Pinout and LED Details

The following sections provide information for troubleshooting problems on the Cisco NCS 560-4 Router.

Pinouts

The following sections describe the pinouts for the Cisco NCS 560-4 Router interfaces:

BITS Port Pinout

The table below summarizes the BITS port pinout of the Front Panel "Building Integrated Timing Supply" RJ48 port.

Table 1: BITS Port Pinout

Pin	Signal Name	Direction	Description
1	RX Ring	Input	Receive Ring
2	RX Tip	Input	Receive Tip
3			Not used
4	TX Ring	Output	TX Ring
5	TX Tip	Output	TX Tip
6			Not used
7			Not used
8			Not used

GPS Port Pinout

The platform is capable of receiving or sourcing GPS signals of 1 PPS & 10 MHz. These interfaces are provided by two mini-coax 50-Ohm, 1.0/2.3 DIN series connector on the front panel. Similarly there are two mini-coax 50-Ohm connectors provided in the front panel to output this 1PPS and 10MHz.

The table below summarizes the GPS port pinouts.

Table 2: GPS Port Pinout

	10 Mhz (input and output)	1PPS (input and output)
Waveform	Input—Sine wave Output—Square wave	Input—Pulse shape Output—Pulse shape
Amplitude	Input—> 1.7 volt p-p(+8 to +10 dBm) Output—> 2.4 volts TTL compatible	Input—> 2.4 volts TTL compatible Output—> 2.4 volts TTL compatible
Impedance	50 ohms	50 ohms
Pulse Width	50% duty cycle	26 microseconds
Rise Time	Input—AC coupled Output—5 nanoseconds	40 nanoseconds

Time of Day Pinout

Table 3: ToD pinouts

Pin	Signal Name	Direction	Description
1	RESERVED	Output or Inputs	Do Not Connect
2	RESERVED	Output or Inputs	
3	1PPS_N	Output	1PPS RS422 signal
4	GND	—	—
5		—	—
6	1PPS_P	Input	1PPS RS422 signal
7	TOD_N	Output or input	Time of Day R422 output or input signal
8	TOD_P	Output or input	Time of Day R422 output or input signal

Use a 4-port EIA-232 DCE, 10 feet, Female DB-25, and CAB-HD4-232FC. Pinout of the DB25 connector to be connected to the RS232-to-RS422 converter.

Table 4: RS422 Pinout

Pin	Signal Name	Description
4	TXD+	RTS pin for RS232
20	TXD-	DTR pin for RS232
5	RXD+	CTS pin for RS232
6	RXD-	DSR pin for RS232

Alarm Port Pinout

The table below summarizes the external alarm input pinout.

Table 5: External Alarm Input Pinout

Pin	Signal Name	Description
1	ALARM0_IN	Alarm input 0
2	ALARM1_IN	Alarm input 1
3		No connect
4	ALARM2_IN	Alarm input 2
5	ALARM3_IN	Alarm input 3
6		No connect
7		No connect
8	COMMON	Alarm common

Console/Aux RJ45 RS232 Serial Port Pinout

The table below summarizes the console/aux RJ45 RS232 serial port pinout.

Table 6: Console/Aux RJ45 RS232 serial port

Pin	Signal Name	Direction	Description
1	RTS	Not Used	—

Pin	Signal Name	Direction	Description
2	DTR	Not Used	—
3	TXD	Output	Transmit data
4	RI	Not Used	—
5	GND		
6	RXD	Input	Receive data
7	DSR/DCD	Not Used	—
8	CTS	Not Used	—

Management Ethernet Port Pinout

A single management copper ENET port supporting 10/100/1000Base-T operation exists on each RSP. There is no direct access to the CPU of the other RSP. It uses a standard RJ45 jack.

Note This is not a data plane port.

The table below summarizes the Management Ethernet port pinout.

Table 7: Management Ethernet Port Pinout

Pin	Signal Name	Description
1	TRP0+	
2	TRP0-	
3	TRP1+	
4	TRP1-	
5	TRP2+	
6	TRP2-	
7	TRP3+	
8	TRP3-	

USB Console Port Pinout

Two individual Type-A USB connector are used for USB console and USB mass storage. One single USB 2.0 Type-A receptacle is provided on the RSP front panel for providing console access to ROMMON, IOS-XE and diagnostics. It operates as a USB peripheral only for connection to an external host PC. This requires the use of a Type-A to Type-A connector instead of a standard USB cable.

Note　The use of the USB console is mutually exclusive with the RS232 console/Aux port. While a USB cable is inserted, access is automatically switched to this port.

The other single USB 2.0 Type-A receptacle is provided on the RSP front panel for inserting external USB mass storage devices such as standard USB flash drives. It is used to load images, store configurations, write logs, etc. It supports operation up to 12Mbps

The table below summarizes the USB console port pinout.

Pin	Signal Name	Direction	Description
A1	Vcc		+5VDC (500mA)
A2	D-		Data -
A3	D+		Data +
A4	Gnd		Ground

Note　The USB Console port +5VDC is input and operates as an USB peripheral device.

USB Flash/MEM Port Pinout

Table 8: Single USB Flash/MEM Port

Pin	Signal Name	Direction	Description
A1	Vcc		+5VDC (500mA)
A2	D-		Data -
A3	D+		Data +
A4	Gnd		Ground

Note　USB TYPE-A receptacle used.

Note The USB flash/MEM port +5VDC is output. We provide power for USB flash/MEM, and it operates as a USB host device.

Fiber-Optic Specifications

The specification for optical fiber transmission defines two types of fiber: single-mode and multimode. Within the single-mode category, three transmission types are defined: short reach, intermediate reach, and long reach. Within the multimode category, only short reach is available. For information about optical SFP modules, see the documentation for the SFP module at

http://www.cisco.com/en/US/partner/products/hw/modules/ps5455/prod_installation_guides_list.html.

