

Troubleshooting

This chapter provides information for troubleshooting problems on the Cisco ASR 903 Router.

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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

Pin	Signal Name	Direction	Description
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—Rectangular pulse Output—Rectangular pulse
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

Table 3: GPS Port Pinout for ASR 900 RSP3

	10 Mhz (input and output)	1PPS (input and output)
Waveform	Input—Sine wave Output—Sine and Square wave	Input—Rectangular pulse Output—Rectangular pulse
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

	10 Mhz (input and output)	1PPS (input and output)
Rise Time	Input—AC coupled Output—5 nanoseconds	40 nanoseconds

Time of Day Port Pinout

The table below summarizes the TOD pinout for A900-RSP2A and A900-RSP3-3C-400 modules.

Note This port requires the use of SHIELDED cable for GR-1089-core “Intra-Bldg lightning surge” protection. RS422 interface is per industry standard EIA-422 /RS422 specification.

Note In order to comply with IEEE 1613.1-2013 the cables used to connect the 10MHz and 1PPS ports to other equipment must be less than 2 meters long in order to protect these ports from exposure to damaging transients.

Note In order to comply with IEC 61850-3:2013 the 10MHz and 1PPS ports must be classified as Class 1 Reliability Level for Local Connection use in order to protect these ports from exposure to damaging transients.

Table 4: RJ48 IPPS/ToD Port Pinout

Pin	Signal Name	Direction	Description
1	RESERVED	Output or Input	V.11 Cable Corporation
2	RESERVED	Output or Input	
3	1PPS_N	Input	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 5: 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 6: 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 7: Console/Aux RJ45 RS232 serial port

Pin	Signal Name	Direction	Description
1	RTS	Output	Request to send
2	DTR	Output	Data Terminal Ready (always On).
3	TXD	Output	Transmit data

Pin	Signal Name	Direction	Description
4	RI		Ring Indicator
5	GND		
6	RXD	Input	Receive data
7	DSR/DCD	Input	Data set ready/Data Carrier detect
8	CTS	Input	Clear to send

16 T1/E1 Interface Module Pinout

The table below summarizes the pinouts of the cable (Tyco part number 2163442-1, Cisco part number 72-5184-01) used to connect the T1/E1 interface module to the rear of the patch panel.

