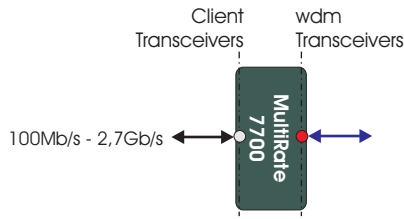


# Flexible Networking



## MultiRate Transponder 7700

The 7700 is a fully featured 100Mb/s - 2.7Gb/s Transponder with pluggable optics on both the line and client side. Via the simple insertion of the relevant pluggable transceivers, this single module can be configured for any CWDM or DWDM application.

### Key features

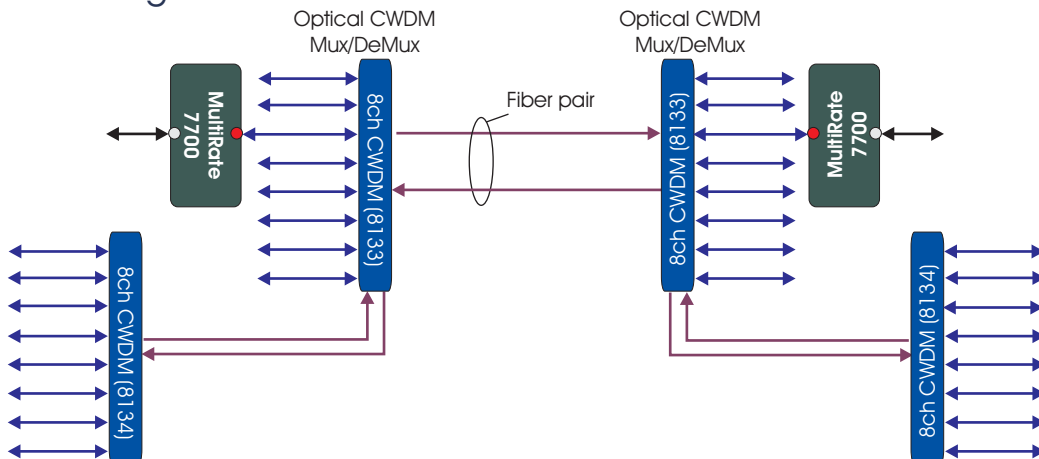
The 7700 Transponder is a versatile, multipurpose device that is bit rate and protocol transparent from 100Mb/s to 2,7Gb/s. The 7700 Transponder can therefore support the following protocols:

- GbE (1000Base-SX and 1000Base-LX)
- STM-1/OC-3, STM-4/OC-12 and STM-16/OC-48
- ESCON, FICON
- 1Gb Fibre channel and 2Gb Fibre channel
- DVB- ASI Video
- Any other signal within 100Mb/s - 2.7Gb/s, e.g. PDH-signals

Pluggable Transceivers (SFP's) are used on both client and line interfaces enabling configurations that exact match current and future needs. The line interfaces can be equipped with either CWDM or DWDM SFP's;

- 40km CWDM @ 2.5Gb/s
- 80km CWDM @ 2.5Gb/s
- 100km CWDM @ 2.5Gb/s
- 120km CWDM @ 1,25Gb/s
- 120km DWDM @ 2.5Gb/s

### CWDM configurations



The 7700 Transponder can be combined with other CWDM units on a fiber-pair with optical Mux/DeMux'es (MDU's). Up to 16 CWDM channels are supported using a modularity of 8+8 ch MDU's (8133 + 8134).



7700/01 Transponder



The 9013 chassis can house both DWDM and CWDM units

*TS-Series is a versatile platform with modularity both in channel count and transmission reach. It is scalable up to 16 CWDM channels and 38 C/DWDM channels by adding one or several channels at a time without any service downtime or impact on existing traffic.*

*The protocol transparent nature of TS-Series provides support for a wide range of services including Gigabit Ethernet, Fast Ethernet, SDH/SONET, Fibre Channel, FICON, ESCON, ETR etc.*

