Intelligent fibre optic node

The introduction of our 1.2 GHz optical node platform shows our commitment to deliver innovative products that address the needs of the market. The guidelines for the design have been to create a small node with intelligence that would meet the challenges of cost-efficiency, ergonomics , and all the features that reduce the lifetime costs. Supporting the DOCSIS 3.1 standard, the ACE8 presents a concept that offers flexibility and brings new levels of usability to deep fibre nodes.

Bringing intelligence to deep fibre applications

Much more capacity and intelligence is required from today's fibre networks than ever before, and the applications need to be user friendly and reliable, robust yet compact. The ACE8 intelligent deep fibre node fulfils these requirements. With outstanding performance it is well suited for conventional applications, and can also be updated to DOCSIS 3.1. Supporting latest network requirements the new ACE8 will carry fibre not only deep into the network but also deep into the future.

Compact deep fibre node

The deployment costs for fibre infrastructure are high, but the associated costs can be mitigated with an alternative approach. Existing coaxial networks can be updated using a hybrid solution where fibre cables are taken to the roadside and individual customer connections remain on a coaxial cable. The ACE8 is a cost effective node that enables service providers to gain access to high transmission capacity-flexibly and at a low cost.

The ACE8 is a compact node with one active output, designed for deep fibre solutions. It is based on a fixed receiver and a modular US transmitter. Output amplifier stage uses high performance GaN hybrid, making the usable output level range especially wide. Output can be split in two. The node's US path can be equipped with 1310 nm, 1550 nm or CWDM upstream transmitters. In order to fulfil future service requirements the downstream frequency band reaches up to 1.2 GHz and upstream can be easily updated to 200 MHz.

Increased efficiency through remote connectivity

Labour intensive network maintenance is often the prime reason for high operating expenses. Rather than sending out technicians on a regular maintenance schedule to ensure each node in the network is operating as expected, the ACE8 can be controlled remotely via the optional plug-in transponder unit.

Together with Teleste's CATVisor EMS network management software the ACE8 replaces conventional mechanical adjustments and the laborious checking of parameters with a reliable system that responds quickly to any indication of a problem. The early warning system allows you to rectify any inefficiency before it becomes a real problem, and reduces unexpected, costly downtime to an absolute minimum. In turn, this leads to several operational benefits, such as improved network reliability and performance. Remote connectivity is also possible via third-party applications through SNMP. If it is necessary to go on site, the ACE8 can be configured locally via its USB interface even wirelessly.

Benefits of intelligence

The ACE8 equipped with an intelligent transponder which enables a whole new class of functionality. The ACE8 has for example the ability to observe quality of upstream signal with an automatic ingress control. Another beneficial feature of ACE8 is its capability to adjust itself automatically. With the ACE8, all configurations are done automatically without the maintenance crew having to adjust and configure each device separately. The automatic features greatly reduce the possibility of human errors, as well as time consuming and inefficient network operations. More importantly, it means cutting down operating costs and increasing customer satisfaction.

Ideally suited for deep fibre solutions

The deployment costs of a completely optical communication infrastructure are high, but the associated costs can be mitigated with an alternative approach. Existing coaxial networks can be updated using a hybrid solution where fibre cables are taken to the roadside and individual customer connections remain on coaxial cable.

In such cases, the deep fibre-optic node offers an easy and future-proof way for increasing broadband penetration and reaching out to new users. Using ACE8 enables access to high transmission capacity at a low cost with the possibility to install fibre cables on demand. This in turn minimises initial installation costs.

ACE8 and environment

- Advanced GaN hybrid with automatic power optimisation
- Power supply with active power factor correction
- Compact size with reduced material consumption
- High performance means less active units in the field
- Operational savings with a superior remote monitoring system

Wireless configuration

The ACE8 can be controlled via an intuitive touch screen user interface for tablets. Included USB and wireless Bluetooth® connectivity makes the node easily configurable even on site.

Power supply with active power factor correction.

No need for usual plug-in accessories in the system set up.

The transponder module is used to add remoteconnectivity, ALSC and up- and downstream signal monitoring functionality.

A full range of return path transmitters using various laser technologies are available.