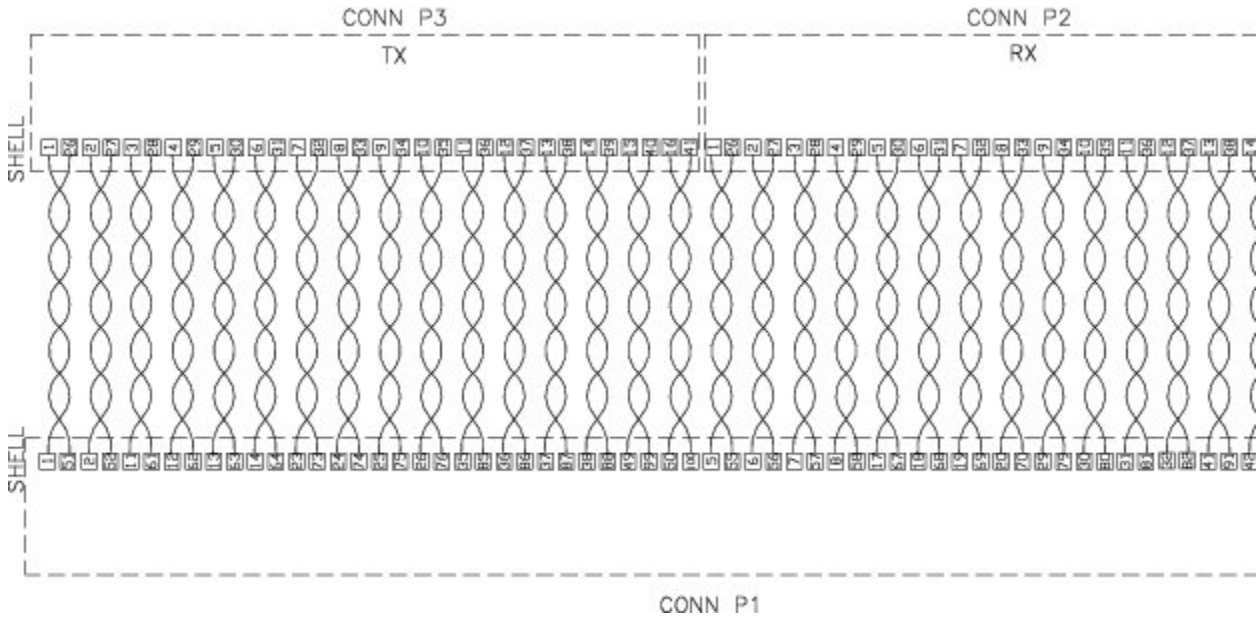
Table 8: 16 T1/E1 Interface Pinouts

Line	Board PIns	Signal Name	Telco TX	Jack Pin	Board Pins	Signal Name	Telco RX	Jack Pin
Line 0	88	TX_RING_P1	39	1	92	RX_RING_P1	39	4
	38	TX_TIP_P1	14	2	42	RX_TIP_P1	14	5
Line 1	87	TX_RING_P2	38	1	91	RX_RING_P2	38	4
	37	TX_TIP_P2	13	2	41	RX_TIP_P2	13	5
Line 2	76	TX_RING_P3	35	1	80	RX_RING_P3	35	4
	26	TX_TIP_P3	10	2	30	RX_TIP_P3	10	5
Line 3	75	TX_RING_P4	34	1	79	RX_RING_P4	34	4
	25	TX_TIP_P4	9	2	29	RX_TIP_P4	9	5
Line 4	100	TX_RING_P5	41	1	94	RX_RING_P5	41	4
	50	TX_TIP_P5	16	2	44	RX_TIP_P5	16	5
Line 5	99	TX_RING_P6	40	1	93	RX_RING_P6	40	4
	49	TX_TIP_P6	15	2	43	RX_TIP_P6	15	5
Line 6	86	TX_RING_P7	37	1	82	RX_RING_P7	37	4
	36	TX_TIP_P7	12	2	32	RX_TIP_P7	12	5
Line 7	85	TX_RING_P8	36	1	81	RX_RING_P8	36	4
	35	TX_TIP_P8	11	2	31	RX_TIP_P8	11	5

Line	Board Plns	Signal Name	Telco TX	Jack Pin	Board Pins	Signal Name	Telco RX	Jack Pin
Line 8	64	TX_RING_P9	31	1	68	RX_RING_P9	31	4
	14	TX_TIP_P9	6	2	18	RX_TIP_P9	6	5
Line 9	63	TX_RING_P10	30	1	67	RX_RING_P10	30	4
	13	TX_TIP_P10	5	2	17	RX_TIP_P10	5	5
Line 10	52	TX_RING_P11	27	1	56	RX_RING_P11	27	4
	2	TX_TIP_P11	2	2	6	RX_TIP_P11	2	5
Line 11	51	TX_RING_P12	26	1	55	RX_RING_P12	26	4
	1	TX_TIP_P12	1	2	5	RX_TIP_P12	1	5
Line 12	74	TX_RING_P13	33	1	70	RX_RING_P13	33	4
	24	TX_TIP_P13	8	2	20	RX_TIP_P13	8	5
Line 13	73	TX_RING_P14	32	1	69	RX_RING_P14	32	4
	23	TX_TIP_P14	7	2	19	RX_TIP_P14	7	5
Line 14	62	TX_RING_P15	29	1	58	RX_RING_P15	29	4
	12	TX_TIP_P15	4	2	8	RX_TIP_P15	4	5
Line 15	61	TX_RING_P16	28	1	57	RX_RING_P16	28	4
	11	TX_TIP_P16	3	2	7	RX_TIP_P16	3	5

The figure below shows the wiring schematic of the cable used to connect the T1/E1 interface module to the rear of the patch panel.

