

Agema AGC5648S Switch Specifications

Revision 0.1

Agema System Inc.

Fremont CA

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**Version History**

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Agema Systems, Inc.

# AGC5648S Overview

The AGC5648S is the next generation carrier switch for Telecommunication Networks. It leverages the 100G technology (4x25G SERDES) to offers 48-port 25G SFP28 and 6-port 100G QSFP28 in a compact 1RU form factor. 2.5 times speed upgrade from current 10Gigabits leaf switch. The 48 ports 25G are backward compatible to 10G and the 100G uplink offer dual speed – 40G and 100G. Total I/O bandwidth upgrade to 1.8T which is 2.5time capacity performance of current 10G downlink and 40G uplink switch (720G). The processor used on AGC5648S is the Intel® Xeon® Processor Broadwell-DE D1548 which is one of the D-1500 product families. There is also one Integrated Remote Management Processor-AST2520 which is a baseboard management controller (BMC).

## Features

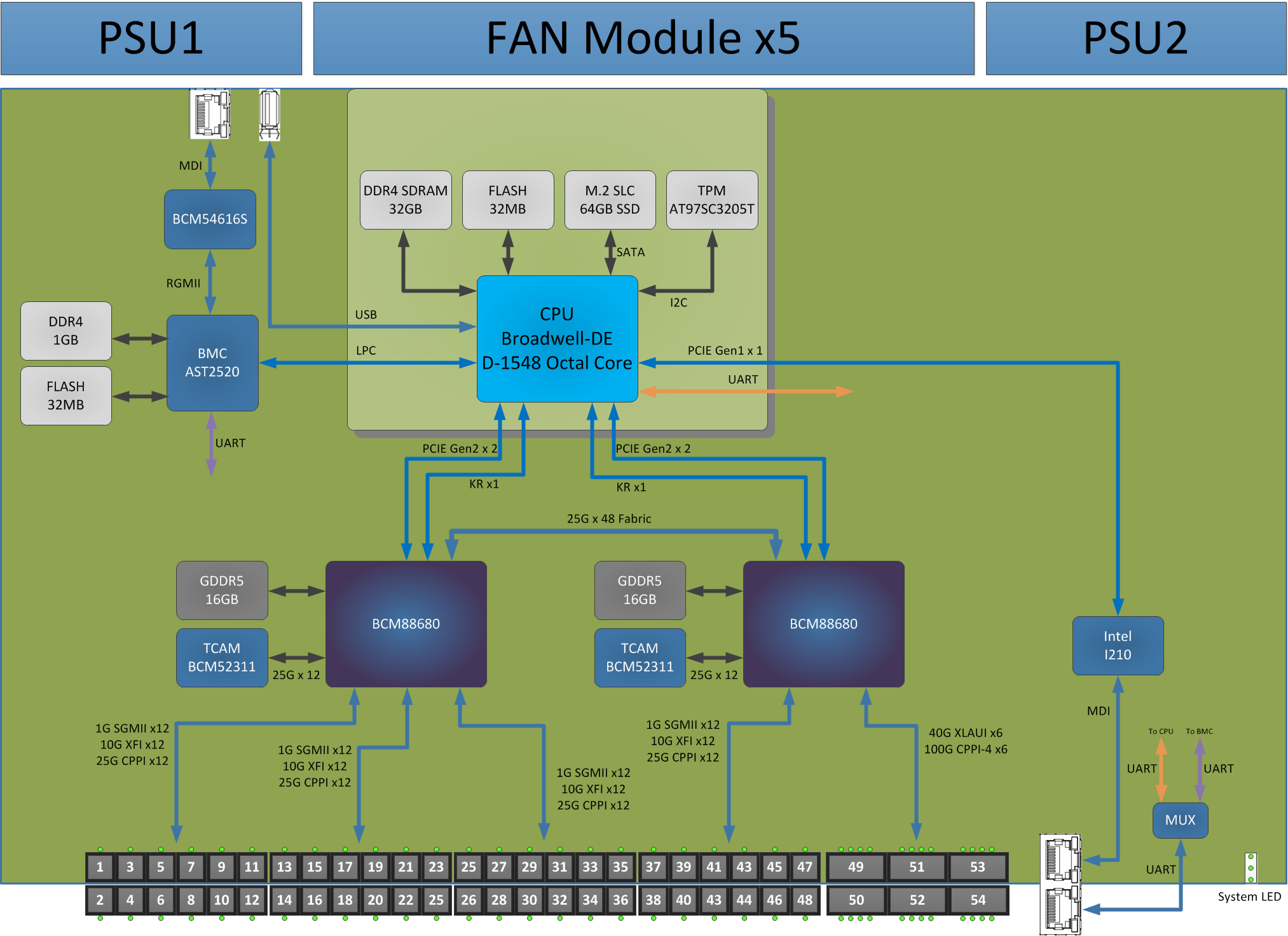
* + External Serial RS232 port (RJ45 type).
  + Support one USB ports for USB type-A
  + 48 x 25Gbps SFP28 ports and 6 x 100Gbps QSFP28 ports in front.
  + The 25G port support 10G/25G speeds
  + The 100G port support 10G/25G speed by Fanout cable, the port also supports 40G QSFP28 transceiver.
  + 1588 Synchronization
  + SYNC-E Synchronization
  + Front panel 1G Management port. (RJ45 type)
  + Rear panel 1G BMC Management port. (RJ45 type)
  + Front panel LED display for System, FAN and power status indicates.
  + On board high performance CPU system with high density memory, Intel Broadwell-DE D1548
  + Temperature monitoring. (TMP75).
  + Backup BIOS
  + Software readable thermal monitor.
  + RTC time clock support.
  + Hot plugging redundant power supply.
  + Current monitoring for Power management.
  + FAN removable and monitoring.
  + Standard 1U chassis high

