ADTRAN

G.FAST

Optical Network Units

Models: 500G, SDX 2220 and SDX 2221 Series

Gigabit	Open Architecture	Weather-Resistant	Low TCO	SDN Enabled

500G/SDX 22XX G.FAST ONUs

Advancing the Gigabit Society

The drive towards a Gigabit Society that's being championed by regulatory agencies around the world is fueling the need for pushing fiber deeper into the network and closer to the end user. However, the cost of delivering Fiber-to-the-Home (FTTH) can be prohibitive in many areas. Next-generation broadband technologies based on ITU-T G.fast standards (106 MHz and 212 MHz) enable symmetric Gigabit services over existing copper or coax infrastructure. Using Fiber-to-the-distribution point (FTTdp), Fiber-to-the-Premises (FTTP) and Fiber-to-the-Building (FTTB) architectures, service providers can deliver Gigabit services at reduced cost per connection, accelerating the path to a Gigabit society.

Unlock Symmetric Broadband Services

Growing number of live-streaming, virtual reality, online learning and gaming applications and services require an approach that disrupts restrictive DSL-like "set-and-forget" configurations. The ADTRAN 500G and SDX 22xx series optical network units (ONUs), support dynamic time

assignment (DTA), allowing responsive broadband that can burst to full bandwidth potential based on application needs. Service providers can now cost-effectively deliver symmetric Gigabit services dynamically adapt to customer bandwidth demands.

Open Networks, Unlimited Possibilities

As it unlocks the single-vendor access network, ADTRAN is providing a standards-based carrier-grade set of products and solutions spanning the entire access network, from the central office to the cabinet and the customer premises. Uniquely software-defined access (SD-Access) G.fast nodes are built using modern data center principles allowing for their native integration into any open source SDN controller such as the ADTRAN Mosaic Cloud Platform, and are both chipset and physical-layer agnostic. This affords service providers a vastly simplified path to new Gigabit service on-boarding regardless of FTTH OLT or DSLAM vendor incumbency, while supporting the rapid creation and delivery of user-driven services.

G.FAST: KEY PART OF BROADBAND TOOLKIT
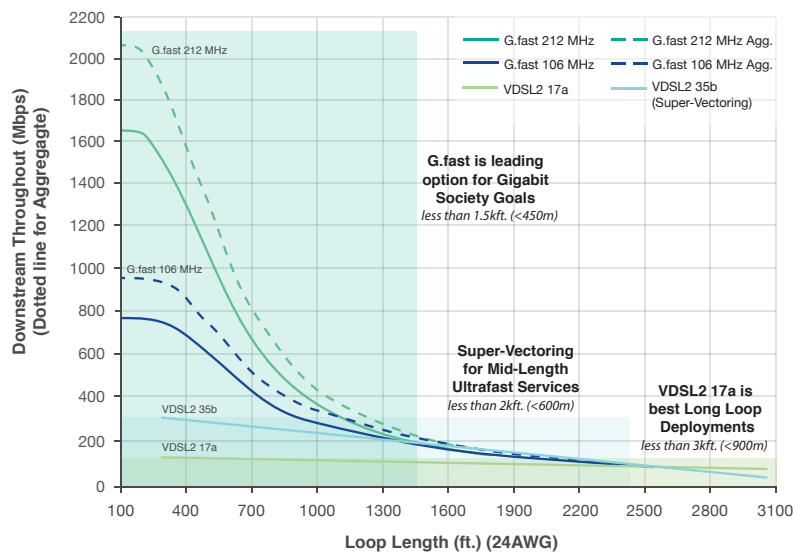
* G.fast: NFL 140 dBm; Single-pair with no X-talk; dn/up=28/7

Eliminate In-Home Wiring Concerns

The ADTRAN G.fast ONUs are a complementary solution for GPON, XGS-PON or NGPON2 based FTTH networks. The G.fast ONUs, deliver ITU-T G.9700/9701 standards-based G.fast (106 MHz or 212 MHz), enabling service providers to utilize the existing wiring (twisted pair or coax) within the customer premises to deliver Gigabit services. With FTTH, delivering the last 300 ft. (100 m) has presented a problem for service providers and ADTRAN's solution changes the dynamics allowing for ultra broadband services to be deployed rapidly, and with minimal installation and construction costs.

