



ECLIPSE

CONNECT



ETSI Datasheet



*Looking for a Better Way
to Get Data Across Town?*

stratex
NETWORKS

Eclipse Connect—High-Speed Wireless Data Transport

Eclipse Connect™ ES

Looking for a highly scalable wireless Ethernet solution? Eclipse Connect ES is designed with an industry-leading suite of features to solve your demanding broadband service requirements.

As your need for increased speed grows, throughput capacity can be increased by a simple remotely activated software key, to provide a low cost entry-level solution that is able to deliver additional bandwidth, only when required.



Feature Overview

Delivering professional-grade reliability with a software scalable, high performance Ethernet packet forwarding engine, Connect ES offers an excellent choice for licensed, point-to-point wireless transport over path lengths up to 80 kilometers.

The Connect ES IDU presents four, wire-speed 100 Base-T ports, all with the ability to groom multiple applications into a single QoS-controlled radio link. Up to eight E1 wayside channels can be independently assigned for TDM/voice support.

Integrated remote monitoring (RMON) enables network traffic status to be viewed at each point in the network. Complete control of Connect ES networks is provided by Stratex Networks' element management platform, ProVision™.

Core Benefits

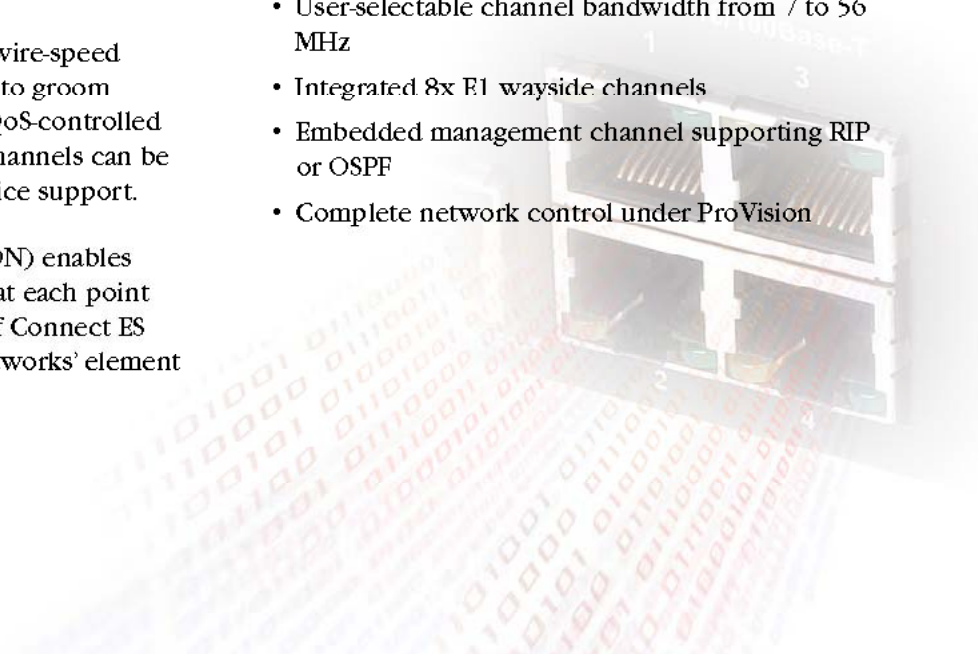
- Asset-based, interference-free licensed radio solution
- Dedicated bandwidth, scalable to match ROI considerations
- Comprehensive suite of management options
- Manage the transition from TDM to high-speed Ethernet
- Prioritization of application traffic to support high value services

Applications

- High-speed broadband access services
- Leased-line replacement
- Mobile/Wi-MAX/Wi-Fi base station backhaul
- Enterprise, Health Care, Education, Local Government and Military networks
- DSLAM service backhaul

Key Features Highlights

- Scalable bandwidth from 10 to 200 Mbps, full duplex
- Ultra-low latency
- Wire speed 4-port 100 Base-T switch with Integrated RMON
- Per-port VLAN tagging
- QoS via 802.1p/q and Diffserve
- Radio frequency options of 5 to 38GHz
- User-selectable channel bandwidth from 7 to 56 MHz
- Integrated 8x E1 wayside channels
- Embedded management channel supporting RIP or OSPF
- Complete network control under ProVision