Figure 1: Wiring Schematic of Cable between 16 T1/E1 Interface and Patch Panel



32 T1/E1 Interface Module Pinout

The table below summarizes the pinouts of the cable used to connect the 32 T1/E1 interface module to the rear of the patch panel.

Table 9: 32 T1/E1 Pinout

Board Connector	Line	Board PIns	Signal Name	Telco TX	Jack Pin	Board Pins	Signal Name	Telco RX	Jack Pin
PORTS 0-15	Line 0	48	TX_RING_P0	39	1	66	RX_RING_P0	39	4
		14	TX_TIP_P0	14	2	32	RX_TIP_P0	14	5
	Line 1	47	TX_RING_P1	38	1	65	RX_RING_P1	38	4
PORTS 0-15		13	TX_TIP_P1	13	2	31	RX_TIP_P1	13	5
PORTS 0-15	Line 2	44	TX_RING_P2	35	1	62	RX_RING_P2	35	4
		10	TX_TIP_P2	10	2	28	RX_TIP_P2	10	5
PORTS 0-15	Line 3	43	TX_RING_P3	34	1	61	RX_RING_P3	34	4
		9	TX_TIP_P3	9	2	27	RX_TIP_P3	9	5
PORTS 0-15	Line 4	50	TX_RING_P4	41	1	68	RX_RING_P4	41	4
		16	TX_TIP_P4	16	2	34	RX_TIP_P4	16	5

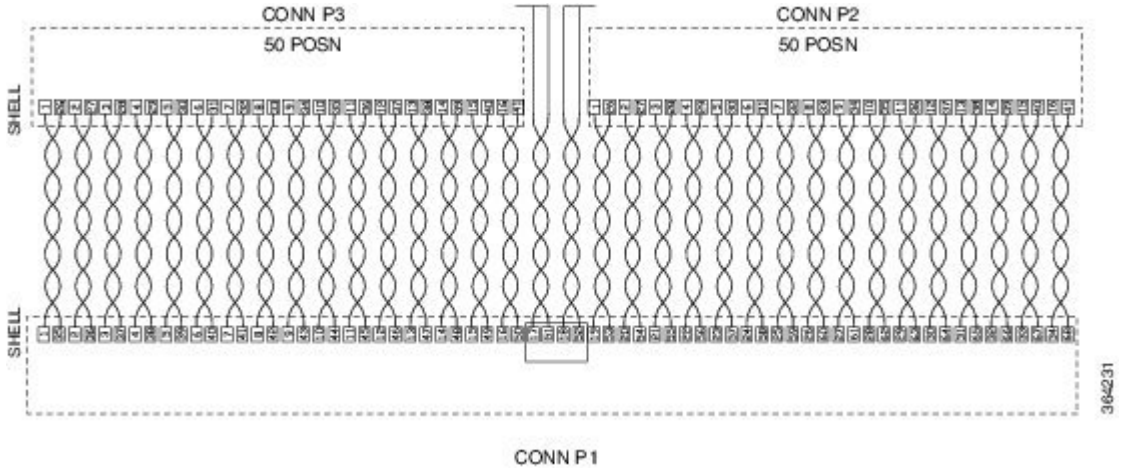
Board Connector	Line	Board PIns	Signal Name	Telco TX	Jack Pin	Board Pins	Signal Name	Telco RX	Jack Pin
PORTS 0-15	Line 5	49	TX_RING_P5	40	1	67	RX_RING_P5	40	4
		15	TX_TIP_P5	15	2	33	RX_TIP_P5	15	5
PORTS 0-15	Line 6	46	TX_RING_P6	37	1	64	RX_RING_P6	37	4
		12	TX_TIP_P6	12	2	30	RX_TIP_P6	12	5
PORTS 0-15	Line 7	45	TX_RING_P7	36	1	63	RX_RING_P7	36	4
		11	TX_TIP_P7	11	2	29	RX_TIP_P7	11	5
PORTS 0-15	Line 8	40	TX_RING_P8	31	1	58	RX_RING_P8	31	4
		6	TX_TIP_P8	6	2	24	RX_TIP_P8	6	5
PORTS 0-15	Line 9	39	TX_RING_P9	30	1	57	RX_RING_P9	30	4
		5	TX_TIP_P9	5	2	23	RX_TIP_P9	5	5
PORTS 0-15	Line 10	36	TX_RING_P10	27	1	54	RX_RING_P10	27	4
		2	TX_TIP_P10	2	2	20	RX_TIP_P10	2	5
PORTS 0-15	Line 11	35	TX_RING_P11	26	1	53	RX_RING_P11	26	4
		1	TX_TIP_P11	1	2	19	RX_TIP_P11	1	5
PORTS 0-15	Line 12	42	TX_RING_P12	33	1	60	RX_RING_P12	33	4
		8	TX_TIP_P12	8	2	26	RX_TIP_P12	8	5
PORTS 0-15	Line 13	41	TX_RING_P13	32	1	59	RX_RING_P13	32	4
		7	TX_TIP_P13	7	2	25	RX_TIP_P13	7	5
PORTS 0-15	Line 14	38	TX_RING_P14	29	1	56	RX_RING_P14	29	4
		4	TX_TIP_P14	4	2	22	RX_TIP_P14	4	5
PORTS 0-15	Line 15	37	TX_RING_P15	28	1	55	RX_RING_P15	28	4
		3	TX_TIP_P15	3	2	21	RX_TIP_P15	3	5
PORTS 16-31	Line 16	48	TX_RING_P16	39	1	66	RX_RING_P16	39	4
		14	TX_TIP_P16	14	2	32	RX_TIP_P16	14	5
	Line 17	47	TX_RING_P17	38	1	65	RX_RING_P17	38	4
PORTS 16-31		13	TX_TIP_P17	13	2	31	RX_TIP_P17	13	5