## Main Components

|  |  |
| --- | --- |
| AGC5648S | |
| CPU | BROADWELL-DE-GP D-1548 |
| BIOS | 32MB NOR FLASH |
| Memory | 16G DDR4 MODULE \*2 |
| Storage | 64GB SLC SSD |
| MAC | BCM88680CA0KFSBG \*2 |
| Packet DRAM | 8G GDDR5 \*16 |
| KBP | BCM52311 \*2 |
| PHY (OOB Port) | WGI210AT \*1  BCM54616S \*1 |
| PSU | DPS1600AB13A (1600W AC PSU) \*2 |
| DC FAN | MAX 2300 rpm (Front to Rear) |

Table 1: Main Components

## System Block Diagram W/O SYNCE

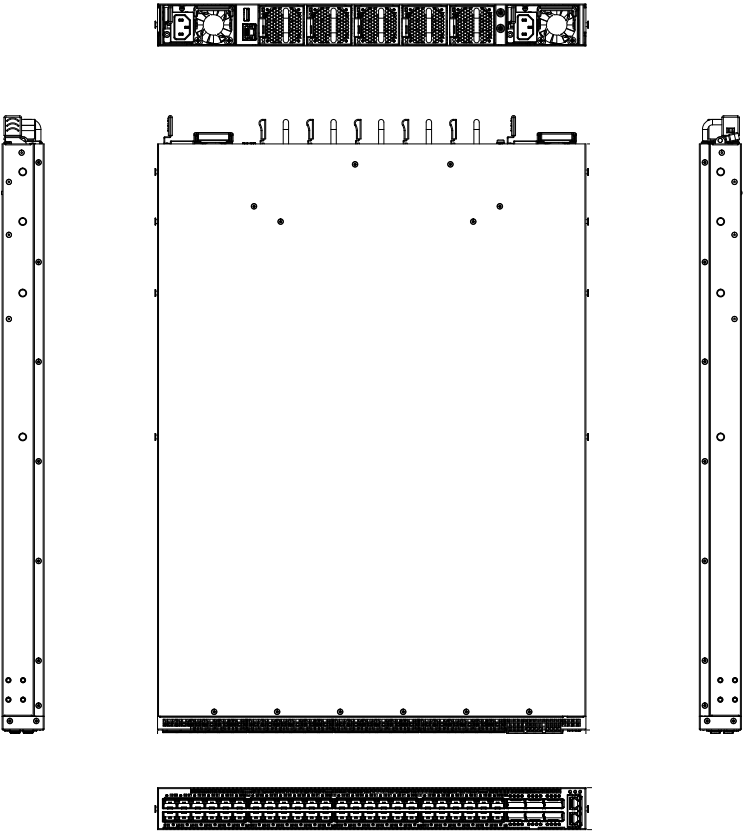


## Mechanical overview

**Dimension: H(43mm) x W(438.5mm) x L(600mm)**



### Outline



## PCB

### CPU (TOP)



### CPU (BOT)



### SW (TOP)



### SW (BOT)



# CPU SUBSYSTEM

## CPU Subsystem

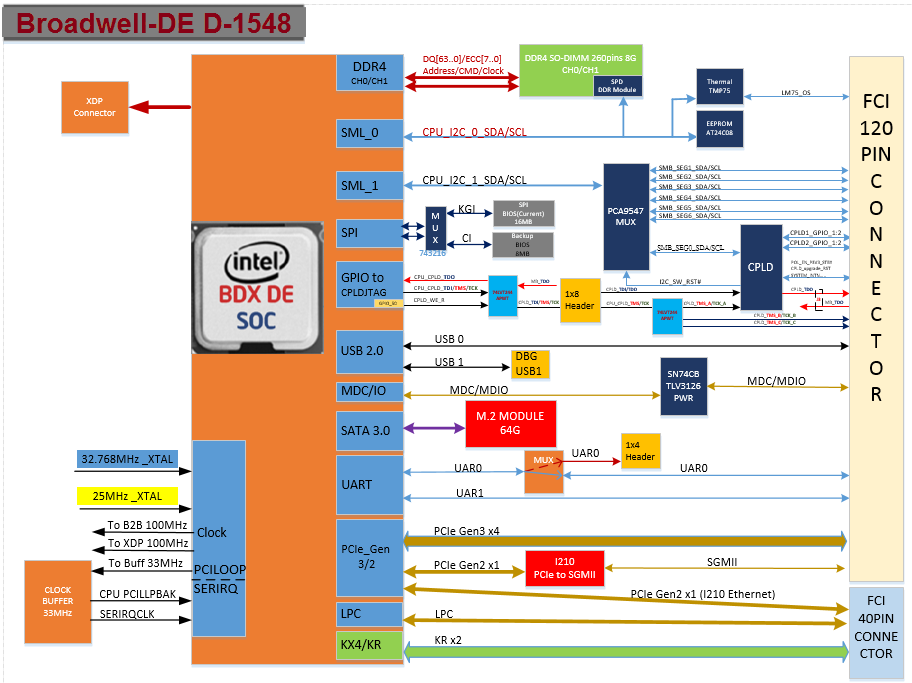


Figure 2: CPU block diagram

## BMC Subsystem

A baseboard management controller (BMC) is a specialized service processor that monitors the physical state of a [network](http://searchnetworking.techtarget.com/definition/network) [server](http://whatis.techtarget.com/definition/server) or other [hardware](http://searchcio-midmarket.techtarget.com/definition/hardware) device using sensors and communicating with the [system administrator](http://searchnetworking.techtarget.com/definition/system-administrator) through an independent connection. The BMC is part of the [Intelligent Platform Management Interface](http://searchwindowsserver.techtarget.com/definition/Intelligent-Platform-Management-Interface) (IPMI) and is usually contained in the [motherboard](http://searchcio-midmarket.techtarget.com/definition/motherboard) or main circuit board of the device to be monitored.