System Parameters



General Characteristics					
Operating Frequency Range					5 to 38 GHz
Modulation Options					QPSK, 16, 32, 64, 128 QAM
Error Correction					FEC, Reed Solomon Decoding
Adaptive Equalisation					24 tap T/2 equalizer
Configuration Options					Non Protected, 1+0
Ethernet and TDM Traffic Interfaces					
Ethernet Traffic Interface	Interfaces				4x 10/100baseT Fast Ethernet
	Connectors				4x 8-pin RJ45
	Frame size				64 - 1536 bytes
	Ethernet transport channels				2
	Granularity per channel				2 Mbps increments
E1 Wayside Traffic Interface	Interfaces				8x 2.048 Mbps (E1)
	Line code				G703 HDB3
	Connectors				8x RJ45
	Impedance				75Ω unbalanced or 120Ω balanced, configurable
Ethernet Throughput Options (duplex)					
	Modulation	Channel Bandwidth	Nominal Data Throughput, Mbps	Actual Data Throughput ^[1] , Mbps	
Connect ES 10s ^[2]	QPSK	7 MHz	10	10	
Connect ES 20s	QPSK	13.75 / 14 MHz	20	20	
Connect ES 20s	16 QAM	7 MHz	20	20	
Connect ES 30s	QPSK	27.5 / 28 MHz	30	32	
Connect ES 30s	16 QAM	13.75 / 14 MHz	30	32	
Connect ES 30	64 QAM	7 MHz	30	32	
Connect ES 40s	QPSK	27.5 / 28 MHz	40	41	
Connect ES 40s	16 QAM	13.75 / 14 MHz	40	41	
Connect ES 50s	16 QAM	27.5 / 28 MHz	50	65	
Connect ES 50	16 QAM	27.5 / 28 MHz	50	65	
Connect ES 50	32 QAM	13.75 / 14 MHz	50	55	
Connect ES 80s	16 QAM	27.5 / 28 MHz	80	82	
Connect ES 100	32 QAM	27.5 / 28 MHz	100	106	
Connect ES 150	16 QAM	55 / 56 MHz	150	153	
Connect ES 150	128 QAM	27.5 / 28 MHz	150	153	
Connect ES 200	64 QAM	55 / 56 MHz	200	198	
Auxiliary Functions and other Interfaces					
Auxiliary Data Channel					1x RS232 or RS422, 1.2 to 19.2 kbps async, or 64 kbps sync
Alarm I/O					2 - TTL inputs, 4 - Form C Relay outputs
NMS LAN interface	Type				10/100 Base-T Ethernet
Serial Maintenance Interface	Standard				Complies to TIA/EIA-561
IF Cable Connector					N-Type
Configuration memory, removable					Up to 128 MB CompactFlash card (rear access)
Power Supply and Environment					
Power Supply	Input Voltage Range				-40.5 to -60.0 VDC
	Power Consumption				60W max
	Protection Circuit				3A Slow-Blow Fuse
Operating Temperature	Indoor Unit		Guaranteed		-5° to +45° C (23° to +113° F)
	Outdoor Unit		Guaranteed		-33° to +55° C (-27° to +131° F)
			Extended ^[3]		-50° to +65° C (-58° to +149° F)
Weight and Dimensions	Indoor Unit				44mm (1.7U) x 482mm (19in) x 280mm (11.0in), 1.6 kg (3.5 lb)
	Outdoor Unit	ODU300ep			287mm (11.2 in) x 287mm (11.2 in) x 162mm (6.4 in), 8.8 kg (19.4 lb)
		ODU300hp			287mm (11.2 in) x 287mm (11.2 in) x 162mm (6.4 in), 6.4 kg (14 lb)
		ODU300sp			287mm (11.2 in) x 287mm (11.2 in) x 162mm (6.4 in), 6.1 kg (13.5 lb)
Fault and Configuration Management					
Protocol supported					SNMP v2, Static and dynamic routing, RIP I, RIP II, OSPF
Local/remote Configuration and Support Tool					Eclipse Portal
Performance Monitoring					To ITU-T Rec. G.826
Network Management					Stratex Networks Provision
Engineering Orderwire					Optional VoIP handset
Standards Compliance					
Ethernet					IEEE 802.3u
		Framing			IPv4 and IPv6, IEEE 802.3d
		Flow Control			IEEE 802.3x
		VLAN			IEEE 802.1q
		QoS			Port based, IEEE 802.1p, Diffserv (RFC 2474)
		RMON			RFC 1757
Radio Frequency					EN 302 217
Electromagnetic Compliance (EMC)					EN 301 489-1, EN 301 489-4 (EN 55022 Class B)
Operation	Outdoor Unit				ETS 300 019, Class 4.1
Operation	Indoor Unit				ETS 300 019, Class 3.2
Storage					ETS 300 019, Class 1.2
Transportation					ETS 300 019, Class 2.3
Safety					IEC 60950-1/EN 60950-1
Water Ingress	Outdoor Unit				IEC 60529 (IPX6)

[1] Actual throughput available for data transport will be reduced proportionally when wayside E1 channels are used.