Board Connector	Line	Board PIns	Signal Name	Telco TX	Jack Pin	Board Pins	Signal Name	Telco RX	Jack Pin
PORTS 16-31	Line 18	44	TX_RING_P18	35	1	62	RX_RING_P18	35	4
		10	TX_TIP_P18	10	2	28	RX_TIP_P18	10	5
PORTS 16-31	Line 19	43	TX_RING_P19	34	1	61	RX_RING_P19	34	4
		9	TX_TIP_P19	9	2	27	RX_TIP_P19	9	5
PORTS 16-31	Line 20	50	TX_RING_P20	41	1	68	RX_RING_P20	41	4
		16	TX_TIP_P20	16	2	34	RX_TIP_P20	16	5
PORTS 16-31	Line 21	49	TX_RING_P21	40	1	67	RX_RING_P21	40	4
		15	TX_TIP_P21	15	2	33	RX_TIP_P21	15	5
PORTS 16-31	Line 22	46	TX_RING_P22	37	1	64	RX_RING_P22	37	4
		12	TX_TIP_P22	12	2	30	RX_TIP_P22	12	5
PORTS 16-31	Line 23	45	TX_RING_P23	36	1	63	RX_RING_P23	36	4
		11	TX_TIP_P23	11	2	29	RX_TIP_P23	11	5
PORTS 16-31	Line 24	40	TX_RING_P24	31	1	58	RX_RING_P24	31	4
		6	TX_TIP_P24	6	2	24	RX_TIP_P24	6	5
PORTS 16-31	Line 25	39	TX_RING_P25	30	1	57	RX_RING_P25	30	4
		5	TX_TIP_P25	5	2	23	RX_TIP_P25	5	5
PORTS 16-31	Line 26	36	TX_RING_P26	27	1	54	RX_RING_P26	27	4
		2	TX_TIP_P26	2	2	20	RX_TIP_P26	2	5
PORTS 16-31	Line 27	35	TX_RING_P27	26	1	53	RX_RING_P27	26	4
		1	TX_TIP_P27	1	2	19	RX_TIP_P27	1	5
PORTS 16-31	Line 28	42	TX_RING_P28	33	1	60	RX_RING_P28	33	4
		8	TX_TIP_P28	8	2	26	RX_TIP_P28	8	5
PORTS 16-31	Line 29	41	TX_RING_P29	32	1	59	RX_RING_P29	32	4
		7	TX_TIP_P29	7	2	25	RX_TIP_P29	7	5
PORTS 16-31	Line 30	38	TX_RING_P30	29	1	56	RX_RING_P30	29	4
		4	TX_TIP_P30	4	2	22	RX_TIP_P30	4	5

