# Cisco D9402 IP to ASI Adapter

## Product Overview

Today's contribution and distribution systems demand versatile, flexible, and compact solutions that allow content providers and service providers to support new network architectures. The Cisco D9402 IP to ASI Adapter (Figure 1) allows broadcasters and telecommunications operators to take advantage of the flexibility and cost savings available in real-time delivery of MPEG2 transport streams over cost-effective IP links.

The Cisco D9402 offers 100BASE-T and 1000BASE-T Ethernet network interfaces, or an optional 1000BASE-X Ethernet network interface, for receiving or transmitting one or two IP-encapsulated MPEG transport streams.

To enhance reliability, the Cisco D9402 implements Forward Error Correction (FEC) based on Pro-MPEG Forum CoP-3 FEC.

With its high quality, flexibility, and compact design (up to three dual Asynchronous Serial Interface(ASI) receivers in one rack unit [RU]), the Cisco D9402 can adapt to a wide range of applications, including professional compressed broadcast contribution, studio-to-studio media exchange, in-house signal distribution and routing, postproduction, and live event coverage.

The Cisco D9402 is controlled with an easy and intuitive GUI, supports Simple Network Management Protocol (SNMP), and interoperates with Cisco ROSA® or third-party management systems.

**Figure 1.** Cisco D9402 ASI to IP Adapter

## Main Features and Benefits

- IP network adapter for reception or transmission of one or two MPEG transport streams (constant bit rate [CBR])
- 100BASE-T, 1000BASE-T, or 1000BASE-X Ethernet network interface (Small Form-Factor Pluggable [SFP])
- User Data Protocol (UDP) and Real-Time Transport Protocol (RTP)encapsulation and de-encapsulation
- Unicast and multicast support
- VLAN support
- FEC according to Pro-MPEG Forum CoP-3
- Adaptive Clock Recovery according to ETR290 supporting single-frequency networks (SFNs)
- Compact 1RU, one-third-width enclosure (three units in 1RU)
- 10BASE-T and 100BASE-T Ethernet management interface for out-of-band management

- Inband-management using a Gigabit Ethernet interface
- SNMPv2c and SNMPv3 support
- Web interface
- DC or optional AC power supply
- Monitoring with ROSA Network Management System

## Product Specifications

Table 1 provides detailed specifications for the Cisco D9402 ASI to IP Adapter.

**Table 1.** Product Specifications

| Feature | Description |
|---|---|
| **Transport Stream Interfaces** | |
| **Ports** | • Dual Digital Video Broadcasting (DVB) and ASI ports per Cisco D9402 module, up to 3 modules per chassis (1RU)<br>• Each ASI port can be user programmed as either input or output |
| **Physical and electrical characteristics** | EN50083-9 |
| **Line coding** | 270 Mbps and 10B/8B Coding |
| **Connector** | Female BNC |
| **DVB-ASI framing** | Byte and packet-mode |
| **MPEG-TS packet size** | 188 and 204 byte |
| **Network Interfaces** | |
| **Type** | • 100BASE-T Ethernet<br>• 1000BASE-T Ethernet and 1000BASE-X Ethernet (optional) |
| **Protocols** | • IEEE802.3 Ethernet, VLAN 802.1Q<br>• UDP, RTP, Address Resolution Protocol (ARP), IPv4, and Internet Group Management Protocol (IGMP) Version 2 and Version 3 |
| **Connector** | RJ45, SFP module (optional) |
| **Total bitrate** | Maximum 400 Mbps |
| **Ethernet MTU length** | Maximum 1500 bytes |
| **Protocols** | UDP, RTP, and Real-Time Transport Control Protocol (RTCP) |
| **Stream Processing** | |
| **TS bitrate** | Maximum 200 Mbps per port, CBR |
| **TS format** | Single-program transport stream (SPTS) or multiprogram transport stream (MPTS) |
| **TS encapsulation** | UDP or RTP |
| **Forward Error Correction** | Pro-MPEG Forum CoP-3 |
| **Transport stream processing** | Transparent, no-PCR restamping |
| **Clock recovery** | Adaptive to ETR290 |
| **Control and Management** | |
| **Type** | 10BASE-T and 100 BASE-T Ethernet or in-band over Gigabit Ethernet |
| **Features** | Element control through SNMP and Web interface |
| **Protocol** | HTTP, XML, and SNMP v2c and v3 |
| **Connector** | RJ45 |
| **Maintenance port** | RS232, RJ45 |
| **Physical and Power** | |
| **Input voltage** | 18 to 60 VDC |

| Feature | Description |
|---|---|
| **Input voltage option** | 110 to 240 VAC +/-10% |
| **Power consumption** | ≤ 25W |
| **Dimensions** | 1 RU, one-third width 19 in.<br>(W x D x H) 5.8 x 10.3 x 1.7 in. (146 x 260 x 43.5 mm)<br>Three units in 19-in. 1 RU rack space |
| **Weight** | Maximum1.76 lb (0.8 kg ) |
| **Installation** | 19-in. rack-mounting kit supplied |
| **Environmental Specifications** | |
| **Operating temperature** | 32 to 104℉ (0 to 40℃) |
| **Storage temperature** | -4 to 158℉ (-20 to 70℃) |
| **Relative humidity** | 5 to 95% (non condensing) @ 104℉ (40℃) |
| **Altitude** | 70 to 106 kPa |
| **Cooling** | Forced cooling with air flow from side to side (left to right viewed from the front) |

## Ordering Information

To place an order, visit the Cisco Ordering homepage. To download software, visit the Cisco Software Center. Table 2 provides ordering information.

