| Analysis | Pilotgen | saWe | RIS | ALSC | Optima+ | Wireless | 204 MHz | 1218 MHz | GaN | RPDready |

ICON™ series

ICON9000
INTELLIGENT RPD-READY
1.2 GHZ OPTICAL NODE

Teleste ICON9000 is a DOCSIS® 3.1 capable node able to host a remote PHY module. In addition to being an excellent fiber node, it stands out as a future-proof choice in the network evolution process towards distributed access solutions.

The ICON9000 offers an excellent HFC node concept that delivers innovative and proven technologies with a wide range of benefits to meet the needs of today's most demanding operators. The 2x2x4 node is based on a modular platform and responds to diverse requirements. With smart and automatic features, ICON9000 eliminates the efforts normally associated with conventional and time-consuming network operations. The node stands up to future bandwidth needs with a 1.2 GHz downstream frequency band and a unique flexible upstream solution that natively supports 204 MHz or alternatively can be upgraded to 204 MHz. With the support of remote PHY device (RPD) modules with RF overlay, the ICON9000 provides an economically sensible platform for foresighted operators.

TELESTE

ICON9000
INTELLIGENT RPD-READY
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The ICON9000 represents the latest in broadband technologies. This intelligent optical node called ICON9000 is able to host a remote PHY module, a sensible feature that enables a smooth transition to distributed network architectures without any loss of the initial investment.

1. Housing can host a remote PHY module
Operators who have selected RPD-ready products secure their investments. All these products can host a remote PHY module in the future. This feature allows operators to start with traditional centralized DOCSIS architectures and move to distributed access architectures when ultra-high broadband speeds are required.

2. Remotely controlled
ICON9000 is a 24/7 probe in a network and managed remotely through an optional transponder (bidirectional communication), remotely over a Remote Ingress Switching (RIS) link (unidirectional downstream) or locally through a USB port. The downstream spectrum and upstream quality measurements are performed by the transponder, which can also generate return path pilot signals.

3. Automatic and intelligent
An automatic level control (ALC) and optical level control (OLC) keep output levels constant and alignments precise. The node also includes ingress switches in every RF port and assists in locating and isolating ingress sources in the network.

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

Unique features

- Visibility over the entire frequency domain via transponder
- Automatic alignment for ensuring optimal device settings
- Power save (saWe) technology allows cutting down power consumption by 30%
- Remote Ingress Switching (RIS) isolates network upstream problems, especially ingress and CPD that enter a network via loose connections
- Configuration can be done via optional Bluetooth connection
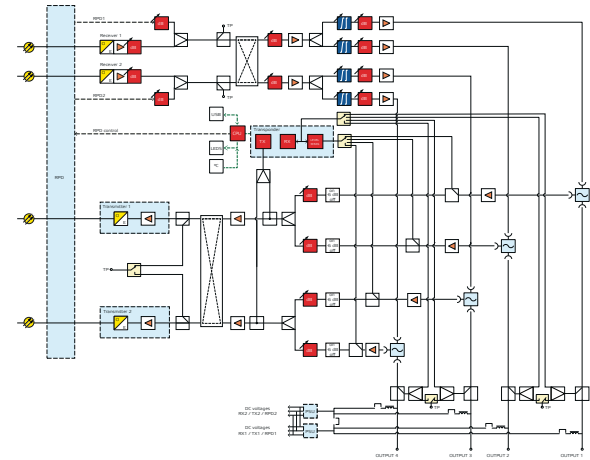
ICON9000 block diagram

5. High reliability
Excellent and fully passive cooling design lowers the internal temperature, which increases reliability and component durability. This leads to higher service quality and lower operational costs.

6. Easy management even on the site
The node can be accessed locally via a USB port. The USB port also enables wireless local management via Bluetooth® adapter and Teleste CATVisor Commander.

7. No coaxial interconnection cables
The risk of damaging the coaxial interconnection cables between the cover and the base has been eliminated. This approach dramatically improves the screening efficiency, reliability and RF performance.

8. Redundancy
The ICON9000 node includes an electrically and remotely configurable routing matrix, equipping the optical node to act as two independent nodes or in a redundant A/B switching mode. Profound reliability is secured by two power supplies supporting load-sharing.

ICON9000 / INTELLIGENT RPD-READY 1.2 GHZ OPTICAL NODE

DOWNSTREAM SIGNAL PATH		UPSTREAM SIGNAL PATH	
Light wavelength	1290…1610 nm	Frequency range	5…42 / 65 / 85 / 204 MHz
Optical input power range	-7…0 dBm	Return loss	18 dB
Frequency range	54 / 85 / 105 / 258…1218 MHz	Ingress switching	0 dB / -6 dB / Blockage
Flatness	± 0.5 dB	Nominal input level	0 dBmV
Gain limited output	4 x 62 dBmV	OMI adjustment	0…-20 dB
Max output level	64 dBmV	OMI test point	-20 dB

ICON67 Tx OPTICAL CWDM TRANSMITTERS		ICON68 Tx OPTICAL DWDM TRANSMITTERS	
Light source	CWDM (10 wavelengths)	Light source	DWDM (40 wavelengths)
Optical output power	+1 dBm / +3 dBm / +6 dBm	Optical output power	+8 dBm
Frequency range	5… up to 204 MHz	Frequency range	5… up to 204 MHz
Pilot generator	5.5 MHz / 6.5 MHz / no pilot	Pilot generator	5.5 MHz / 6.5 MHz / no pilot

AC6992 TRANSPONDER MODULE (CATVisor / HMS)		AC6983 TRANSPONDER MODULE (DOCSIS)	
Power consumption	1.8 W	Power consumption	4.8 W
DS frequency range	80…88 MHz, 108…132 MHz, 160…176 MHz, 216…264 MHz	DS frequency range	85…1002 MHz
US frequency range	5…65 MHz	US frequency range	5…85 MHz
DS measurement range	50…1218 MHz, 0.25 MHz steps	DS measurement range	50…1218 MHz, 0.25 MHz steps
US measurement range	5…204 MHz, 0.25 MHz steps	US measurement range	5…204 MHz, 0.25 MHz steps
Measurement bandwidth	0.35 MHz	Measurement bandwidth	0.35 MHz

RPD111 / RPD112 REMOTE PHY MODULES			
DS SC-QAM channels	160 x 6 MHz channels	Number of US segments	1 / 2
DS OFDM channels	6	US SC-QAM channels	12 per RF interface
Uplink interfaces	2x10 GigE interface, SFP+ mod. slot	US OFDMA channels	2 per RF interface
Standard	CM-SP-PHYv3.1	Number of OOB channels	3

GENERAL CHARACTERISTICS			
Power consumption	100 W…158 W (with RPD)	Dimensions (h x w x d)	11" x 23" x 11"
Supply voltage	42…90 V AC	Weight	22 kg (49 lbs)
Max current feed through	15 A / port	Operating temperature	-40…+60 ºC (-40…+140 ºF)
Hum modulation	65 dB	Class of enclosure	IP67
Optical connectors	SC/APC	EMC compatibility	FCC part 15, EN50083–2
Output connectors	5/8"	ESD, Surge	4 kV, 6 kV (EN 60728–3)

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