Board Connector	Line	Board PIns	Signal Name	Telco TX	Jack Pin	Board Pins	Signal Name	Telco RX	Jack Pin
PORTS 16-31	Line 31	37	TX_RING_P31	28	1	55	RX_RING_P31	28	4
		3	TX_TIP_P31	3	2	21	RX_TIP_P31	3	5

The table below shows the wiring schematic of the cable used to connect the 32 T1/E1 interface module to the rear of the patch panel.

Figure 2: 32 T1/E1 Wiring Schematic of Cable between 32 T1/E1 Interface and Patch Panel



8 T1/E1 Interface Module RJ48C Port Pinouts

Table 10: RJ48C Connector Pin-out for 8 T/E1 Interface Module

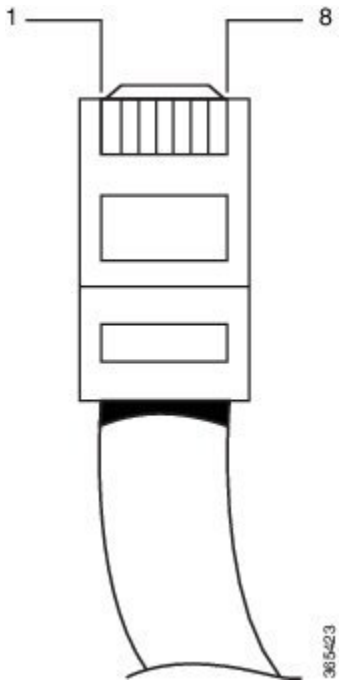
Pin	Signal	Direction	Description
1	RX_TIP	Input	Receive Tip
2	RX_RING	Output	Receive Ring
3	—	—	Not Connected
4	TX_TIP	Input	Receive Tip
5	TX_RING	Output	Receive Ring
6	—	—	Not Connected
7	—	—	Not Connected
8	—	—	Not Connected

T1/E1 Port Pinout

RJ48 T1/E1 Port Pinouts

The figure below shows the RJ48 connector wiring for the T1/E1 cable for the interface module. The table shows the pinout configuration for the RJ4C connectors for both the shielded and unshielded cables for either T1 or E1.

Figure 3: RJ48 Connector Wiring



The table below summarizes the RJ48 port pinout.

Table 11: RJ48 Port Pinouts

Shielded	**Unshielded**		
Pin	Description	Pin	Description
1	Receive Ring	1	Receive Ring
2	Receive Tip	2	Receive Tip
3	Receive Shield	3	
4	Transmit Ring	4	Transmit Ring
5	Transmit Tip	5	Transmit Tip
6	Transmit Shield	6	

Shielded	Unshielded		
7	Not Used	7	
8	Not Used	8	

The table below summarizes the RJ45 port pinout.

Table 12: RJ45 Port Pinout

Pin	Signal Name	Direction	Description
1	1PPS_P	Output or Input	1PPS RS422 signal
2	1PPS_N	Output or Input	1PPS RS422 signal
3	RESERVED	Output	Do NOT connect
4	GND		
5	GND		Time of Day character
6	RESERVED	Input	Do NOT connect
7	TOD_P	Output or Input	Time of Day character
8	TOD_N	Output or Input	Time of Day character

Serial Cable Pinouts

The following sections summarize the pinouts for 14-port serial interface module when used with the cable types specified in Connecting Serial Cables.