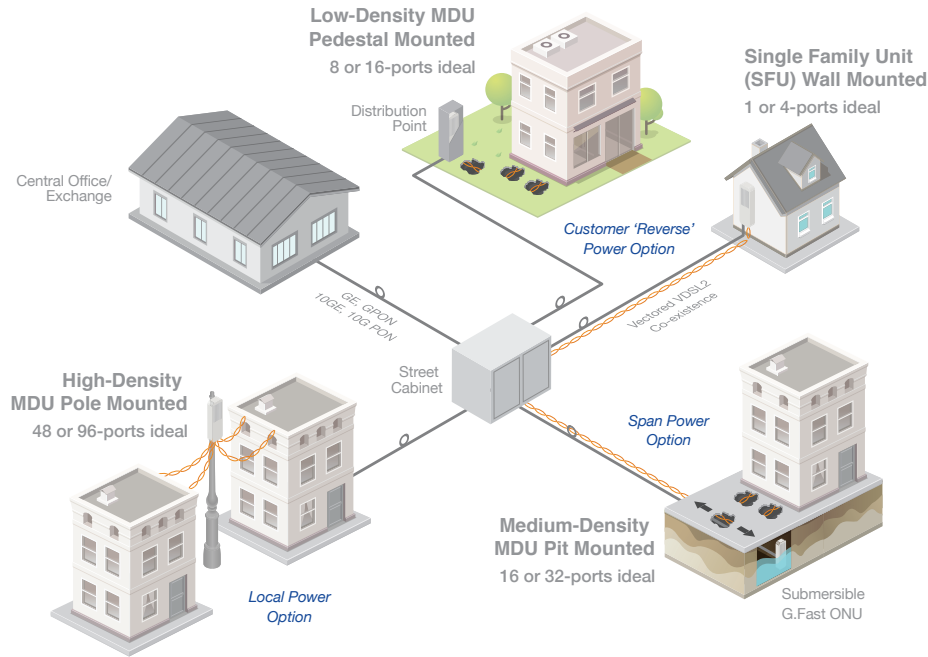## Target Multiple Customer Segments

ADTRAN offers a comprehensive portfolio of hardened G.fast ONUs ideal for single family units (SFUs), multi-dwelling units (MDUs) or shelter-based deployments. Indoor units are rack-mountable units making them ideal for FTTB deployments serving high-density multi-dwelling units (MDU). Sealed outdoor variants can be mounted to an exterior wall, pedestal, or pole, or installed inside a handhole making them ideal for FTTP or FTTdp deployments to target single family units (SFUs) or MDUs. They can also be housed inside small outdoor cabinets. Depending on the placement the solution can be span-, local-, or reverse-powered from the subscriber.

Portfolio Summary

	G.fast 106 MHz Profile			G.fast 212 MHz Profile with VDSL2 (17a and 35b) Fallback				G.fast 212 MHz Profile without VDSL2 Fallback		
	508G (TP)	516G (TP)	516G (CX)	SDX 2221-01 (TP/CX)	SDX 2221-04 (TP)	SDX 2221-08 (TP)	SDX 2221-16 (TP/CX)	SDX 2220-16 (TP/CX)	SDX 2220-48 (TP-Outdoor)	SDX 2220-48 (TP-Indoor)
Speeds	Up to 1 Gbps (aggregate)			2+ Gbps (aggregate)						
Number of subs	8-16 subscribers			1-4 subscribers		8-16 Subscribers			48 subscribers	
Application	SFU/Medium-density MDU			SFU		SFU / Medium-density MDU			High-density MDU	
Uplinks	2 x 1/2.5 Gbps			1 x 1/2.5 Gbps (GPON)		1 x 1/10 Gbps (GPON/10G PON)			2 x 1/10 Gbps (GPON/10G PON)	
Cabling Support	Twisted pair		Coax	Twisted pair or Coax	Twisted pair		Twisted pair or coax		Twisted Pair	
Housing	Fully sealed and Submersible Outdoor Design									Hardened Indoor Pizza Box
Deployment	Pedestal, Pole, Wall, Pit or Handhole Mounting									Rack or Wall Mountable
Operational Model	FTTP, FTTdp, FTTB, FTTCab									
Management	OMCI / Open SDN Controller / Mosaic Cloud Platform									
SDN-Ready/ Interoperability	Yes. Interoperable with ADTRAN or Any 3rd-party OLT or CPE									
Operating Environment	-40C to +65C (-40F to +149F); 100% Relative Humidity, Condensing, Weather-hardened									
Power	Reverse, Span, Local (AC/DC)			Reverse		Reverse, Span, Local (AC/DC)			Local (AC/DC)	