[2] Suffix 's' denotes the applicable capacity variant using the ODU300sp. All other configurations without the suffix use the ODU300hp/ep.

[3] Over full Extended Operating Temperature Eclipse may be subject to reduced performance. Contact Stratex Networks for more details.

For additional specifications please refer to the main Eclipse Platform Datasheet.

ODU Specifications

General Specifications												
IF Cable, recommended	IDU to ODU										Belden 9913 (RG-8) 50Ω	
Maximum IF Cable length ^[1]	IDU to ODU										300 meters (1,000 ft)	
IF cable connector											N-Type	
AGC monitor point											BNC	
General Transmitter Specifications	Transmit Power Tolerance	5 to 26 GHz									± 2 dB	
		28 to 38 GHz									± 3 dB	
	Transmitter Source										Synthesized	
	Frequency Stability										± 10 ppm	
	Manual Transmitter Power Control range	5, L6, U6 GHz (ODU300ep) 7 to 38 GHz (ODU300sp/hp)									QPSK 16QAM 32QAM 64QAM 128QAM N/A 26 dB 25.5 dB 25 dB 24 dB 20 dB 18 dB 17.5 dB 17 dB 16 dB	
General Receiver Specifications	Automatic Transmitter Power Control										Configurable over full available manual attenuation range	
	Receiver Source										Synthesized	
	Frequency Stability										± 10 ppm	
	Receiver Overload, BER = 1x10 ⁻⁶										-22 dBm	
	Residual (Background) Bit Error Rate										Better than 10 ⁻³	
System RF Specifications												
	5 GHz ^[2]	L6/U6 GHz	7/8 GHz	11 GHz	13 GHz	15 GHz	18 GHz	23 GHz	26 GHz	28 GHz	38 GHz	
Frequency Range, GHz	4.4 - 5.0	5.925 - 6.425 6.425 - 7.11	7.125 - 7.9 7.725 - 8.5	10.7 - 11.7	12.75 - 13.25	14.4 - 15.35	17.7 - 19.7	21.2 - 23.632	24.52 - 26.483	27.5 - 29.5	37.0 - 39.46	
T-R Spacings supported, MHz	300, 312	252.04 340	154, 161, 245 119, 126, 151, 614, 266, 311, 32	490, 530	266	315, 420, 490, 644, 728	1010, 1092.5	1008, 1200, 1232	1008	1008	1260	
Maximum Tuning Range (dependent upon T-R spacing), MHz	56	56	56	165	84	245	380	370	360	360	340	
Antenna Interface												
Waveguide Type	N/A	R70 (WR137)	R84 (WR112)	R100 (WR90)	R120 (WR75)	R140 (WR62)	R220 (WR42)	R220 (WR42)	R220 (WR42)	R320 (WR28)	R320 (WR28)	
Flange Type	Coax	UDR70	UDR84	UDR100	UBR120	UBR140	UBR220	UBR220	UBR220	UBR320	UBR320	
Mating Flange Type	7/16 DIN F	PDR70 or CDR70	PDR84 or CDR84	PDR100 or CDR100	PBR120 or CDR120	PBR140 or CBR140	PBR220	PBR220	PBR220	PBR320	PBR320	
System Gain ^[3]												
