Intelligent 1.2 GHz fibre optic node

The introduction of ACE8 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 and cost efficient node with intelligent features. The fibre optic node ACE8 offers flexibility and usability for deep fibre networks.

Bringing intelligence to deep fibre networks

More capacity and intelligence is required from today's fibre networks than ever before, and solutions need to be user friendly and reliable, robust yet compact. The ACE8 intelligent deep fibre node fulfills these requirements. With outstanding performance it is well suited for conventional applications as well as DOCSIS 3.1. Supporting the latest network requirements the new ACE8 will carry fibre not only deep into the network but networks 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 and at a low cost.

The ACE8 is a compact node with one active output, designed for deep fibre networks. 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 DOCSIS requirements the downstream frequency band reaches up to 1.2 GHz and upstream can be easily updated to 204 MHz.

Ideally suited for deep fibre migration

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.

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 remote connectivity, ALSC and up- and downstream signal monitoring functionality.

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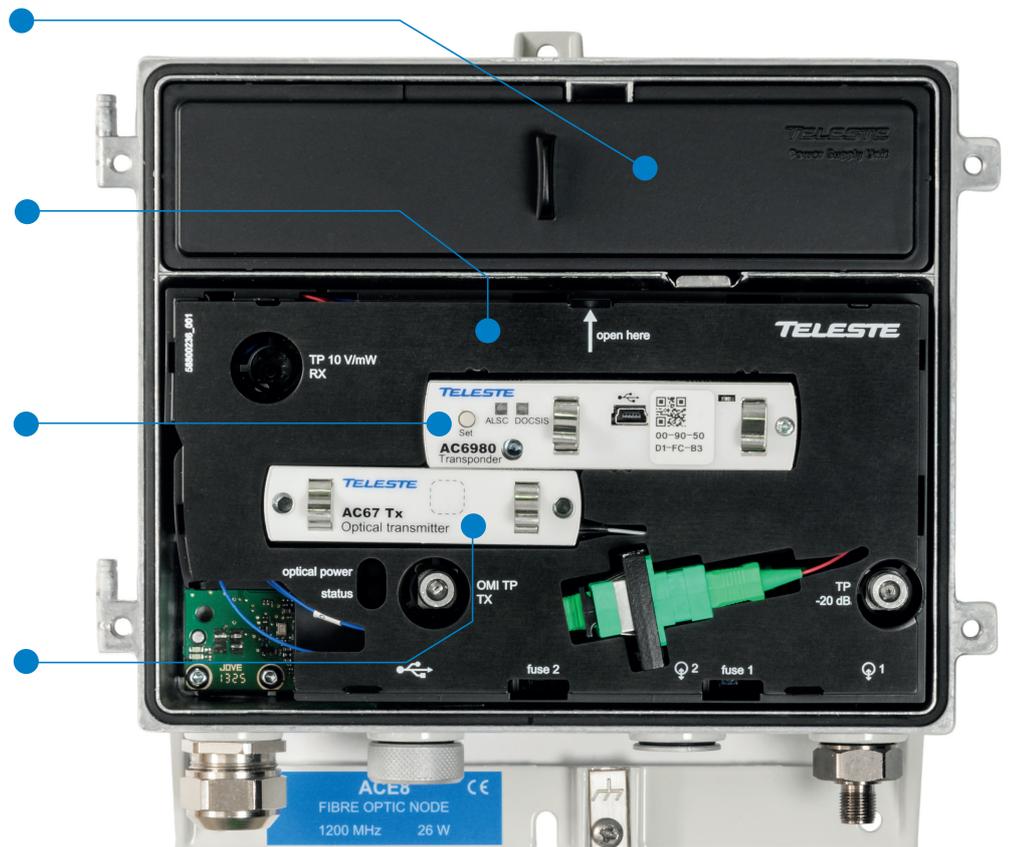
Benefits of intelligence

The ACE8 equipped with a transponder which enables a whole new class of functionality. The ACE8 has for example the ability to observe quality of upstream signal and 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.

## 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 Argus 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 deviations 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. If it is necessary to go on site, the ACE8 can be configured locally via its USB interface even wirelessly.

