Distributed access

DAN3
COMPACT REMOTE PHY NODE

Teleste DAN3 is a compact DOCSIS® 3.1 capable RPD node. A true space saving alternative for operators eager to take a quantum leap and build networks having substantially higher capacity.

The DAN3 is designed and optimized for distributed access networks and meets CableLabs® specifications ensuring interoperability with different CCAP cores. It converts a 10 gigabit IP connection into 1.2 GHz full spectrum, high-quality coax-based data data interface and makes it possible for operators to address consumers' increasing demands for faster broadband connectivity. The DAN3 utilises full DOCSIS 3.1 spectrum downstream and upstream directions allowing maximum of 6 OFDM- and 2 OFDMA-channels augmented with traditional single-carry QAM channels. This capacity makes DAN3 a future-proof investment for operators who are looking for a reliable solution for network transformations.

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The DAN3 represents the latest addition to our portfolio, in which high capacity, extensive interoperability with CCAP cores and flexibility towards future needs have been taken into account from the very beginning.

Remote PHY device (RPD) modules
DAN3 has a single downstream and up to two upstream segments. The device can be equipped with one 1x1 or 1x2 remote phy module. The 1x2 module supports 1x1 configuration that can upgraded to 1x2 remotely if a capacity extension is needed later on.

Integrated fiber compartment
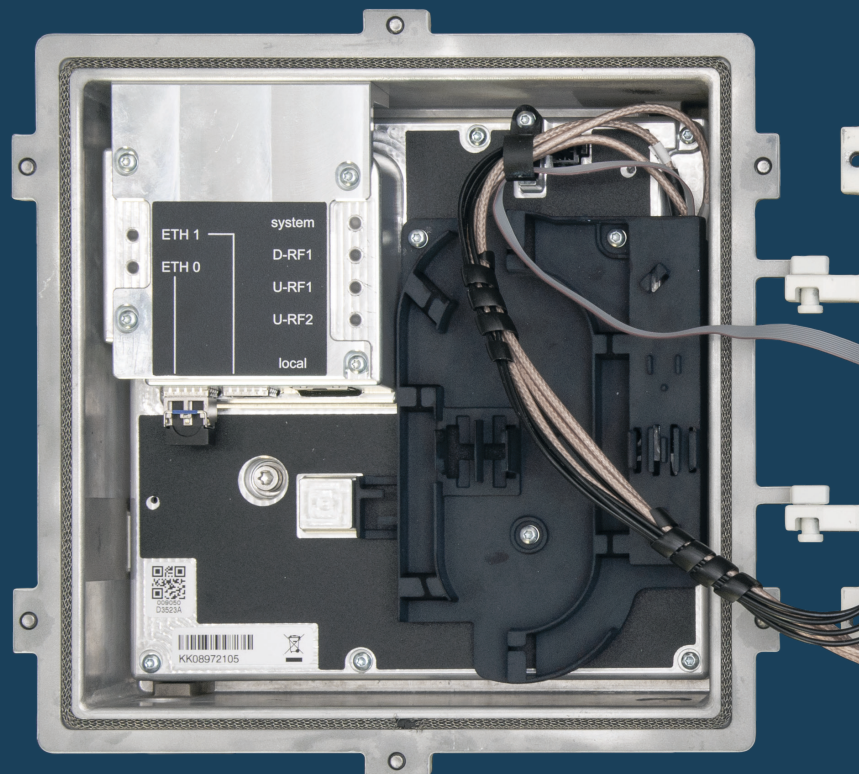The integrated fiber management provides secure storing location for fiber-optic cables and fiber splices.
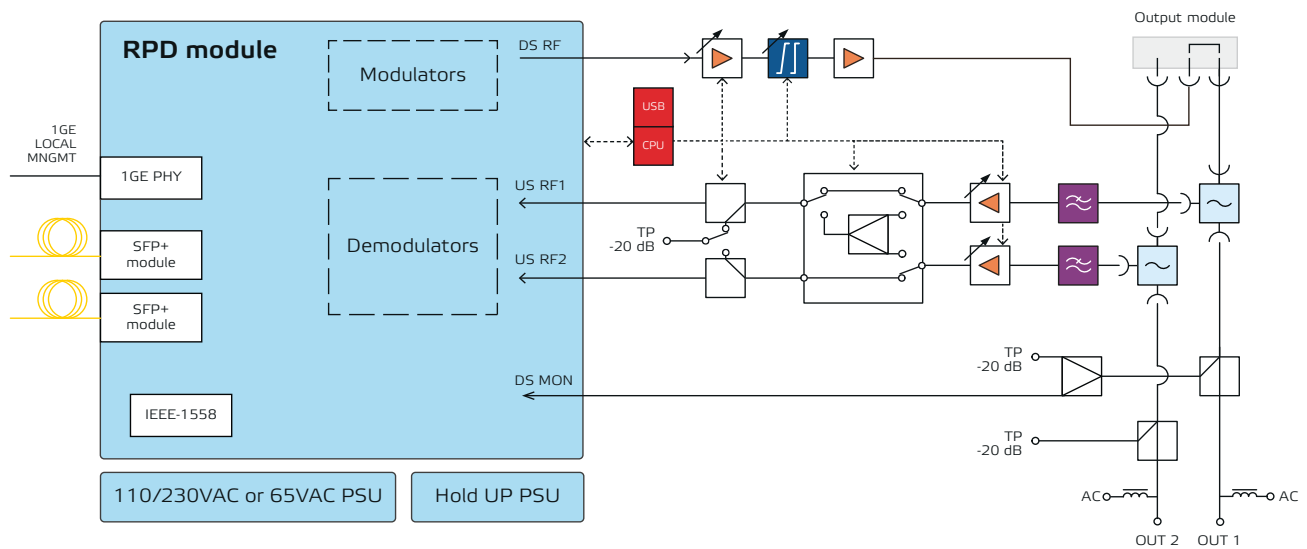
Local management interface