Connect ES 10s	7 MHz	QPSK	117.0 dB	114.0 dB	111.5 dB	110.5 dB	108.0 dB	108.0 dB	106.0 dB	104.5 dB	103.0 dB	
Connect ES 20s	13.75 / 14 MHz	QPSK	114.0 dB	111.5 dB	109.0 dB	107.5 dB	105.5 dB	105.0 dB	103.0 dB	102.0 dB	100.0 dB	
Connect ES 20s	7 MHz	16 QAM	108.5 dB	105.5 dB	103.0 dB	102.0 dB	99.5 dB	99.5 dB	97.5 dB	96.0 dB	94.0 dB	
Connect ES 30s	27.5 / 28 MHz	QPSK	112.0 dB	109.5 dB	107.0 dB	105.5 dB	103.5 dB	103.0 dB	101.0 dB	100.0 dB	98.0 dB	
Connect ES 30s	13.75 / 14 MHz	16 QAM	106.0 dB	103.5 dB	101.0 dB	99.5 dB	97.5 dB	97.0 dB	95.0 dB	93.5 dB	92.0 dB	
Connect ES 30	7 MHz	64 QAM	104.0 dB	99.5 dB	98.5 dB	97.0 dB	94.5 dB	94.0 dB	93.0 dB	91.5 dB	89.0 dB	
Connect ES 40s	27.5 / 28 MHz	QPSK	111.0 dB	108.5 dB	106.0 dB	104.5 dB	102.5 dB	102.0 dB	100.0 dB	99.0 dB	97.0 dB	
Connect ES 40s	13.75 / 14 MHz	16 QAM	105.5 dB	102.5 dB	100.0 dB	99.0 dB	96.5 dB	96.5 dB	94.5 dB	93.0 dB	91.0 dB	
Connect ES 50s	27.5 / 28 MHz	16 QAM	103.5 dB	100.5 dB	98.0 dB	97.0 dB	94.5 dB	94.5 dB	92.5 dB	91.0 dB	89.0 dB	
Connect ES 50	27.5 / 28 MHz	16 QAM	106.5 dB	107.0 dB	107.0 dB	102.0 dB	101.0 dB	100.0 dB	97.0 dB	96.0 dB	94.5 dB	
Connect ES 50	13.75 / 14 MHz	32 QAM	104.0 dB	104.5 dB	104.5 dB	99.5 dB	98.5 dB	97.5 dB	94.5 dB	93.5 dB	92.0 dB	
Connect ES 80s	27.5 / 28 MHz	16 QAM		102.5 dB	99.5 dB	97.0 dB	96.0 dB	93.5 dB	93.5 dB	91.5 dB	90.0 dB	
Connect ES 100	27.5 / 28 MHz	32 QAM	101.5 dB	102.0 dB	102.0 dB	97.0 dB	96.0 dB	92.0 dB	92.0 dB	91.0 dB	89.5 dB	
Connect ES 150	55 / 56 MHz	16 QAM					93.0 dB	93.0 dB	92.0 dB	90.5 dB	88.0 dB	
Connect ES 150	27.5 / 28 MHz	128 QAM	94.0 dB	94.0 dB	94.0 dB	88.5 dB	88.5 dB	84.5 dB	84.0 dB	83.0 dB	81.5 dB	
Connect ES 200	55 / 56 MHz	64 QAM						88.0 dB	87.5 dB	86.0 dB	85.0 dB	
Connect ES 200	55 / 56 MHz	64 QAM									82.5 dB	
Transmitter Performance												
Power Output (nominal)	ODU300sp	QPSK		25.0 dBm	22.5 dBm	20.0 dBm	19.0 dBm	17.0 dBm	17.0 dBm	16.0 dBm	15.5 dBm	15.0 dBm
		16 QAM		23.0 dBm	20.5 dBm	18.0 dBm	17.0 dBm	15.0 dBm	15.0 dBm	14.0 dBm	13.5 dBm	13.0 dBm
	ODU300hp/ep	16 QAM	26.5 dBm	26.5 dBm	26.5 dBm	22.0 dBm	21.0 dBm	20.0 dBm	17.5 dBm	17.0 dBm	17.0 dBm	16.0 dBm
		32 QAM	26.0 dBm	26.0 dBm	26.0 dBm	21.5 dBm	20.5 dBm	19.5 dBm	17.0 dBm	17.0 dBm	17.0 dBm	16.5 dBm
		64 QAM	25.5 dBm	25.5 dBm	25.5 dBm	21.0 dBm	20.0 dBm	19.0 dBm	16.5 dBm	16.5 dBm	16.5 dBm	15.0 dBm
128 QAM	24.5 dBm	24.5 dBm	24.5 dBm	19.0 dBm	19.0 dBm	21.0 dBm	15.5 dBm	15.5 dBm	15.5 dBm	15.5 dBm		
