

Remote PHY node

DAN200 is a DOCSIS 3.1 -compliant remote PHY node. The DAN200 is our second generation distributed access node, which is designed in co-operation with Casa Systems and supports interoperability with Casa Systems CCAP CMTS.



The DAN200 has been developed for operators who want to deploy distributed architectures to increase their network capacity for offering future bandwidth-hungry services. While centralized DOCSIS architectures require a lot of space at the headend, the DAN200 saves it.

In addition to being an excellent HFC fibre node, the DAN200 hosts Remote PHY module. The DAN200 supports full DOCSIS 3.1 downstream spectrum and upstream frequencies, while the Remote PHY module of DAN200 supports 1.2GHz downstream and 100 MHz upstream.

Remote PHY module can be upgraded later to support full DOCSIS 3.1 upstream spectrum. The DAN200 supports one downstream segment and two upstream segments via two RF ports.

Management and user traffic between CCAP service card and DAN200 is secured. All traffic is received via two SFP modules supporting 10 GbE and/or 10G-EPON protocols. The third optical port is used for traditional broadcast services such as linear television that still persists due to STB legacy.

The DAN200 can be powered remotely over coaxial cabling. The robust housing has been developed to meet strict space requirements and harsh outdoor conditions. Knowledge about how intelligent devices are brought into street cabinets is in our DNA and now our well known intelligent fibre nodes have taken the next step.

Technical specifications

DOCSIS		10 GIGABIT ETHERNET INTERFACES	
Interoperability	CASA C40G or C100G with CSC8x10G	Number of ports	1 + 1
Number of downstream segments	1	Function	CIN 10GbE + Secondary 10GbE for 1+1 port protection. CIN 10G-EPON. Requires SW upgrade
Downstream frequency range	85 MHz - 1.218 GHz	Security	IPSec
Number of downstream channels	1 OFDM + 40/48 SC-QAM (Annex A/B) 1)	Connectors	SFP+ module slots
Downstream OFDM modulation	Up to 4096 QAM	UPSTREAM SIGNAL PATH	
Downstream OFDMA channel width	Up to 192 MHz	Frequency range	5...204 MHz 2)
Downstream SC-QAM modulation	64, 256 QAM	Return loss	18 dB
Downstream SC-QAM channel width	6 MHz (Annex B) / 8 MHz (Annex A)	Nominal input level	54...96 dBμV
Number of upstream segments	2	Signal path attenuation	7 dB
Upstream frequency range	5 MHz... 100 MHz 2)	Test point	-20 dB
Number of upstream channels	8 x A-TDMA channels or 4 x A-TDMA channels + 1 x OFDMA channel per segment		
Upstream OFDMA modulation	Up to 1024 QAM		
Upstream OFDMA channel width	Up to 96 MHz		
Upstream SC-QAM modulation	QPSK, 8, 16, 32 and 64 QAM		
Upstream SC-QAM channel width	1.6 MHz / 3.2 MHz / 6.4 MHz		
Security	DOCSIS BPI+		

OPTICAL NODE SIGNAL PATH (RF OPT IN TO RF OUT)

Light wavelength	1290...1610 nm	Gain limited output level	2 x 112 dBμV 4)
Optical input power range	-7...0 dBm	U_{max} (138 QAM channels) @ 1.2 GHz	107 dBμV
Optical connector	SC/APC	CTB 41 channels	114.0 dBμV 5)
Frequency range	85...1218 MHz	CSO 41 channels	115.0 dBμV 5)
Return loss	20 dB 3)	Output connectors	PG11 threads

GENERAL CHARACTERISTICS

Power consumption	78 W	Weight	10 kg
Supply voltage	30...65 V AC	Operating temperature	-40...+55 °C
Max current feedthrough	7 A / port	Class of enclosure	IP54 6)
Hum modulation	65 dB	EMC	EN50083-2
Test point connectors	F female	ESD	4 kV
Dimensions (h x w x d)	33 (36) cm x 31(35) cm x 14 cm	Surge	6 kV (EN60728-3)

Notes

- 1) Upgradeable to 2 OFDM + 96/128 SC-QAM (Annex A/B)
- 2) RF design 204MHz, DOCSIS US upgradable to 5 - 204 MHz with future R-PHY Module.
- 3) The limiting curve is defined at 85 MHz -2 dB / octave. Return loss is always better than 12 dB.
- 4) This is the gain limited output level when OMI is 4.0 %. The used wavelength is 1310 nm
- 5) EN50083-3. 8 dB sloped between 110...862 MHz
- 6)The housing is tested to be class of IP67. However, in standard delivery condition the lowest side wall is equipped with a 1 mm ventilation hole. Then the theoretical enclosure class is IP54