Figure 3: BMC block diagram

# SWITCH SUBSYSTEM

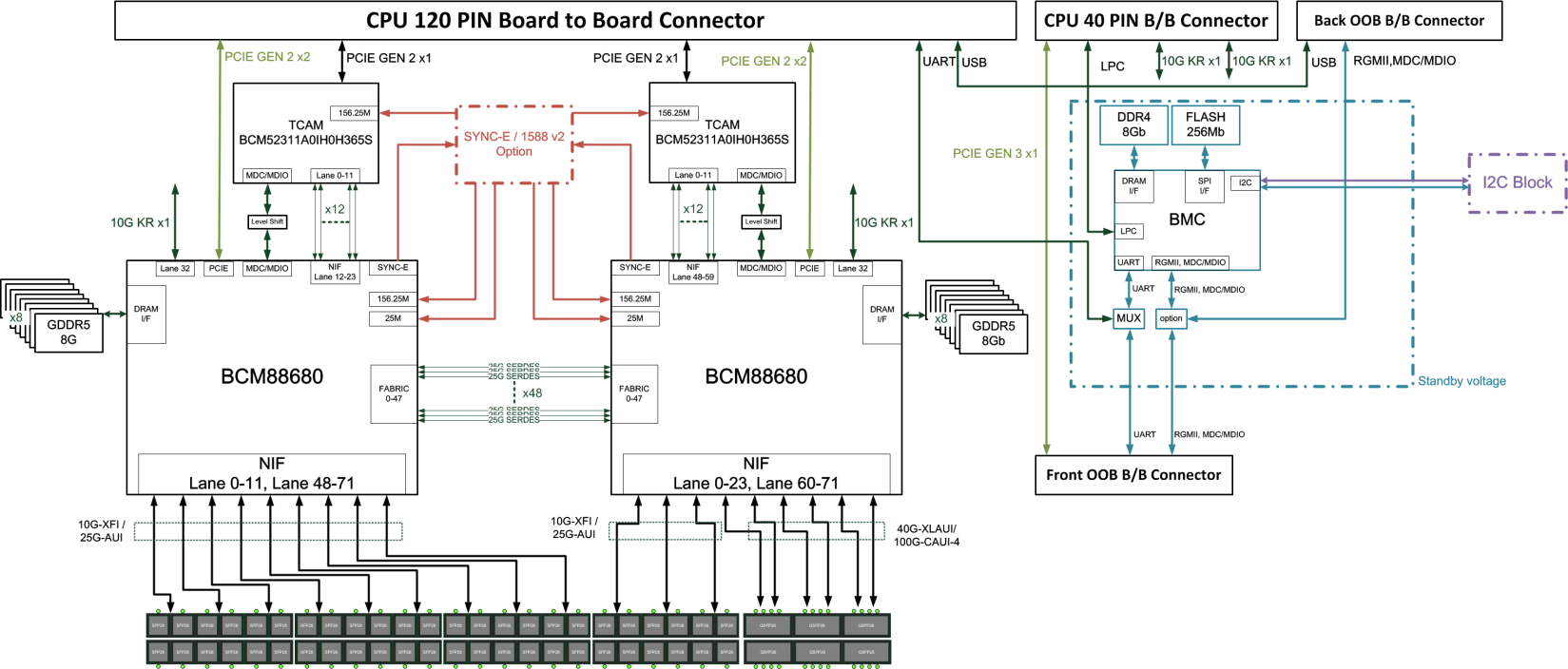


Figure 4: Switch block diagram

## Switch Engine

The Broadcom® BCM88680 device process up to 900Gpbs traffic at wire speed, supporting up to nine 100G full-duplex ports at Layer 2 through Layer 4, with integrated deep buffer traffic management capabilities and a fabric interface. The BCM88680 has integrated 1GbE, 10GbE, 25GbE, 40GbE, 50GbE and 100GbE MAC network interface, supporting various port rate combinations.

## AGC5648S Port Allocation

### Front Panel Port Number



Figure 5: Port Number on front panel

# SYNC-E & 1588 SUBSYSTEM

## System Clock



Figure 6: SYNC-E & IEEE1588 Block Diagram

### SYNC-E and IEEE1588v2

The 82P33714 Synchronization Management Unit (SMU) provides tools to manage timing references, clock sources and timing paths for IEEE1588 / Precision Time Protocol (PTP) and Synchronous Ethernet (SyncE) based clocks. The device supports up to three independent timing paths that control: PTP clock synthesis; SyncE clock generation; and general purpose frequency translation. The device supports physical layer timing with Digital PLLs (DPLLs) and it supports packet based timing with Digitally Controlled Oscillators (DCOs). Input-to- input, input-to-output and output-to-output phase skew can all be precisely managed. The device outputs low-jitter clocks that can directly synchronize lower-rate Ethernet interfaces; as well as CPRI/OBSAI, SONET/SDH and PDH interfaces and IEEE 1588 Time Stamp Units (TSUs).

# PSU SUBSYSTEM

## Overview

* Features
* Output power: 1600W
* Input: AC 110V~220V
* Output: DC 12V/132A; DC stby 12V/2.1A
* FAN speed: 23000 Rpm
* Air direction: front to rear
* Power Supply Top View