G.FAST DEPLOYMENT VARIANTS

Low-Density MDU Pedestal Mounted
8 or 16-ports ideal

Single Family Unit (SFU) Wall Mounted
1 or 4-ports ideal

Distribution Point

Central Office/Exchange

Customer 'Reverse' Power Option

GE, GPON 10GE, 10G PON

Vectored VDSL2 Co-existence

Street Cabinet

High-Density MDU Pole Mounted
48 or 96-ports ideal

Span Power Option

Local Power Option

Medium-Density MDU Pit Mounted
16 or 32-ports ideal

Submersible G.Fast ONU

ILL541A

Ordering Information

	Reverse Power	Span Power (RFT-V)	Local Power (AC)	Local Power (DC)
G.fast 106MHz				
508G 8-port G.fast ONU (TP)	11321707Fx*	11321707Fx*	11321707Fx*	11321707Fx*
516G 16-port G.fast ONU (TP)	11321763Fx*	11321763Fx*	11321763Fx*	11321763Fx*
516G 16-port G.fast ONU (CX)	11321764Fx*	11321764Fx*	11321764Fx*	11321764Fx*
G.fast 212MHz with VDSL2 Fallback				
SDX 2221-01 Single-Port G.fast ONU (TP/CX)	1131799S1			
SDX 2221-04 4-Port G.fast ONU (TP)	11321706Fx*			
SDX 2221-08 8-Port G.fast ONU (TP)	11321771Fx*	11321771Fx*	11321771Fx*	11321771Fx*
SDX 2221-16 16-Port G.fast ONU (TP/CX)	11321781Fx*	11321781Fx*	11321781Fx*	11321781Fx*
G.fast 212MHz without VDSL2 Fallback				
SDX 2220-16 16-Port G.fast ONU (TP)	11321710Fx*	11321710Fx*	11321710Fx*	11321710Fx*
SDX 2220-16 16-Port G.fast ONU (CX)	11321766Fx*	11321766Fx*	11321766Fx*	11321766Fx*
SDX 2220-48-OSP 48-Port G.fast ONU (TP-Outdoor)			11321774Fx*	11321774Fx*
SDX 2220-48-1RU 48-Port G.fast ONU (TP-Indoor)			11321774Fx*	11321774Fx*

* Additional ONU configurations including options for chipset, line test, SFP and cabling are available for quote. Please email support@adtran.com or +1.256.963.8716

Product Specifications

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Interfaces										
Network										
Capacity	2 x 1/2.5 Gbps			1 x 1/2.5 Gbps		1 x 1/10 Gbps		2 x 1/10 Gbps		
GPON	•	•	•	•	•	•	•	•	•	•
10G PON						•	•	•	•	•
Subscriber										
G.fast (106 MHz)	8	16	16	1	4	8	16	16	48	48
G.fast (106 MHz, 212 MHz)				1	4	8	16	16	48	48
VDSL Fallback	•			• (TP-only)	•	•	• (TP-only)			
Coax Interface			•	• (CX-only)	N/A	N/A	• (CX-only)	• (CX-only)	N/A	N/A
Line Rate Performance										
Vectoring Group								2 nodes (32-ports) (TP-only)	2 nodes (96-ports)	
G.vector ITU-T G.993.5	•	•	N/A	N/A	•	•	•	•	•	•
Dynamic Time Assignment (DTA) Range 30:5 - 5:30										
Independent DTA (iDTA)			•	• (CX-only)			• (CX-only)	• (CX-only)		
Coordinated DTA (cDTA)	• (TP-only)							• (TP-only)	•	•
VDSL2 Profiles 17a and 35b	•			• (TP-only)	•	•	• (TP-only)			
Configurable G.fast Start Frequency 2.2MHz	•	•	•	•	•	•	•	•	•	•
Programmable Downstream to Upstream Ratio (1:1 to 10:1)	•	•	•	•	•	•	•	•	•	•
SRA, FRA, Physical Layer Retransmission	•	•	•	•	•	•	•	•	•	•
Ethernet Services										
802.1D Bridging	•	•	•	•	•	•	•	•	•	•
Virtual Switch Based on 802.1q VLAN	•	•	•	•	•	•	•	•	•	•
VLAN Tagging/Detagging per Ethernet Port	•	•	•	•	•	•	•	•	•	•
VLAN Stacking (Q-in-Q) and VLAN Translation	•	•	•	•	•	•	•	•	•	•
Class-of-Service (CoS) Based on VLAN-ID, 802.1p Bit	•	•	•	•	•	•	•	•	•	•
Marking/Remarking of 802.1p	•	•	•	•	•	•	•	•	•	•
IPTV SUPPORT										
Internet Group Management Protocol (IGMP) v2 and v3	•	•	•	•	•	•	•	•	•	•
Dynamic Host Configuration Protocol (DHCP) Support with Option 82	•	•	•	•	•	•	•	•	•	•
Bypass Function										
Relay-function per Subscriber Port				• (TP-only)	•	•	• (TP-only)	• (TP-only)	•	•

