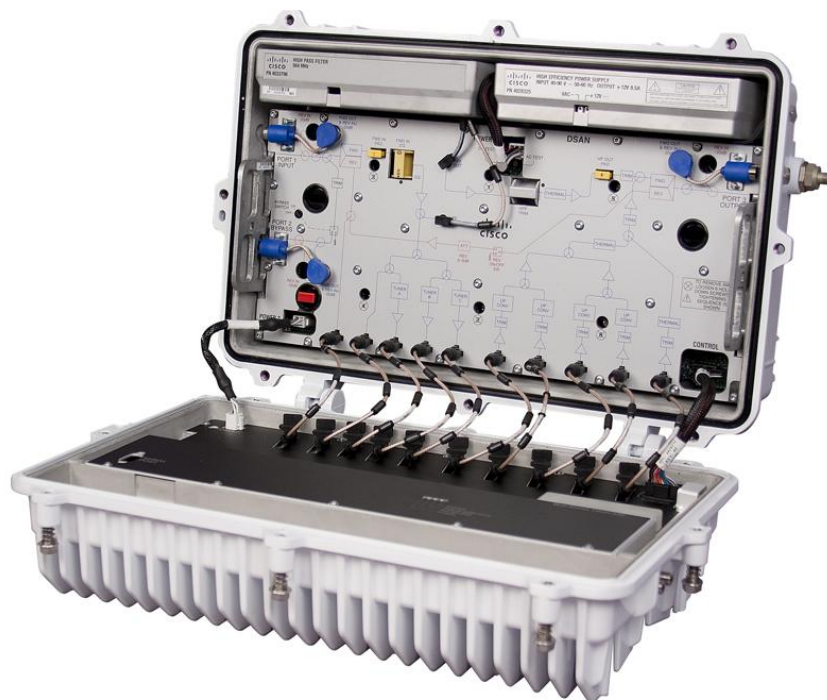


## The Cisco DSAN Solution

As broadband service providers begin to migrate to deep digital networks, the Cisco® Digital Service Access Node (DSAN) provides a cost-effective, flexible, easy-to-deploy solution for serving the needs of MDU and bulk analog accounts. Its HFC-ready design, environmentally hardened enclosure, and output port flexibility provide service providers with the right product for maintaining analog service to its bulk MDU customers. With 82 channels to populate, 8 of which can be locally generated, service providers are sure to be able to meet even the most demanding custom channel lineup needs.

**Figure 1.** DSAN System, Interior



### Benefits of the Cisco DSAN Solution

- Meet the analog channel requirements for bulk MDU accounts
- Create custom channel lineups
- Turn on and off individual channels
- Reduce cable programming theft through bulk agreements
- Local channel insertion capability
- Additional revenue streams through up-sell opportunities for advanced services

## Features of the Cisco DSAN Solution

- Recreates up to 82 channels of analog content from Standard Definition (SD) MPEG-2
- Recreates the analog spectrum from 54 to 552 MHz
- Digital pass-through port
- Two ASI input ports for local channel insertion
- Indoor/outdoor environmentally hardened IP68 (UL50E) compliant housing
- Fixed-value plug-in accessories are common to all GainMaker products
- 60 and 90 VAC powering capability
- 15 Ampere current capacity (steady-state) and 25 Ampere surge survivability
- Plug-in, self-contained diplex filters
- Modular tech-friendly design
- Modular high-efficiency power supply simplifies maintenance
- Supports PowerKEY<sup>®</sup> decryption on all channels
- Integrates easily into existing DNCS systems
- Dual output port flexibility

## Supplied Accessories

The DSAN ships from the factory in a fully operational configuration that includes the following pre-installed accessories:

- DC Power Supply Module
- High Pass Filter Module
- Plug-in attenuator pads
- Plug-in forward equalizer
- AC shunts (not installed)
- Strand clamp mounting hardware (not installed)

## Optional Accessories

The following optional accessories are available separately for the DSAN:

- Wall Mounting Bracket
- AC Mains Power Pack Kit
- Replacement Cable Kit (10 x RF cables, DC cable, control cable)
- Replacement DC Power Supply Module
- Replacement High Pass Filter Module
- DSAN Auxiliary Input Box (DAXI)

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In addition, the DSAN accepts the following GainMaker® 1 GHz compatible field-replaceable accessories:

- Plug-in Attenuator Pads
- Plug-in Forward Equalizer Pads
- Crowbar Surge Protector

For details and ordering information, please see *GainMaker Amplifier Accessories*, part number 716336.

### **Cisco DSAN DAXI**

The DAXI is an accessory for the Cisco DSAN System that converts up to four analog video channels to digital format for distribution via the DSAN.

The DAXI provides baseband video and audio conversion to MPEG-2 Transport Stream. The output is carried over one ASI channel to the DSAN Aux1 or Aux2 input port. The content that the DAXI converts can come from external sources such a set-top box, DVD player, analog security camera, or character generator.

For additional information, see the *Cisco DSAN DAXI* data sheet, part number 7019475.

## DSAN System Specifications

**Table 1.** QAM RF (CATV) Input

Parameter	Value
Connector	KS Port (F adaptor)
Forward Path Input Level	+10 to +30 dBmV (analog carrier level) +4 to +24 dBmV (digital carrier level)
Nominal Input Level	+10 dBmV (analog carrier level) +4 dBmV (digital carrier level)
Reverse Path Gain	0 dB (unity gain) <sup>1</sup>
Return Loss	16 dB minimum (5 to 42 MHz) 16 dB minimum (54 to 1002 MHz)
Modulation	64 or 256 QAM (Annex B)
Tuning Block Frequency Response	88 to 1002 MHz
QAMs Demodulated (Maximum)	16
CAS Type	PowerKEY
CAS Format	Embedded
AC Power Passing	15 A

**Table 2.** Transport Stream Details

Parameter	Value
Video Format	MPEG2, MP@ML
	4:2:0 chroma subsampling
	4:3 aspect ratio
Video Resolution	480 x 720
	480 x 704
	480 x 544
	480 x 528
	480 x 352
Audio Formats	MPEG1 Layer 2 (MUSICCAM)
	Dolby Digital (AC3)
Audio Bitrate	MPEG Audio 512 kbps maximum
	Dolby <sup>®</sup> Audio 512 kbps maximum
Audio Sample Rates	32 kHz
	44.1 kHz
	48 kHz

**Note:**

1. The reverse path (5 to 42 MHz) is set up for unity gain performance. A reverse path amplifier is used to offset the internal losses in the product.

## DSAN System Specifications, cont'd.

**Table 3.** Mixed Analog + Digital Output

Parameter	Value
Connector	KS Port (F adaptor)
Number of Analog RF Channels	82 NTSC
Frequency Range	5 to 42 MHz (upstream) 54 to 552 MHz (analog) 564 to 1002 MHz (digital pass-through)
Output Level	+20 dBmV (analog carrier level) +14 dBmV (digital carrier level)
Output Flatness	±1.5 dB (54 to 552 MHz)
Return Loss	16 dB minimum (5 to 42 MHz) 16 dB minimum (54 to 1002 MHz)
Inband Carrier-to-Noise, Audio	BTSC/SAP
VBI Support	SCTE-18
	SCTE-20
	SCTE-21 user_datatype_code 3, 4, and 5
AC Power Passing	15 A

**Table 4.** Digital Bypass Output

Parameter	Value
Connector	KS Port (F adaptor)
Frequency Range	5 to 42 MHz (upstream) 54 to 1002 MHz (pass-through)
Insertion Loss	9 dB ±1 dB
Return Loss	16 dB minimum (5 to 42 MHz) 16 dB minimum (54 to 1002 MHz)
AC Power Passing	15 A