Alarm Conditions

The table below summarizes the meaning of alarm conditions on the router.

Table 9: Alarm Condition Summary

Alarm Type	Alarm Meaning
Critical	RSP OIR
	Power supply OIR
	Port in down state
	Environmental sensor threshold exceeded (voltage, temperature)
	IM OIR
	IM crash
Major	Standby RSP in ROMmon mode
	RSP removed
	RSP failure
Info	Port administratively shut down

LED Summary

The following sections describe the meanings of the LEDs on the router.

RSP LEDs

Table 10: N560-RSP4 and N560-RSP4-E LEDs

LED	Color/State	Description (Two LEDs for Each Port)
Power (PWR)	Off	Disabled/no power to RSP
	Green	Power rails on RSP in range
Status (STAT)	Off	Disabled/power down
	Red	Failure to boot (lit at reset)
	Yellow	ROMMON booted
	Green	IOS booted and running
Active (ACT)	Off	Not available
	Yellow	Standby (indicates standby RSP)
	Green	Active (indicates active RSP)
Management port (MGMT)	Off	No connection
	Green	Connected with no activity
	Flashing Green	Connected with activity
Sync status (SYNC)	Off	Not enabled
	Yellow	Free run
	Flashing Yellow	Holdover
	Green	Locked to source
BITS	Off	Out of service/not configured
	Amber	Fault or loop condition
	Green	In frame/working properly

Note   The digital code signing functionality validates the integrity and authenticity of the ROMMON image before booting it.

The PWR and STAT LEDs are available on the front panel. These LEDs provide power on the board (PWR) and overall router health (STAT) status. During power up state, these LEDs provide booting status and report errors.

Table 11: Power and Status LEDs Combination

PWR LED State	STAT LED State	Indication	Comment
Light Green	Red	Power is OK and the field-programmable gate array (FPGA) is nfigured successfully, but FPGA image validation failed.	Image validation failed. System is in hung state.
Flashing Light Green and Green alternatively	Off	FPGA configured and core validated successfully. FPGA image passed the control to micro-loader to boot ROMMON.	System is up with ROMMON. Both the FPGA image is validated successfully, but the booted ROMMON (primary or secondary) is undetermined.
	Amber	The digital code signing functionality reported upgrade FPGA image validation error and is continuing with the FPGA image.	System is up with ROMMON. FPGA image is validated successfully, but the booted ROMMON (primary or secondary) is undetermined.
	Red	The digital code signing functionality reported failure in the ROMMON image validation.	FPGA is up but both primary and secondary ROMMON failed. System is in hung state.
Green	Off	IOS is successfully booted	IOS writes into FPGA register to indicate that it has booted, FPGA stops flashing PWR LED and turns Green. Software now controls the STAT LED.

Interface Module LEDs

The following table describes the interface module LEDs:

Table 12: Interface Module LED Details

LED	Color/State	Description (2x100G)	Description (8x10G)	Description (8/16x1G + 1x10G)
PID	—	N560-IMA2C	A900-IMA8Z	A900-IMA8CS1Z-M
Power (PWR)	Off	Disabled/no power to IM	Disabled/no power to IM	Disabled/no power to IM
	Green	Enabled and power rails on IM in range	Enabled and power rails on IM in range	Enabled and power rails on IM in range

LED	Color/State	Description (2x100G)	Description (8x10G)	Description (8/16x1G + 1x10G)
Status (STAT)	Off	Disabled/power-down	Disabled/power-down	Disabled/power-down
	Red	—	—	—
	Flashing Red	Booting (if local CPU), IM Failure, FPD upgrade in progress, FPD upgrade failure	Booting (if local CPU), IM Failure	Booting (if local CPU), IM Failure
	Green	Operational	Operational	Operational
Link Status (L)	Off	Inactive or no connection	Inactive or no connection	Inactive or no connection[1]
	Amber	Fault/loop condition	Fault/loop condition	Fault/loop condition
	Green	Ok with activity or no activity	Ok with activity or no activity	Ok with activity or no activity
Speed (S)	Off	—	Inactive port status	Inactive port status**
	Green	—	Activity or no activity	Activity or no activity

[1] ** CSFP optics is not supported in the 10G port. So the LEDs on port 17 do not function and remains off.

Fan Tray LEDs

Note A major alarm condition indicates the failure of a single fan in the fan tray; a critical alarm indicates the failure of multiple fans. In the event that a single fan fails, the router software adjusts the fan speed to prevent excessive heat within the chassis.

Table 13: Master Fan Tray LED Details

LED	Color/State	Description
Status (TEMP)	Off	Disabled/power down
	Amber	Over temperature
	Green	OK
Fan (FAN)	Green	Fan rotation in range
	Amber	Fan fault
	Red	Two or more fan faults

LED	Color/State	Description
Minor (MIN)	Off	No minor alarm
	Amber	Minor alarm
Major (MAJ)	Off	No major alarm
	Red	Major Alarm
Critical (CRIT)	Off	No critical alarm
	Red	Critical alarm (defaults to ON upon RSP reset)

Table 14: Slave Fan Tray LED Details

LED Color	Fan Fail Status
Green	All fans working fine
Amber	Single fan failure
Red	Two or more fans have failed

Power Supply LEDs

The table below summarizes the power supply LEDs for both the AC and DC power supplies.

Table 15: Power Supply LEDs

LED	Color/State	Description
Input OK	Off	No Input Voltage
	Amber	Input voltage out of range
	Green	Input voltage within acceptable operating range
Output Fail	Off	Disabled/Forced Shut down/No input power
	Red	Power supply fault (internal failure such as over temperature)
	Green	Operational
	Blinking Red	Output ORING FET Failed