and CLI interfaces
- Access Control Lists (ACLs) for filtering/policing/port copy
- IP source guard

### Time Synchronization [Managed]

- Synchronous Ethernet (SyncE) with SSM
- IEEE 1588v2 with one or two-step clock
- Peer-to-Peer Transparent Clock
- End-to-End Transparent Clock
- Boundary Clock
- Redundant Masters and Multiple Timing Domains
- ITU G8265.1 Best Master Selection
- PTP over IPv4 (unicast and multicast)
- NTPv4 Client

### Power and Thermal:

- PHY power savings
- LED power savings
- Thermal Protection

### Management [Managed]

- JSON-RPC
- DHCP and DHCPv6 Client / DHCP Server
- DNS Client, Proxy
- Web Interface via HTTP or HTTPS
- IPv6 Management
- SNMP v1, v2c, v3c (MIBs and Traps)
- RMON
- Link Layer Discovery Protocol (LLDP), IEEE 802.1AB, TIA 1057
- Cisco Discovery Protocol (CDP) – Receive Only
- sFlow

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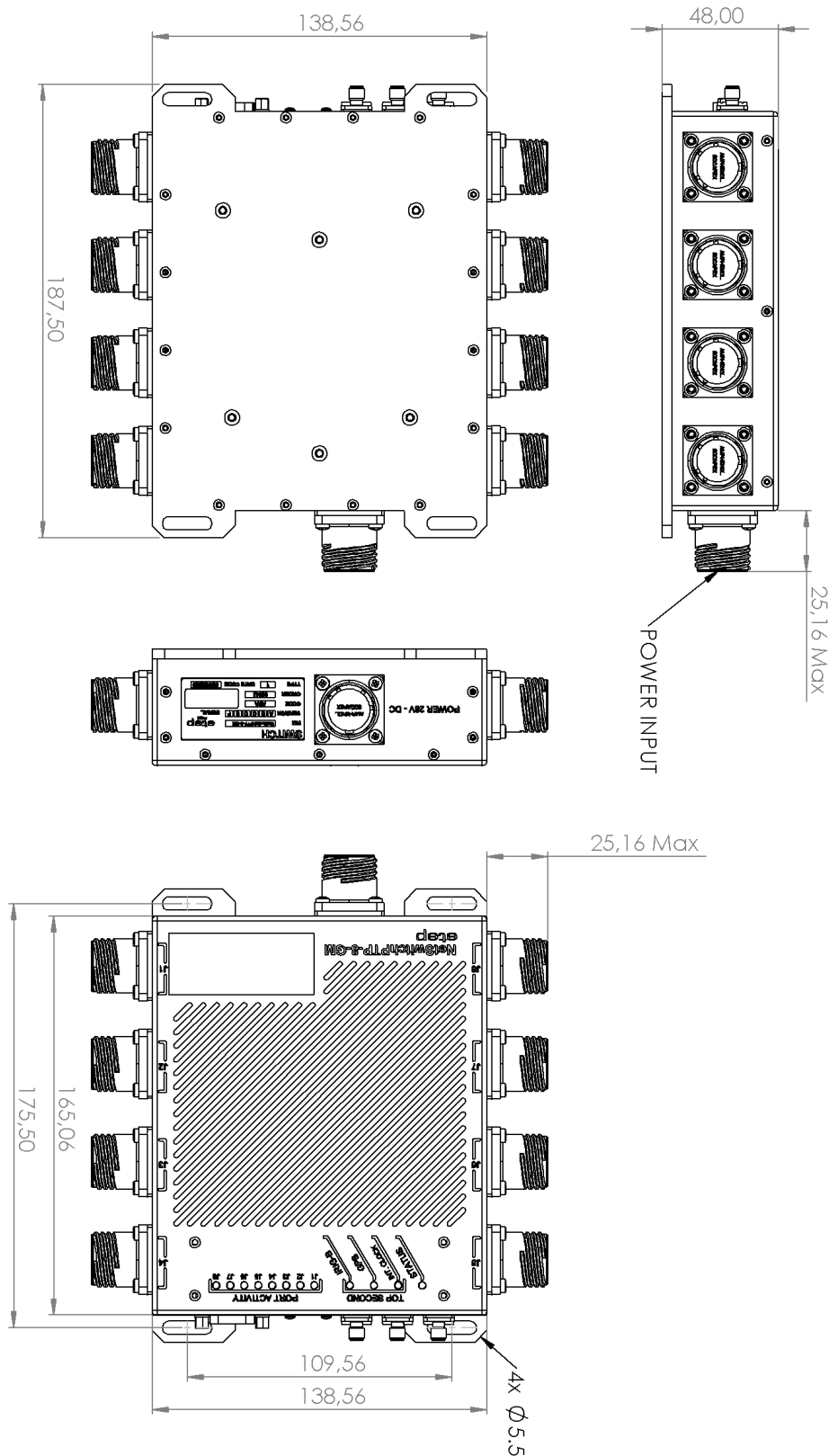
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## Dimensional Drawing 8-Port



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## INPUT 28VDC

**INPUT 28VDC**

\*Following version

| SOCKET  | PLUG  |
|---|---|
| <b>TYPE: SOCKET 10 CONTACTS MALE</b><br><b>Manufacturer: AMPHENOL</b><br><b>SERIE: MIL-C 38999 SERIE III</b><br><b>REFERENCE: TV P00 RW 13 98 PN</b><br><b>Socket mark: INPUT 28VDC</b> | <b>TYPE: PLUG 10 CONTACTS FEMALE</b><br><b>Manufacturer: AMPHENOL</b><br><b>SERIE: MIL-C 38999 SERIE III</b><br><b>REFERENCE: TV 06 RW 13 98 SN</b><br><b>Cable mark:</b> |