**Table 5.** Auxiliary Inputs

Parameter	Value
Connectors	2 x F type, female
Impedance	75 Ω
Input Type	ASI
Minimum Input Sensitivity	200 mV (p-p)
Maximum Input Voltage	800 mV (p-p)
Input Return Loss	15 dB minimum (27 to 270 MHz)
ASI Input Transmission Format	Burst Packet Mode or Spaced Byte Mode, auto-sensing
Output Channels	Each auxiliary input channel can be mapped to any EIA output channel

## DSAN System Specifications, cont'd.

**Table 6.** Control and Management

Parameter	Value
Local Craft Interface	RS-232 9-pin
Protocols Supported	SNMP, DHCP, TFTP
Embedded Cable Modem	DOCSIS 2.0 with DSG

**Table 7.** Environmental

Parameter	Value
Operating Temperature Range	-40 to +140°F (-40 to +60°C)
Storage Temperature Range	-40 to +158°F (-40 to +70°C)
Relative Humidity	5 to 95% non-condensing
Altitude	60 to 3700 meters

**Table 8.** Mechanical

Parameter	Value
Housing Dimensions	8.60 in. H x 19.85 in. W x 13.49 in. D 21.8 cm H x 50.4 cm W x 34.3 cm D
Weight, Loaded	53 lbs (24 kg)

**Table 9.** Power

Parameter	Value
Input Voltage <sup>1</sup>	40 to 90 VAC line power
Power Consumption	< 106 W

**Table 10.** Typical Station Powering Data at 25°C<sup>2</sup>

DSAN		AC Voltage <sup>1</sup>										
		90	85	80	75	70	65	60	55	50	45	40
DC Current: +12.5 VDC @ 7 A <sup>3</sup>	AC Current (A)	1.30	1.31	1.37	1.45	1.54	1.65	1.79	1.96	2.18	2.39	2.82
	AC Power (W)	102	101	101	101	101	101	101	101	102	100	102

**Table 11.** Regulatory Compliance

Parameter	Value
Regulatory and Safety Approvals	As required per country where the DSAN will be used

### Notes:

1. This power supply has a fixed under-voltage lockout of 30 VAC.
2. AC currents specified are based on measurement made with typical CATV type ferroresonant AC power supply (quasi-square wave).
3. The power supply maximum current rating is 12.5 V @ 8.5 A.

### Ordering Information

This page contains ordering information for the DSAN and its optional accessories.

The DSAN ships with pre-installed attenuators and forward equalizer. You may need to use different plug-in input attenuator pad and EQ values to optimize the DSAN response for your system. For a list of available plug-in values and part numbers, see *GainMaker Amplifier Accessories*, part number 716336.

Please speak with your Account Representative, Customer Service Representative, or Systems Engineer to help determine the best configuration for your particular application.

**Table 12.** DSAN Configurations

Description	Customer Order Number
DSAN System with High Pass Filter	DSAN8200

**Table 13.** Optional Accessories

Description	Customer Order Number
Wall Mount Bracket	DSANWALL
AC Mains Power Pack Kit	DSANMAINS
Replacement Cable Kit (10 x RF cables, DC cable, control cable)	DSANCBLS
Replacement DC Power Supply Module	DSANPWR
Replacement High Pass Filter Module	DSAN82HPF
DSAN Auxiliary Input Box (DAXI)	DSANDAXI

## Service and Support

Using the Cisco Lifecycle Services approach, Cisco and its partners provide a broad portfolio of end-to-end services and support that can help increase your network's business value and return on investment. This approach defines the minimum set of activities needed by technology and by network complexity to help you successfully deploy and operate Cisco technologies and optimize their performance throughout the lifecycle of your network.

## For More Information

To learn more about the Cisco DSAN System, contact your local account representative.

To subscribe to receive end-of-life/end-of-sale information, go to: <http://www.cisco.com/cgi-bin/Support/FieldNoticeTool/field-notice>.



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Part Number 7018933 Rev A  
March 2010