DB-9 Connector Pinouts

The table below summarizes the pinouts for each serial interface type when using a DB-9 connector.

Table 13: DB-9 Pin-outs

Pin	Standard DB-9	Direction	Description	RS-485	IRIG-B
1	NC	Output	Unused	NC	NC
2	RxD	Input	Receive	NC	NC
3	TxD	Output	Transmit	NC	IRIG-B (RS232)
4	DTR	Output	DTR	TxD-	IRIG-B- (RS485)
5	GND	—	GND	GND	GND

Pin	Standard DB-9	Direction	Description	RS-485	IRIG-B
6	DSR	Input	DSR	RxD-	NC
7	RTS	Output	RTS	TxD+	IRIG-B+
8	CTS	Input	CTS	RxD+	NC
9	NC/GND	—	Unused or Ring	NC	NC

Note Twisted Pairs are 2-5, 6-8, 4-7.

Note IRIG-B standards are not currently supported by software.

RJ-45 Connector Pinouts

The table below summarizes the pinouts for each serial interface type when using an RJ-45 connector.

Table 14: RJ45 Pinout

Pin	Standard DB-9	Direction	Description	RS-485	IRIG-B
1	RTS	Input	Ready to send	RxD+ (RS485)	NC
2	DTR	Input	DTR	RxD- (RS485)	NC
3	TxD	Input	Transmit	NC	NC
4	GND	—	Signal ground	Gnd	Gnd
5	GND	—	Signal ground	Gnd	Gnd
6	RxD	Output	Receive data	NC	IRIG-B (RS232)
7	DST	Output	DSR	TxD-	IRIG-B- (RS485)
8	CTS	Output	CTS	TxD+	IRIG-B+ (RS485)

Note Twisted Pairs are: 1-2, 3-6, 4-5, 7-8.

Note IRIG-B standards are not currently supported by software.

E and M Interface Module Pinouts

Table 15: RJ45 Front End Pinout

Pin	Signal	Description	Type 1	2	3	5	Usage
1	SIG_BAT_N48V	48V signaling battery	—	SB	SB	—	
2	M_SIG_IN	Signaling input	M				
3	RING_AUDIO_IN	Ring, audio input	R				Not used in 2-wire mode
4	RING_AUDIO_IN_OUT	Ring, audio input/ouput or output	R1				4-wire mode: Output 2-wire mode: InOut
5	TIP_AUDIO_IN_OUT	Tip, audio input/output or output	T1				
6	TIP_AUDIO_IN	Tip, audio input	T				Not used in 2-wire mode
7	E_SIG_OUT	Signaling output	E				
8	SIG_GND_RETURN	Signaling ground return	—	SG	SG	—	

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 16: Management Ethernet Port Pinout

Pin	Signal Name
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.

Table 17: Single USB Console Port

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

The table below summarizes the USB flash/MEM port pinout.

Table 18: 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 .

Cabling Guidelines

The guidelines are recommended during the installation of fiber cables:

- Avoid the following actions that can stress the cable:
  - Pulling or stretching beyond the specified pulling load rate
  - Bending it beyond the specified bend radius

- Creating tension in the suspension runs

- Do not touch the fiber tips of fiber cables.
- Use single mode or multi-mode optical fiber cables as per the optical transceiver requirement.
- Use fiber cleaner to clean the fiber tip as well as transceiver before inserting the fiber cable into the optical transceiver during installation.
- To avoid excessive bending of fiber cable and efficient routing of cables, cable guides or cable brackets are recommended to be used with the chassis.

LED Summary

The following sections describe the meanings of the LEDs on the Cisco ASR 903 Router.

RSP LEDs

The table below summarizes the RSP LEDs for the supported RSP modules.

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 Cisco ASR 903 Router software adjusts the fan speed to prevent excessive heat within the chassis.