Receiver Threshold ^[3]												
Connect ES 10s	7 MHz	QPSK	-92.0 dBm	-91.5 dBm	-91.5 dBm	-91.5 dBm	-91.0 dBm	-91.0 dBm	-90.0 dBm	-89.0 dBm	-88.0 dBm	
Connect ES 20s	13.75 / 14 MHz	QPSK	-89.0 dBm	-89.0 dBm	-89.0 dBm	-88.5 dBm	-88.5 dBm	-88.0 dBm	-87.0 dBm	-86.5 dBm	-85.0 dBm	
Connect ES 20s	7 MHz	16 QAM	-85.5 dBm	-85.0 dBm	-85.0 dBm	-85.0 dBm	-84.5 dBm	-84.5 dBm	-83.5 dBm	-82.5 dBm	-81.0 dBm	
Connect ES 30s	27.5 / 28 MHz	QPSK	-87.0 dBm	-87.0 dBm	-87.0 dBm	-86.5 dBm	-86.5 dBm	-86.0 dBm	-85.0 dBm	-84.5 dBm	-83.0 dBm	
Connect ES 30s	13.75 / 14 MHz	16 QAM	-83.0 dBm	-83.0 dBm	-83.0 dBm	-82.5 dBm	-82.5 dBm	-82.0 dBm	-81.0 dBm	-80.0 dBm	-79.0 dBm	
Connect ES 30	7 MHz	64 QAM	-78.5 dBm	-78.5 dBm	-78.5 dBm	-78.0 dBm	-78.0 dBm	-77.5 dBm	-76.5 dBm	-75.5 dBm	-74.0 dBm	
Connect ES 40s	27.5 / 28 MHz	QPSK	-86.0 dBm	-86.0 dBm	-86.0 dBm	-85.5 dBm	-85.5 dBm	-85.0 dBm	-84.0 dBm	-83.5 dBm	-82.0 dBm	
Connect ES 40s	13.75 / 14 MHz	16 QAM	-82.5 dBm	-82.0 dBm	-82.0 dBm	-82.0 dBm	-81.5 dBm	-81.5 dBm	-80.5 dBm	-79.5 dBm	-78.0 dBm	
Connect ES 50s	27.5 / 28 MHz	16 QAM	-80.5 dBm	-80.0 dBm	-80.0 dBm	-80.0 dBm	-79.5 dBm	-79.5 dBm	-78.5 dBm	-77.5 dBm	-76.0 dBm	
Connect ES 50	27.5 / 28 MHz	16 QAM	-80.0 dBm	-80.5 dBm	-80.5 dBm	-80.0 dBm	-80.0 dBm	-79.5 dBm	-78.5 dBm	-77.5 dBm	-76.0 dBm	
Connect ES 50	13.75 / 14 MHz	32 QAM	-78.0 dBm	-78.5 dBm	-78.5 dBm	-78.0 dBm	-78.0 dBm	-77.5 dBm	-76.5 dBm	-75.5 dBm	-74.0 dBm	
Connect ES 80s	27.5 / 28 MHz	16 QAM	-79.5 dBm	-79.0 dBm	-79.0 dBm	-79.0 dBm	-78.5 dBm	-78.5 dBm	-77.5 dBm	-76.5 dBm	-75.0 dBm	
Connect ES 100	27.5 / 28 MHz	32 QAM	-75.5 dBm	-76.0 dBm	-76.0 dBm	-75.5 dBm	-75.5 dBm	-75.0 dBm	-74.0 dBm	-73.0 dBm	-71.5 dBm	
Connect ES 150	55 / 56 MHz	16 QAM						-75.5 dBm	-75.5 dBm	-74.5 dBm	-73.5 dBm	
Connect ES 150	27.5 / 28 MHz	128 QAM	-69.5 dBm	-69.5 dBm	-69.5 dBm	-69.5 dBm	-69.0 dBm	-68.5 dBm	-67.5 dBm	-66.0 dBm	-64.5 dBm	
Connect ES 200	55 / 56 MHz	64 QAM						-71.5 dBm	-71.0 dBm	-69.5 dBm	-67.5 dBm	

[1] Maximum IF cable length is for recommended RG-8 cable. Longer distances are possible using higher specification cable, but performance is not guaranteed by Stratex Networks.

[2] For switchable diplexer option, 5GHz system gain is reduced by 4 dB.

[3] System Gain and Rx Threshold values are for BER=10⁻⁶. Values for BER=10⁻³ are improved by 1dB.

All specifications are typical values unless otherwise stated, and are subject to change without notice.