*The protocols can be mixed between C/DWDM and even between TDM channels.*



TS-1100 9013 Chassis



TS-100 9002 Chassis

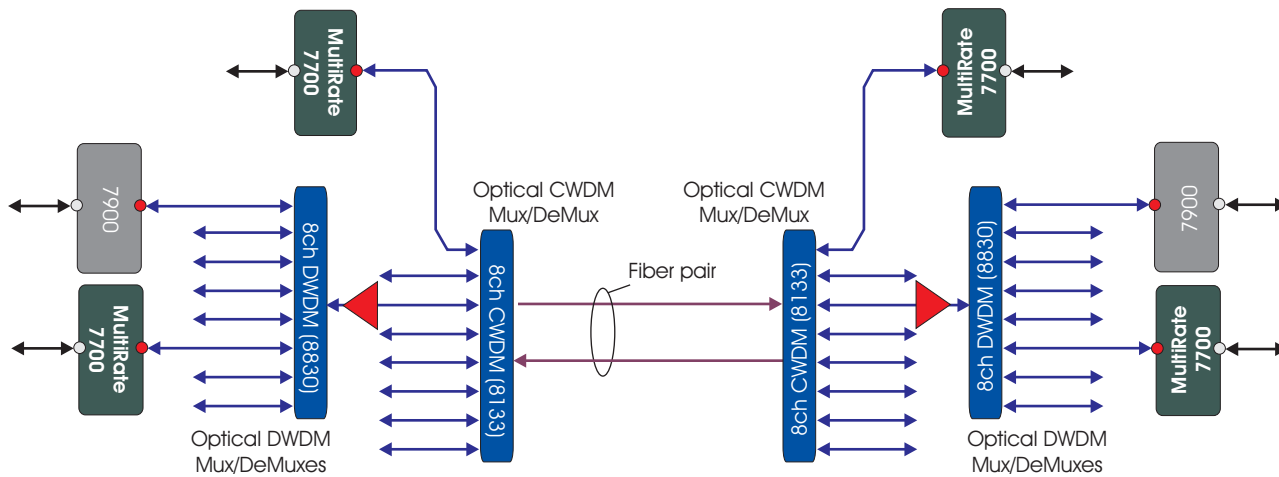


MultiRate Transponder 7700



4G FC Transponder 7400





The 7700 Transponder can be configured with CWDM SFPs to provide low cost wavelengths for initial traffic connections. As traffic demands increase it is possible to equip the 7700 Transponder with DWDM SFPs and to combine these C/DWDM 2.5Gb/s channels with 10Gb/s channels using the 7900 Transponder, as shown above. The figure shows an example where up to 8 DWDM wavelengths are connected to a CWDM-link via a 1550nm port of the CWDM MDU (8133). This gives a combined 7ch CWDM and a 8ch DWDM network. This is just one out of several options for building cost-effective networks using active Transponders and passive optical MDU's and Add/drop filters. Please contact Transmode directly or a local Transmode representative for more information.

Networks with the 7700 are managed on a NE-basis via the Embedded Node Manager (ENM) and on network level via the Transmode Network Manager (TNM).

## Technical Data

Parameter	Value	Comment
Power consumption	5,5W	Fully equipped
Timing	Through-timing in both directions	2R of full 3R
Performance monitoring	- Optical parameters: Laser output power, Laser bias, Received optical power	
Embedded management channels	No	
Misc	- Protocol and bit rate transparent between 100Mb/s - 2.7Gb/s - Loop-back on client & line interface	

Non-wdm SFP's (normally used on client interfaces)					
Module type	"MultiRate SM" Short Reach	"MultiRate SM" Intermediate Reach	"GbE /FC SM"	"GbE /FC MM"	"1000Base-T"
Signal types	100Base-LX ESCON DVB Video 1G FC GbE STM-1/-4/-16 OC-3/-12/-48	100Base-LX ESCON DVB Video 1G FC GbE STM-1/-4/-16 OC-3/-12/-48	100Base-LX ESCON DVB Video 1G FC GbE	100Base-SX ESCON DVB Video 1G FC 2G FC GbE	Electrical GbE
Bit rate	100Mb/s - 2.5Gb/s	100Mb/s - 2.5Gb/s	100Mb/s - 1.25Gb/s	100Mb/s - 2.125Gb/s	1.25Gb/s
Connector type	LC	LC	LC	LC	RJ45
Input fiber type	SM	SM	SM	MM	Electrical
Interface type	~2km	~15km	~10km	~550m	-
Output wavelength (nm)	1260 - 1360	1260 - 1360	1260 - 1360	820 - 860	-
Output power	-10dBm min -3dBm max	-5dBm min 0dBm max	-10dBm min -3dBm max	-9,5dBm min -3,5dBm max	-
Receiver sensitivity @ 10 <sup>12</sup>	-17dBm	-17dBm	-17dBm	-14dBm	-
Overload	-3dBm	0dBm	-3dBm	0dBm	-
Link budget without System Margin	7dB	12dB	7dB	4,5dB	-

Transmode patented IWDM technology entails "Protocol Recognition" and "Speed Watch" that introduces true Plug-and-Play simplicity to wdm networking by allowing the Transponders to recognize the attached signal and auto-provision the optimum parameters.

Speed Watch allows the operator to restrict the traffic flow based on a maximum allowable bit rate and/or protocol type.

Module type	CWDM SFP Transceivers				DWDM SFP Transceivers <sup>1)</sup>
	"40km"	"80km"	"100km"	"120km"	"120km"
Bit rate	100Mb/s to 2.488Gb/s	100Mb/s to 2.488Gb/s	100Mb/s to 2.488Gb/s	100Mb/s to 1.25Gb/s	622Mb/s to 2.488Gb/s
Connector type	LC	LC	LC	LC	LC
Input fiber type	SM	SM	SM	SM	SM
Output wavelength (nm)	1471, 1491, 1511, 1531, 1551, 1571, 1591, 1611nm (G.694.2)				G.694.1 100GHz spaced C-band
Output power	0dBm min +5dBm max	0dBm min +5dBm max	0dBm min +5dBm max	0dBm min +5dBm max	0dBm min
Overload	0dBm	-9dBm	-9dBm	-9dBm	-9dBm
Rec sensitivity @ 10 <sup>12</sup> excl. System Margin	-20dBm	-28dBm	-30dBm	-32dBm	-28dBm
Link budget without System Margin	20dBm	28dBm	30dBm	32dBm	28dBm

<sup>1)</sup> Supported by 7700/01

The specifications and information within this document are subject to change without further notice. All statements, information and recommendations are believed to be accurate but are presented without warranty of any kind.

The TS-Series Transponders provide a completely integrated solution to convert client signals to run over C/DWDM channels. There are several modules available covering a wide range of protocols from 100Mb/s to 10Gb/s. The TS-Series Transponders are bit rate transparent requiring no pre-configuration or on-site provisioning.



Muxponder 5400/03



10G Transponder 7900



Mux/DeMux & AD-filters

DS-7700 Rev G March 2008