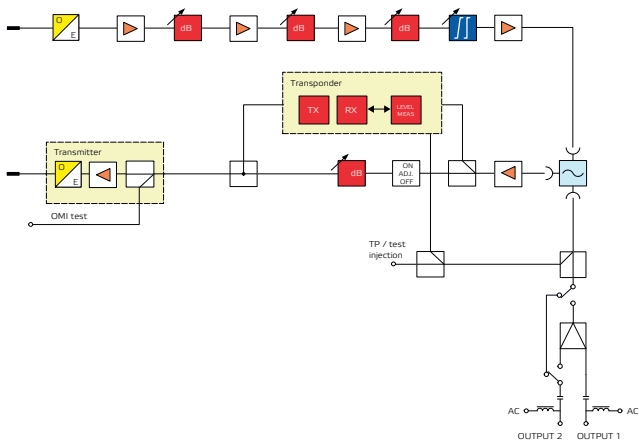External USB management interface enables local control.

Fibre management

Integrated fibre organiser provides a convenient interconnection and storage capability as well as superior protection for fibre cables and splices. Connectors and adapters are held in place in the fibre organiser by universal type holders ensuring compatibility with a variety of existing connectors and adapters. The fibre organiser is equipped with lid for further protection.

Features

- Supports 1.2 GHz downstream and up to 200 MHz upstream
- Wide range of upstream transmitters available
- Automatic or manual ingress control
- Power factor-corrected PSU
- Local Bluetooth® connectivity
- Remote management with DOCSIS or HMS

Technical specifications

RF CHARACTERISTICS

Downstream signal path		Upstream signal path	
Light wavelength	1290…1610 nm	Frequency range	5…204 MHz
Optical input power range	-7…0 dBm	Return loss	18 dB
Frequency range	85…1218 MHz	Ingress switching	0 / -6 / < -45 dB
Return loss	18 dB	Input level	57.0 dBµV
Flatness	± 0.5 dB	OMI adjustment	0…-20 dB
Gain limited output level	118 dBµV		
Slope control range	0…18 dB		
Noise current density	6 pA / √Hz		
CTB 41 channels	116.0 dBµV		
CSO 41 channels	117.0 dBµV		
U_{max} (112 QAM channels)	112.0 dBµV		

OPTICAL CHARACTERISTICS

AC6740 return path transmitter		AC6745 return path transmitter | AC6476 return path transmitter	
Light source	1310 nm FP	Light source	1310 nm DFB
Optical output power	+1 dBm	Optical output power	+3 dBm | +6 dBm
Frequency range	5…65 / …85 / …204 MHz	Frequency range	5…65 / …85 / …204 MHz
Pilot frequency	5.5 MHz / 6.5 MHz / no pilot	Pilot frequency	5.5 MHz / 6.5 MHz / no pilot

AC67xx return path transmitters	
Light source	CWDM units are available with DFB laser of 10 wavelengths.
Optical output power	+3 dBm / +6 dBm
Frequency range	5…65 / …85 / …204 MHz
Pilot frequency	5.5 MHz / 6.5 MHz / no pilot

AC6991 TRANSPONDER MODULE (CATVisor and HMS) | AC6980 TRANSPONDER MODULE (DOCSIS)

RF modem		RF level measurements	
Power consumption	1.8 W | 3.8 W	DS measurement range	50…1000 MHz, 025 MHz steps
DS frequency range	80…155 MHz | 93…858 MHz	US measurement range	5…85 MHz, 0.25 MHz steps
US frequency range	5…65 MHz	Measurement bandwidth	0.35 MHz
DS input level range @ transponder	50…90 dBµV | 68…98 dBµV	DS dynamic range	80…120 dBµV @ node out
US output level range @ transponder	75…104 dBµV | 67…117 dBµV	US dynamic range	20…75 dBµV @ node in

GENERAL CHARACTERISTICS

Power consumption	22 W	Dimensions (h x w x d)	200 mm x 230 mm x 90 mm
Supply voltage	27…65 V AC / 205…255 V AC	Weight	2.3 kg
Max current feed trough	6 A / port	Operating temperature	-40…+55 ºC
Hum modulation	70 dB	Class of enclosure	IP54
Optical connectors	SC/APC, FC/APC, E-2000	EMC compatibility	IEC 60728-2
Output ports	PG11	ESD	4 kV
Test point connectors	F female	Surge	6 kV

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