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Power Options										
Power Consumption (AC)	40W	60W	60W	<8W	15W	21W		21W	60W	60W
Local DC Power	-42 VDC to -56VDC			N/A	N/A	-42 VDC to -56VDC		-42 VDC to -56VDC		
Local AC Power	100-240 VAC, 50/60 Hz			N/A	N/A	100-240 VAC, 50/60 Hz		100-240 VAC, 50/60 Hz		
Reverse Power Feeding				<8W	15W	21W		21W	N/A	N/A
Forward Line Power (per pair)	1-2 Line Powering Pairs (+/- 190 VDC)					1-2 Line Powering Pairs (+/- 190 VDC)		1-2 Line Powering Pairs (+/- 190 VDC)		
Physical										
Dimensions	17.3" x 10" x 3.3" (H x W x D)			2" x 6.7" x 9" (H x W x D)	2.4" x 6.2" x 12" (H x W x D)	19.7" x 10" x 3.9" (H x W x D)		19.7" x 10" x 3.9" (H x W x D)	18.5" x 8.6" x 5.7" (H x W x D)	1.7" x 17.2" x 10.7" (H x W x D)
Weight	16 lbs			<2 lbs	3.3 lbs	16 lbs		16 lbs	33 lbs	8 lbs
Mounting	Pedestal, Pole, Wall, Handhole, Dog House-style Cabinets			Pedestal, Pole, Wall, Handhole, Dog House-style Cabinets				Pedestal, Pole, Wall, Handhole, Dog House-style Cabinets		Desk, Rack and Wall Mountable
Environmental										
Operating Temperature	-40º F to +149º F			-40º F to +149º F				-40º F to +149º F		
Environmentally Sealed	•	•	•	•	•	•	•	•	•	
Storage Temperature	-40º F to +185º F			-40º F to +185º F				-40º F to +185º F		
Relative Humidity	100%, Condensing, Fully Submersible			100% Condensing, Fully Submersible				100%, Condensing, Fully Submersible		100% Condensing, Weather-hardened
Regulatory										
FCC Part 15	•	•	•	•	•	•	•	•	•	•
UL 60950-1/21/22	•	•	•	•	•	•	•	•	•	•
GR-487-CORE, Issue 2	•	•	•	•	•	•	•	•	•	•
GR-1089-CORE, Issue 3	•	•	•	•	•	•	•	•	•	•
GR-63-CORE, Issue 2	•	•	•	•	•	•	•	•	•	•
NEBS Level 3	•	•	•	•	•	•	•	•	•	•
RoHS 6 of 6 Compliant	•	•	•	•	•	•	•	•	•	•
ETSI EN 300 019	•	•	•	•	•	•	•	•	•	•
ETSI EN 300 386	•	•	•	•	•	•	•	•	•	•
ETSI ES 201 468	•	•	•	•	•	•	•	•	•	•
ETSI EN 60950-1; -21 and -22 without ETSI	•	•	•	•	•	•	•	•	•	•
ETSI EN 300 019	•	•	•	•	•	•	•	•	•	•
ETSI 300 753	•	•	•	•	•	•	•	•	•	•
DTAG TS 0364/96	•	•	•	•	•	•	•	•	•	•
DTAG 1TR9	•	•	•	•	•	•	•	•	•	•
ITU-T K.27/31/35	•	•	•	•	•	•	•	•	•	•
ITU-T K.45	•	•	•	•	•	•	•	•	•	•