Connector	RJ-45
Standard	1000BASE-T

Security
All traffic is received via two SFP modules supporting 10 GbE protocols.

Authentication	802.1x
Device Certificate	as in CM-SP-R-PHY
Secure SW download	as in CM-SP-R-PHY
MACSec	Product option

RPD module

Modulators

DS RF

1GE LOCAL MNGMT

1GE PHY

SFP+ module

SFP+ module

Demodulators

US RF1

US RF2

USB

CPU

TP -20 dB

IEEE-1558

DS MON

110/230VAC or 65VAC PSU

Hold UP PSU

Output module

TP -20 dB

TP -20 dB

AC

AC

OUT 2   OUT 1

DAN3 simplified block diagram

Highlights
- Meets CableLabs specifications, ensuring multivendor interoperability
- Support for both DOCSIS 3.1 and DOCSIS 3.0 modems
- Supports legacy and out-of-band services and applications
- Power save technology allows over 10% power savings
- Compact and energy efficient
- Hold UP PSU for uninterrupted operation over short electric breaks

Features
- Full spectrum downstream capacity up to 1.2 GHz
- Return path supports 204 MHz bandwidth
- Support DOCSIS 3.1 and DOCSIS 3.0 channels
- 2 x 10 Gbe SFP+, 2nd for redundancy
- Up to 10 Gbps downstream throughput
- Up to 2 Gbps upstream throughput
- Out of Band-systems support using NDF/NDR-channels
- Pilot-tone generation
- 3rd generation GaN amplifier
- Electrical level and slope controls
- Efficient surge and ESD protection

DAN3 / COMPACT REMOTE PHY NODE

DOWNSTREAM SIGNAL PATH		UPSTREAM SIGNAL PATH	
Frequency range	85…1218 MHz	Frequency range	5…204 MHz
Return loss	19 dB	Input level	57…90 dBµV (-3…30 dBmV)
Level control	-25…0 dB	Return loss	18 dB
Slope control	10…23 dB	Test point	-20 dB
Test points	-20 dB		
Gain limited output level	119 dBµV (59 dBmV)	**10 GBIT ETHERNET INTERFACES**	
Umax	116.0 dBµV (138 QAM chs, @ 1.2 GHz)	Number of ports	2 x SFP+ module slot
Maximum output level	58 dBmV (188 QAM chs, @ 1.2 GHz)	Standard	IEEE 802.3-2008, Section 4 10GBASE-SR, 10GBASE-LR, 10GBASE-ZR
		Timing	IEEE-1588

DOWNSTREAM SC-QAM		DOWNSTREAM OFDM	
Number of SC-QAM chs	160/Annex B, 120/AnnexA	Number of OFDM chs	6
Frequency range	108…1006 MHz	Frequency range	108…1218 MHz
Modulation order	QAM64/256	Modulation order	Up to 16k QAM
All SC-QAM channels can be used flexibly for video or DOCSIS			

UPSTREAM DEMODULATOR			
Frequency range	2 x 5 …204 MHz	Downstream frequency range	50…1000 MHz and 85…1218 MHz
Number of OFDM chs	2 per RF interface	Number of NDF channels	3, Mode 0…7
Modulation order	Up to 4k QAM	Number of NDR channels	3 per segment, Mode 0…6
Channel width	up to 96 MHz (per channel)	Standard	CM-SP-R-OOB
Number of SC-QAM chs	12 per RF interface		

GENERAL CHARACTERISTICS			
Power consumption - 1x1 - 1x2	58 W, (50 W in power save mode) 61 W , (53 W in power save mode)	Dimensions (h x w x d)	245 mm x 255 mm x 159 mm (9.6"x10"x6.3")
Supply voltage	28…65/40…90/100…253 V AC	Weight	6 kg (13.2 lb)
Max current feed trough	12 A / port	Operating temperature	-40…+60 ºC (-40…+140 ºF)
Hum modulation	70 dB	Class of enclosure	IP68 (IP54 if the pressure plug is removed)
Output port	PG11	EMC compatibility	EN 50083-2
Test point connectors	F female	ESD, Surge	4 kV, 6 kV (EN 60728-3)

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