Nokia G-140W-MD Optical Sensitivity and Power Requirements - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

The Nokia G-140W-MD is a GPON Optical Network Terminal (ONT) designed for Home Gateway Unit (HGU) applications in FTTH deployments. This datasheet provides authoritative engineering specifications for optical sensitivity thresholds, power consumption profiles, and electrical requirements. The device integrates PON, voice, gateway, and LAN switching functions into a single System-on-Chip (SOC) architecture, delivering carrier-grade performance with optimized energy efficiency. Operators deploying the G-140W-MD gain a proven platform for delivering high-speed Internet, VoIP, and IPTV services over a single fiber infrastructure.



HARDWARE ARCHITECTURE & SILICON

The G-140W-MD is built around a highly integrated MTK chipset that consolidates GPON MAC, voice processing, Layer 3 routing, and Ethernet switching into a unified silicon platform. This architectural approach eliminates discrete component interconnects, reducing both bill-of-materials complexity and power overhead. The optical subassembly supports GPON Class C+ performance, ensuring compatibility with extended-reach ODN deployments.

KEY FEATURES

- GPON Compliance: Full ITU-T G.984.x protocol support with Class C+ optical module
- Optical Interface: SC/APC connector with low insertion loss (<0.5 dB)
- Power Efficiency: 25% power reduction through integrated SOC design
- Forwarding Performance: GE line-rate bridging and 900 Mbit/s NAT throughput
- Management: TR-069 remote provisioning, OMCI per G.988, and local web UI
- Service Ports: 1×GE, 3×FE, 1×POTS, 1×USB, and 2.4GHz WiFi

OPTICAL SENSITIVITY CHARACTERISTICS

The G-140W-MD operates on standard GPON wavelengths: 1490 nm downstream and 1310 nm upstream. The optical receiver is specified for Class C+ sensitivity, supporting fiber reach up to 20 km. Deployment guidance indicates that fiber light levels below -27 dBm trigger registration failures, with contaminated SC/APC endfaces identified as the predominant root cause in field diagnostics . The optical link budget accommodates typical ODN loss scenarios including split ratios up to 1:64 and connector losses.

POWER REQUIREMENTS & CONSUMPTION PROFILE

The device is powered via an external AC-DC adapter with universal input acceptance. The power architecture employs a single-stage conversion topology with system-level power management. Static power consumption is documented at 5W, while maximum power draw under full load reaches 15.5W . Typical operating consumption is rated at 8W, reflecting real-world mixed-service conditions .

AC Adapter Input: 100-240V AC, 50-60 Hz

System Power Supply: 11-14V DC, 1A (nominal 12V DC)

Static Power Consumption: 5W

Typical Power Consumption: 8W

Maximum Power Consumption: 15.5W

Power adapters are available in EU, US, UK, and AU plug configurations to support global deployment requirements.

COMPLIANCE & STANDARDS

The G-140W-MD conforms to the following regulatory and industry standards:

- ITU-T G.984.x (GPON protocol suite)
- ITU-T G.988 (OMCI management)
- IEEE 802.11b/g/n (WiFi)
- IEEE 802.1ag (Ethernet OAM)
- CE, RoHS, FCC certifications

TECHNICAL SPECIFICATIONS

Parameter	**Specification**
Model	G-140W-MD
GPON Standard	ITU-T G.984.x, Class C+
Optical Connector	SC/APC
Downstream Wavelength	1490 nm
Upstream Wavelength	1310 nm

Fiber Reach	Up to 20 km
LAN Ports	1×GE + 3×FE
Voice Port	1×RJ-11 POTS
WiFi	2.4 GHz 802.11b/g/n
USB	1×USB
Power Adapter Input	100-240V AC, 50-60 Hz
System Power Supply	11-14V DC, 1A (12V nominal)
Static Power Consumption	5W
Typical Power Consumption	8W
Maximum Power Consumption	15.5W
Dimensions	170 × 137 × 32 mm
Operating Temperature	0°C to 40°C
Operating Humidity	5% to 95% RH (non-condensing)
Management	TR-069, OMCI (G.988), Web UI
Certifications	CE, RoHS, FCC