Note:

|        |                    |
|--------|--------------------|
| « MM » | AIRFRAME GROUNDING |
|--------|--------------------|

| Pin | Signal name         | Identification        | Color  | Notes   |
|-----|---------------------|-----------------------|--------|---|
| H   | +28 VDC             | + 28V DC (Port 1 & 2) | RED    |   |
| A   | 0VN                 | 0V                    | BLACK  |   |
| G   | +28 VDC             | +28 V DC (Port 3 & 4) | RED    | Option: If power distribution through switch only |
| B   | 0VN                 | 0V                    | BLACK  | Option: If power distribution through switch only |
| F   | +28 V DC (Port 5&6) | +28 V DC (Port 5 & 6) | RED    | Option: If power distribution through switch only |
| C   | 0VN                 | 0V                    | BLACK  | Option: If power distribution through switch only |
| E   | +28 V DC (Port 7&8) | +28 V DC (Port 7 & 8) | RED    | Option: If power distribution through switch only |
| D   | 0VN                 | 0V                    | BLACK  | Option: If power distribution through switch only |
| J   | AIRFRAME GROUNDING  | MM                    | YELLOW |   |

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# Pin Contact Gigabit Ethernet Input



**INPUT 28VDC**

**J1 to J24\***

| SOCKET  | PLUG   |
|---|--|
| TYPE: SOCKET 22 CONTACTS FEMALE<br>Manufacturer: AMPHENOL<br>SERIE: MIL-C 38999 SERIE III<br>REFERENCE: TV P00 RW 13 35 SN<br>Socket mark: J1 to J24* | TYPE: PLUG 22 CONTACTS MALE<br>Manufacturer: AMPHENOL<br>SERIE: MIL-C 38999 SERIE III<br>REFERENCE: TV 06 RW 13 35 PN<br>Cable mark: |

\*Following version

| Pin | Designation        | color        | Notes                         |
|-----|--------------------|--------------|-------------------------------|
| 16  | GND                |              | ETHERNET SHIELDING            |
| 2   | ETH_1              | Orange White |                               |
| 3   | ETH_2              | Orange       |                               |
| 14  | ETH_3              | Green White  |                               |
| 12  | ETH_4              | Green        |                               |
| 13  | ETH_5              | Blue White   |                               |
| 1   | ETH_6              | Blue         |                               |
| 21  | ETH_7              | Brown White  |                               |
| 15  | ETH_8              | Brown        |                               |
| 4   | IN_SYNC_BANC+      |              | SYNCHRO - J1 only (For NanoX) |
| 5   | IN_SYNC_BANC-      |              |                               |
| 17  | GND                |              | SHIELDING                     |
| 6   | OUT_SYNC_BANC+     |              | SYNCHRO (For NanoX)           |
| 7   | OUT_SYNC_BANC-     |              | SYNCHRO (For NanoX)           |
| 18  | GND                |              | SHIELDING                     |
| 19  | ON/OFF             |              | ON/OFF - J1 only (For NanoX)  |
| 20  | 0VN                |              |                               |
| 8   | +28V_1_2           |              | Power Distribution (Option)   |
| 9   | +28V_1_2           |              |                               |
| 10  | 0VN                |              |                               |
| 11  | 0VN                |              |                               |
| 22  | AIRFRAME GROUNDING | MM           |                               |

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## RJ45 Gigabit Ethernet Input

**INPUT 28VDC**

**J1 to J24\***

| SOCKET   | Use in Flight Plug [ETHERNET*]                             |   |
|--|--|---|
| TYPE: RJ45 MIL Socket<br>Manufacturer: AMPHENOL<br>SERIE: MIL-C 38999 SERIE III<br>REFERENCE: RJFTV22G00<br>Socket mark: CONTROL | RJFTV 6M G   |  |
|  | Use in Flight Cable [ETHERNET*]                            |   |
|  | Cat 5/6° per TIA/EIA 568B<br>and Class D per ISO/IEC 11801 |   |
| CAP  | Use Ground Plug [CONTROL]                                  |   |
| Manufacturer: AMPHENOL<br>SERIE: MIL-C 38999 SERIE III<br>REFERENCE: RJFTVC2G  | RJ45 T568B<br>Standard Cable Cat5/6°                       |  |

\*Following version

## INPUT GPS

| SOCKET  | PLUG  |
|---|---|
| TYPE: SMA 50Ω<br>Manufacturer: RADIALL<br>SERIE: RF SMA CONNECTOR<br>REFERENCE: R125 560001<br>Socket mark: INPUT GPS | TYPE: SMA 50Ω<br>Manufacturer: RADIALL<br>SERIE: RF SMA CONNECTOR<br>REFERENCE: R125 073000W<br>Cable mark: |

## INPUT IRIG B

| SOCKET   | PLUG  |
|--|---|
| TYPE: SMA 50Ω<br>Manufacturer: RADIALL<br>SERIE: RF SMA CONNECTOR<br>REFERENCE: R125 560001<br>Socket mark: INPUT IRIG B | TYPE: SMA 50Ω<br>Manufacturer: RADIALL<br>SERIE: RF SMA CONNECTOR<br>REFERENCE: R125 073000W<br>Cable mark: |

## OUTPUT IRIG B

| SOCKET  | PLUG  |
|---|---|
| TYPE: SMA 50Ω<br>Manufacturer: RADIALL<br>SERIE: RF SMA CONNECTOR<br>REFERENCE: R125 560001<br>Socket mark: OUTPUT IRIG B | TYPE: SMA 50Ω<br>Manufacturer: RADIALL<br>SERIE: RF SMA CONNECTOR<br>REFERENCE: R125 073000W<br>Cable mark: |

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