ASR900-RSP LED

Table 19: A900-RSP 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)

LED	Color/State	Description (two LEDs for each port)
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
USB flash (MEM)	Flashing green	USB activity
BITS	Off	Out of service/not configured
	Amber	Fault or loop condition
	Green	In frame/working properly

A900-RSP2 and A900-RSP3 LED Information

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.

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

Table 20: A900-RSP2 and A900-RSP3 LED

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.

PWR LED State	STAT LED State	Indication	Comment
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

This LED summary applies to the following interface module:

- 8/16-port 1 Gigabit Ethernet (SFP/SFP) + 1-port 10 Gigabit Ethernet (SFP+) / 2-port 1 Gigabit Ethernet (CSFP) Interface Module

The Status LED is Amber for the 10 Gigabit Ethernet ports when operating in WAN mode for the following:

- 8x1 Gigabit Ethernet SFP + 1x10 Gigabit Ethernet SFP+ Interface Module
- 8x1 Gigabit Ethernet RJ45 + 1x10 Gigabit Ethernet SFP+ Interface Module
- 2x10 Gigabit Ethernet SFP+ Interface Module

Table 21: Interface Module LEDs

LED	Color/State	Description
Power (PWR)	Off	Disabled/no power to IM
	Green	Enabled and power rails on IM in range
Status (STAT)	Off	Disabled/power-down
	Red	Failure (on at reset)
	Flashing Red	Booting (if local CPU)
	Green	Operational

LED	Color/State	Description
Link status (L)	Off	Inactive or no connection
	Amber	Fault/loop condition
	Green	Ok with activity or no activity
Speed (S)	Off	Inactive port status
	Green	Activity or no activity

OC-3 and OC-192 Interface Module LEDs

The table below summarizes the LEDs for the OC-3 and OC-192 interface module.

Table 22: Interface Module LEDs

LED	Color/State	Description
Power (PWR)	Off	Disabled/no power to IM
	Green	Enabled and power rails on IM in range
Status (STAT)	Off	Disabled/power-down
	Red	Failure (on at reset)
	Amber	Booting (if local CPU)
	Green	Operational
Carrier/Alarm (C/A)	Green	SFP receiving good remote signal
	Yellow	Remote or local alarm activated
Active/Loopback(A/L)	Green	SFP ready and operating normally
	Yellow	SFP port in loopback state

T1/E1 Interface Module LEDs

Table 23: 16-port T1/E1 Interface Module LEDs

LED	Color/State	Description (two LEDs for eachT1/E1 port)
Active	Green	Active
	Blinking green	Standby
	Off	Operationally down; card is disabled or shut down

LED	Color/State	Description (two LEDs for eachT1/E1 port)
Port	Green	All ports up
	Blinking green	All ports up and one or more ports in a loopback state
	Amber	One or more configured ports are down
	Blinking amber	One or more configured ports are down and at least one configured port is in a loopback state
	Off	All ports disabled or shut down
PWR	Green	All power rails are within supported range
	Red	Disabled
	Off	No power on the interface module
STAT	Red	Failed
	Off	Disabled or powered down
	Blinking red	Booting
	Green	Active

Table 24: 8-port T1/E1 Interface Module LEDs

LED	Color/State	Description (two LEDs for eachT1/E1 port)
Active	Green	Active
	Blinking green	Standby
	Off	Card is disabled or shut down
Port	Green	All ports up
	Amber	One or more configured ports are down
	Off	All ports disabled or shut down
PWR	Green	All power rails are within supported range
	Red	Disabled
	Off	No power on the interface module
STAT	Red	Failed
	Off	Disabled or powered down
	Green	Active

Table 25: 32-port T1/E1 Interface Module LEDs

LED	Color/State	Description (two LEDs for eachT1/E1 port)
Active	Green	Active
	Blinking green	Standby
	Off	Operationally down; card is disabled or shut down
Port	Green	All ports up
	Blinking green	All ports up and one or more ports in a loopback state
	Amber	One or more configured ports are down
	Blinking amber	One or more configured ports are down and at least one configured port is in a loopback state
	Off	All ports disabled or shut down
STAT	Green	Operational
	Pulsing Green	Booting
	Red	Failure; On at reset
	Off	Disabled or power down
PWR	Green	IM power rails are in range and are enabled
	Off	Disabled; No power to IM