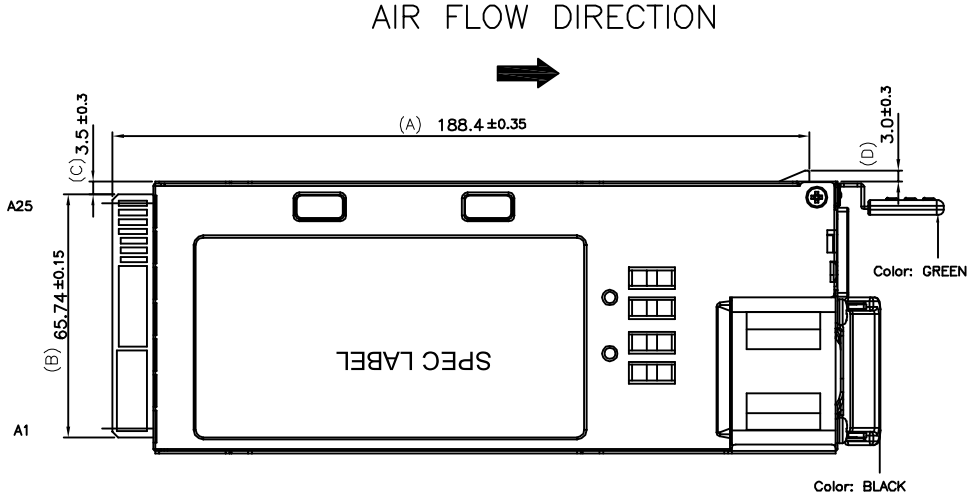


Figure 7: Delta DPS-1600AB-13 A

# MISCELLANEOUS

## LED

### System LED

|  |  |  |
| --- | --- | --- |
| **Feature** | **Detailed Description** | **Comment** |
| *Power LED* | **Solid Green** – 2 Power Suppliers are supplied to the switch & operating normally  **Solid Yellow** – Single power supplier is installed and operating.  **Blinking Yellow** –2 Power Suppliers are installed, but only single power supply is operating.  **Off** – Power is Disconnected. | At front |
| *System LED* | Solid Green – Normal operation  Blinking Green – Booting progress  Solid Red – System is failed  Off – No Power | At front |
| *FAN Status LED* | Solid Green – FAN operating normally.  Solid Amber – FAN failed. | At front |

### MGMT Port LED

|  |  |  |
| --- | --- | --- |
| **Feature** | **Detailed Description** | **Comment** |
| *CPU 1G OOB Port* | Link LED: (on the left side)  Off –No link is established on the port.  Solid Yellow *-* A valid link at 10/100Mbps is established on the port.  Solid Green – A valid link at 1000/10000Mbps is established on the port.    Act LED: (on the right side)  Off –No link is established on the port.  Blinking green *–* Activity, transmitting or receiving packet at this port. | At front |
| *BMC 1G OOB Port* | Link LED: (on the left side)  Off –No link is established on the port.  Solid Yellow *-* A valid link at 10/100Mbps is established on the port.  Solid Green – A valid link at 1000Mbps is established on the port.    Act LED: (on the right side)  Off –No link is established on the port.  Blinking green *–* Activity, transmitting or receiving packet at this port. | At rear |

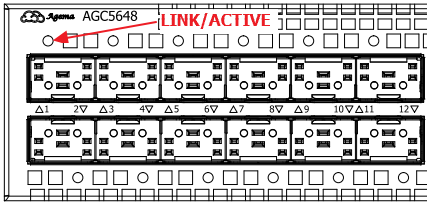
### PSU LED

|  |  |  |
| --- | --- | --- |
| **Feature** | **Detailed Description** | **Comment** |
| *PSU LED* | Solid green – Good AC input.  Solid red – NO AC input. | At rear |

### FAN LED

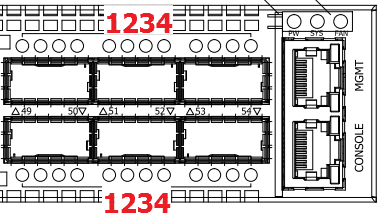
|  |  |  |
| --- | --- | --- |
| **Feature** | **Detailed Description** | **Comment** |
| *FAN Status LED* | Green – FAN operating normally.  Red – FAN failed. | At rear |

#### SFP28 25G, 10G LED



|  |  |
| --- | --- |
| **Speed** | **LED** |
| **25G operation** | **Green** |
| **10G operation** | **Amber** |

#### QSFP28 100G, 40G, 50G, 25G, 10G LED



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Speed** | **LED 1** | **LED 2** | **LED 3** | **LED 4** |
| **100G operation** | **Green** | **Off** | **Off** | **Off** |
| **40G operation** | **Amber** | **Off** | **Off** | **Off** |
| **50G operation** | **White** | **Off** | **White** | **Off** |
| **25G operation** | **Blue** | **Blue** | **Blue** | **Blue** |
| **10G operation** | **Purple** | **Purple** | **Purple** | **Purple** |

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