

# Overview ITU-T Passive Optical Network Solutions

1 Gbit/s per channel	2.5 Gbit/s per channel	10 Gbit/s per channel	25 Gbit/s per channel	50 Gbit/s per channel
<b>Splitter-based ODN Single channel TDMA systems</b>				
	<b>G-PON</b> G.984.x series <b>1</b>	<b>XG-PON (NG-PON1)</b> G.987.x series <b>2</b> <b>XGS-PON</b> G.9807.x series <b>3</b>		<b>50G-PON</b> G.9804.x series <b>5.1</b>
<b>Splitter-based ODN Multi-channel TWDM systems</b>				
		<b>NG-PON2</b> G.989.x series <b>4.1</b>		<b>Nx50G-PON</b> G.9804.x series <b>5.2</b>
<b>Splitter-based ODN Multi-channel WDM Overlay</b>				
<b>NG-PON2</b> G.989.x series <b>4.2</b>	<b>NG-PON2</b> G.989.x series <b>4.2</b>	<b>NG-PON2</b> G.989.x series <b>4.2</b>		
<b>Wavelength multiplexed ODN with logical point to point connections (a.k.a. WDM-PON)</b>				
			<b>25GMW-PON</b> G.9802.x series <b>6</b>	

### 1. ITU-T G.984.x series – Gigabit-capable passive optical networks (G-PON)

Both symmetrical and asymmetrical nominal line rates of 1244.16 Mbit/s and 2488.32 Mbit/s in the downstream direction, and 155.52 Mbit/s, 622.08 Mbit/s, 1244.16 Mbit/s and 2488.32 Mbit/s in the upstream direction.

### 2. ITU-T G.987.x series - 10-Gigabit-capable passive optical networks (XG-PON)

Asymmetrical nominal line rate of 9.95328 Gbit/s in the downstream direction and 2.48832 Gbit/s in the upstream direction.

### 3. ITU-T G.9807.x series - 10-Gigabit-capable symmetric passive optical networks (XGS-PON)

Symmetrical nominal line rate of 9.95328 Gbit/s in both the downstream and upstream directions.

### 4.1. ITU-T G.989.x series - 40-Gigabit-capable passive optical networks (NG-PON2) - Splitter-based ODN Multi-channel TWDM systems

Nx10 Gbit/s with N = up to 4 TWDM channels, optional extended up to 8

TWDM channels  
Downstream/Upstream nominal line rates (Gbit/s) per channel:

- Basic rate: 9.95328/2.48832 Gbit/s
- Rate option 1: 9.95328 /9.95328 Gbit/s
- Rate option 2: 2.48832/2.48832 Gbit/s

### 4.2. G.989.x series - 40-Gigabit-capable passive optical networks (NG-PON2) - Splitter-based ODN Multi-channel WDM Overlay (PtP wavelength overlay channels)

Symmetric Downstream and Upstream nominal line rates per channel:

- Line rate class 1 from 1.2288 Gbit/s to 1.25 Gbit/s
- Line rate class 2 from 2.4576 Gbit/s to 2.666 Gbit/s
- Line rate class 3 from 6.144 Gbit/s to 11.09 Gbit/s

### 5.1. ITU-T G.9804 series – Higher speed passive optical networks (HSP) - Splitter-based ODN Single channel TDMA systems

50 Gbit/s single channel TDMA-PON system with nominal line rates of 49.7664 Gbit/s in the downstream direction and 49.7664 Gbit/s, 24.8832

Gbit/s, or 12.4416 Gbit/s in the upstream direction.

### 5.2. ITU-T G.9804 series - Higher speed passive optical networks (HSP) - Splitter-based ODN Multi-channel TWDM systems

50 Gbit/s multiple channels TWDM-PON system with nominal line rates per channel of 49.7664 Gbit/s in the downstream direction and 49.7664 Gbit/s, 24.8832 Gbit/s, or 12.4416 Gbit/s in the upstream direction.

### 6. ITU-T G.9802.x series - Multiple-wavelength passive optical networks (MW-PON)

Channel count options of 12/20/40 wavelength channel pairs  
Symmetric nominal line rate combination options per wavelength channel:

- 25 Gbit/s
- 10 Gbit/s
- Open to other nominal line rates with individual evolution per OLT-CT