Table 26: 48-port T1/E1 and 48-port T3/E3 interface Module LEDs

LED	Color/State	Description (two LEDs for eachT1/E1 port)
Active	Green	Active
	Blinking green	Standby
	Off	Card is disabled or shut down
Port	Green	All ports up
	Amber	One or more configured ports are down
	Off	All ports disabled or shut down
PWR	Green	All power rails are within supported range
	Red	Disabled
	Off	No power on the interface module

LED	Color/State	Description (two LEDs for eachT1/E1 port)
STAT	Red	Failed
	Off	Disabled or powered down
	Green	Active

Serial Interface Module LEDs

The table below summarizes the LEDs for the serial interface module.

Table 27: Cisco ASR 903 Router Serial IM LEDs

LED Label	Color/State	Meaning
Power (PWR)	Green	All power rails are within spec.
	Red	Disabled
	Off	No Power
Operating Status (STAT)	Red	Failure
	Yellow	Booting (if IM has a local CPU)
	Green	Operational
	Off	No Power
68-Pin Connector LEDs	Green	At least one of the 4 ports is in an up state.
	Blinking Green	At least one of the 4 ports is passing traffic
	Yellow	All four ports are successfully initialized and in a down state
	Blinking Yellow	At least one of the port has failed
	Off	All the ports are not enabled (at POR)
12-in-1 Connector LEDs	Green	Port is passing traffic
	Yellow	Port successfully initialized and in a down state
	Blinking Yellow	Port has failed
	Off	Not Enabled (at POR)

E and M Interface Module LEDs

The table below summarizes the LEDs for the E & M interface module.

Table 28: Cisco ASR 903 Router EandM IM LEDs

LED Label	Color/State	Description
Power (PWR)	Green	All power rails are within spec.
	Red	Disabled
	Off	No Power
Operating Status (STAT)	Red	Failure
	Yellow	Booting (if IM has a local CPU)
	Green	Operational
	Off	No Power
Port Bi-color LEDs	Green	Call established
	Blinking Green	Not used
	Yellow	Call not established
	Blinking Yellow	Not used
	Off	Initialized

4-Port C37.94 Interface Module LEDs

The table below summarizes the LEDs for the 37.94 interface module.

Table 29: Cisco ASR 903 Router C37.94 IM LEDs

LED Label	Color/State	Description
Power (PWR)	Green	All power rails are within spec.
	Red	Disabled
	Off	No Power
Operating Status (STAT)	Red	Failure
	Yellow	Booting
	Green	Operational
	Off	No Power
Rx LEDs	Green	Link up with activity
	Yellow	Fault/Error/Alarm/No Sync
	Off	Link Down

LED Label	Color/State	Description
Tx LEDs	Green	Link up with activity
	Yellow	Fault/Error/Alarm
	Off	Link Down

Power Supply LEDs

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

Table 30: DC Power Supply LEDs (A900-PWR-550-D)

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

Table 31: DC Power Supply LEDs (A900-PWR-1200-D)

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

Table 32: AC Power Supply LEDs (A900-PWR-550-A) and (A900-PWR-!200-A)

LED	Color/State	Description
Input Power (PWR)	Off	No input voltage
	Amber	Input voltage out of range
	Green	Input voltage within acceptable operating range
Status (STAT)	Off	Disabled/power-down/no power
	Red	Power supply fault (internal failure)
	Green	Operational

Fan Tray LEDs

The table below summarizes the fan tray LEDs.

Table 33: Fan Tray LEDs

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

Alarm Conditions

The table below summarizes the meaning of alarm conditions on the Cisco ASR 903 Router.

Table 34: Alarm Condition Summary

Alarm Type	Alarm Description
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