**Table 2.** Ordering Information: Cisco D9402 ASI to IP Adapter

| Description | Part Number |
|---|---|
| **D9402 Single Device, 2 ASI I/O Bi-dir (100BT, AC)** | D9402-1-100-AC |
| **D9402 Single Device, 2 ASI I/O Bi-dir (100BT, DC)** | D9402-1-100-DC |
| **D9402 Single Device, 2 ASI I/O Bi-dir, FEC (100BT, AC)** | D9402-1-FEC-100-AC |
| **D9402 Single Device, 2 ASI I/O Bi-dir, FEC (100BT, DC)** | D9402-1-FEC-100-DC |
| **D9402 Single Device, 2 ASI I/O Bi-dir, FEC (1GbE-e/o, AC)** | D9402-1-FEC-GbE-AC |
| **D9402 Single Device, 2 ASI I/O Bi-dir, FEC (1GbE-e/o, DC)** | D9402-1-FEC-GbE-DC |
| **D9402 Single Device, 2 ASI I/O Bi-dir, (1GbE-e/o,AC)** | D9402-1-GbE-AC |
| **D9402 Dual Device, each 2 ASI I/O Bi-dir, FEC (100BT, DC)** | D9402-2-100-AC |
| **D9402 Dual Device, each 2 ASI I/O Bi-dir, FEC (100BT, DC)** | D9402-2-FEC-100-DC |
| **D9402 Three Devices, each 2 ASI I/O Bi-dir (100BT, DC)** | D9402-3-100-DC |
| **D9402 External AC Pwr Supply, 110-240V** | D9402-PWR-AC= |

Table 3 provides ordering information for optional AC power cords and SFPs.

**Table 3.** Ordering information: AC Power Cord and SFPs

| Description | Part Number |
|---|---|
| **AC Power Cords** | |
| **Argentina** | RFGW1-AC-CORD-A= |
| **Australia** | RFGW1-AC-CORD-K= |
| **China** | RFGW1-AC-CORD-C= |
| **Europe** | 3989835 |
| **Italy** | RFGW1-AC-CORD-I= |
| **Japan** | RFGW1-AC-CORD-J= |
| **UK** | 3989836 |
| **US** | 3989838 |

| Description | Part Number |
|---|---|
| **SFP Plug-Ins: WDM types** | |
| **GbE SFP module 850 nm (LC, up to 500 m)** | SFP-WDM-850-0500= |
| **GbE SFP module 1310 nm (LC, up to 5 km)** | SFP-WDM-1310-5= |
| **SFP Plug-Ins: CWDM types** | |
| **GbE SFP module 1470 nm (LC, up to 40 km)** | SFP-CWDM-1470-40= |
| **GbE SFP module 1490 nm (LC, up to 40 km)** | SFP-CWDM-1490-40= |
| **GbE SFP module 1510 nm (LC, up to 40 km)** | SFP-CWDM-1510-40= |
| **GbE SFP module 1530 nm (LC, up to 40 km)** | SFP-CWDM-1530-40= |
| **GbE SFP module 1550 nm (LC, up to 40 km)** | SFP-CWDM-1550-40= |
| **GbE SFP module 1570 nm (LC, up to 40 km)** | SFP-CWDM-1570-40= |
| **GbE SFP module 1590 nm (LC, up to 40 km)** | SFP-CWDM-1590-40= |
| **GbE SFP module 1610 nm (LC, up to 40 km)** | SFP-CWDM-1610-40= |
| **GbE SFP module 1470 nm (LC, up to 70 km)** | SFP-CWDM-1470-70= |
| **GbE SFP module 1490 nm (LC, up to 70 km)** | SFP-CWDM-1490-70= |
| **GbE SFP module 1510 nm (LC, up to 70 km)** | SFP-CWDM-1510-70= |
| **GbE SFP module 1530 nm (LC, up to 70 km)** | SFP-CWDM-1530-70= |
| **GbE SFP module 1550 nm (LC, up to 70 km)** | SFP-CWDM-1550-70= |
| **GbE SFP module 1570 nm (LC, up to 70 km)** | SFP-CWDM-1570-70= |
| **GbE SFP module 1590 nm (LC, up to 70 km)** | SFP-CWDM-1590-70= |
| **GbE SFP module 1610 nm (LC, up to 70 km)** | SFP-CWDM-1610-70= |

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Cisco Services brings together the people, processes, tools, and partners to accelerate service providers' success by using their IP next-generation (IP NGN) architectural platforms. Cisco Services is focused on promoting business outcomes through network, services, and operational transformation. Through a collaborative approach and tailored engagements, Cisco Services can help accelerate time to market, mitigate risk, reduce cost through improved operating efficiency, and help ensure an excellent user experience.

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## For More Information

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http://www.cisco.com/en/US/products/ps9828/index.html

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