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

Intelligent functionalities are illustrated on the white area below.
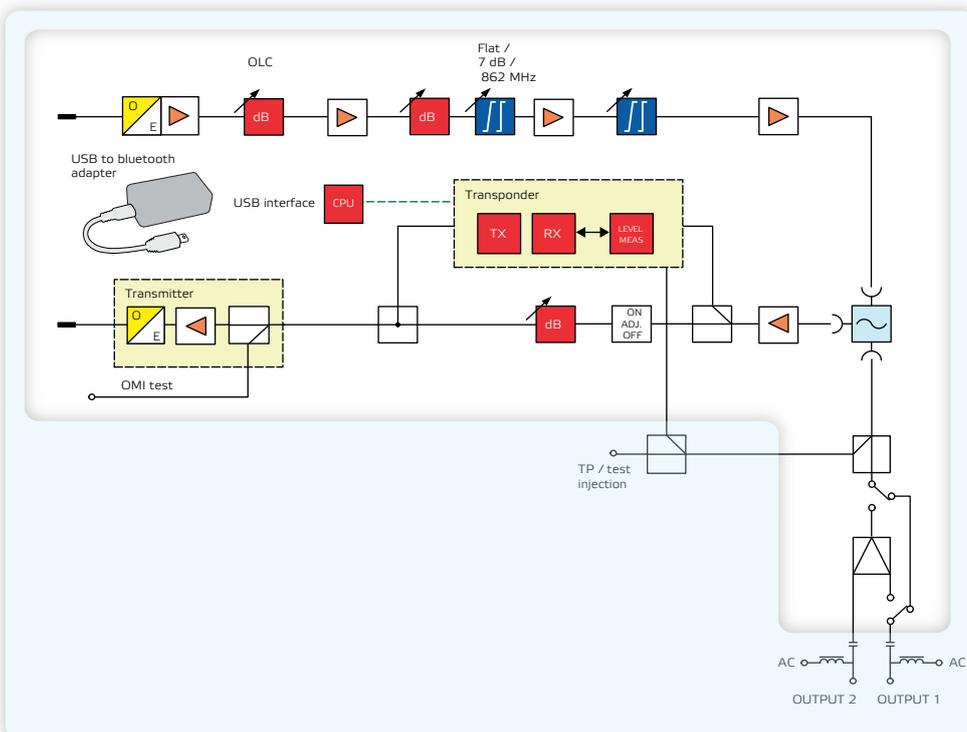
Supports 1.2 GHz downstream and up to 204 MHz upstream

Wide range of upstream transmitters available

Automatic or manual ingress control

USB to bluetooth adapter offers local Bluetooth® connectivity

Remote management with DOCSIS, CATVisor or HMS protocols

Technical specifications

RF CHARACTERISTICS

Downstream signal path		Upstream signal path	
Light wavelength	1290…1610 nm	Frequency range	5…65 / …85 / …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 dBµV
Flatness	± 0.5 dB	OMI adjustment	0…-20 dB
Gain limited output level	118 dBµV	CINR	See curves
Slope control range	0…18 dB		
Noise current density	6 pA / √Hz		
CTB 41 channels	116.0 dBµV		
CSO 41 channels	117.0 dBµV		
$U_{max\ (112\ QAM\ channels)}$ @ 1.0 GHz	111.5 dBµV		
$U_{max\ (112\ QAM\ channels)}$ @ 1.2 GHz	108.5 dBµV		

OPTICAL CHARACTERISTICS

AC67xx return path transmitters	
Light source	CWDM (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

AC6992 TRANSPONDER MODULE (CATVisor and HMS)

RF modem		RF level measurements	
Power consumption	1.8 W	DS measurement range	50…1218 MHz, 0.25 MHz steps
DS frequency range	80…88 MHz, 108…132 MHz, 160…176 MHz, 216…264 MHz	US measurement range	5…204 MHz, 0.25 MHz steps
US frequency range	5…65 MHz	Measurement bandwidth	0.35 MHz
DS input level range @ transponder	60…90 dBµV	DS dynamic range	80…120 dBµV @ node out
US output level range @ transponder	75…104 dBµV	US dynamic range	20…75 dBµV @ node in

GENERAL CHARACTERISTICS

Power consumption	23 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	7 A / port	Operating temperature	-40…+55 ºC
Hum modulation	70 dB	Class of enclosure	IP54
Optical connectors	SC/APC, E-2000	EMC compatibility	EN50083-2
Output ports	PG11	ESD	4 kV
Test point connectors	F female	Surge	6 kV (EN 60728-3)

Curve is defined with CWDM transmitter (nominal performance in room temperature)
Load 5 x 64QAM and 23 x 64QAM, Symbol rate 6.9 MSym/s, input level -2 dBm

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