

CATV Optical Receiver

Features

- Wide bandwidth of 47MHz to 870MHz to support CATV analog channels or a combination of analog and digital channels
- An optical Wavelength-Division Multiplexer (WDM) integrated inside
- High CNR, low CSO/CTB.
- With AGC(Automatic Gain Control)
- 75dBuV RF output level for general type and 92dBuV for enhanced type.
- 3 minitor signals are provided, LOSS, OVERLOAD and NORMAL
- Especially designed for FTTH/FTTB application



Description

Accelink's TVR Series products is designed for FTTH, FTTB, or HFC applications. The general type TVR-D-WDM-10 has a normal output level 75dBuV perchannel for TV. The enhanced type TVR-D-WDM-PE -10 provide higher level, 92dBuV with -6dBm input power and 3.5% optical modulation index. With WDM integrated for 1550nm video signal pass and 1310nm/1490nm digital signal reflection they are very applicable for PON system.

AGC (Automatic Gain Control) circuits are integrated to maintain the output level I over a wide input optical power range -6dBm~+2dBm. A BPF(band pass filter) is designed to restrain outband disturbing signals maybe presented in some optical sources. Monitor signals include LOSS, OVERLOAD and NORMAL are provided for performance informaiton. The function diagram is show in Figure 1.

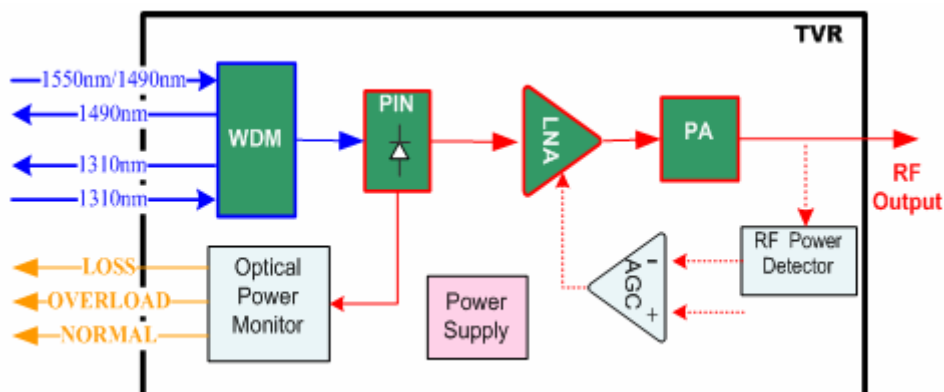


Figure 1. Block Diagram

Absolute Maximum Ratings

Parameter	Min	Max	Unit	
Storage temperature	-40	85	°C	
Maximum Input Optical Power (1550nm)		10	dBm	
Supply voltage	VCC	0	5.25	V
	VPD	0	25	V

Recommended Operating Conditions

Parameter	Min	Typical	Max	Unit	Note	
Operation voltage	VCC	4.75	5.00	5.25	V	[1]
	VPD	10	12	15	V	[2]
Operation Current	GT	200	250	300	mA	[3]
	ET	300	350	400	mA	
Bias Current			10	mA	[4]	
Operating temperature	-20		70	°C		
Ambient humidity	5		95	%		

Note[1]: power supply for amplifier circuit.

Note[2]: power supply for bias circuit of PIN.

Note[3]: in this document, GT means General Type TVR-D-WDM-10, ET means Enhanced Type TVR-D-WDM-PE-10.

Note[4]: real current have relation to the input optical power.

Optical Specifications

Parameter	Min.	Typ.	Max.	Unit	Note	
Wavelength	λ_1	1260	1310	1360	nm	[1]
	λ_2	1480	1490	1500		
	λ_3	1540	1550	1560		
Insertion Loss	Port 1→Port 2 @ λ_1			1.0	dB	[1]
	Port 1→Port 2 @ λ_2			1.0		
	Port 1→Port 3 @ λ_3			1.0		
Isolation	Port 1→Port 2 @ λ_3	20			nm	[1]
	port1→Port 3@ λ_1 & λ_2	40				
Directivity	Port 2→Port 3@ λ_1 & λ_2	50				[1]
	Port 2→Port 3 @ λ_3	20				
PDL			0.2	dB		
Optical return loss	45			dB		
Input optical power	-6		+2	dBm	[2]	
OVERLOAD assert	2.0	3.1	4.0	dB		
LOSS assert	-13.5	-12.0	-10.5	dB		

Note[1]: λ_3 input from Port 1, receive by pin and amplifier to RF output; λ_1/λ_2 is pass wavelength, λ_1 input from Port 2, output from Port 1, λ_2 input from Port 1 and output from Port 2. See Figure 2 for detail.

Note[2]: this input power range assure excellent parameters, otherwise in most cases -10dBm~+5dBm input power make no evidently degraation on TV progrom qulity.

RF Specifications

Parameter	Min.	Typ.	Max.	Unit	Note	
Frequency range	47		870	MHz		
RF output level	GT	70	75	80	dBuv/ch	[1]
	ET	87	92			
TILT			4	dB		
Flatness (Ripple)	± 1.5			dB		
CNR	46			dB	[2]	
CSO			-55	dBc	[3]	
CTB			-55			
RF output impedance		75		Ω		
RF output return loss	12			dB		

Note[1]: optical modulation index (OMI) 3.5%, input Power -6dBm~+2dBm.

Note[2]: CNR@-6dBm optical input, OMI=3.5%, 59 PAL-D channels.

Note[3]: OMI=3.5%, -1dBm input optical power, 59 PAL-D channels.

Interface Definitions

Pin	Function	Description
1	Overload	TTL level, indicates low when the input optical power increase above OVERLOAD optical power, typical 3dBm.
2	Normal	TTL level, indicates high when the input optical power change for LOSS to OVERLOAD, typical from -12dBm~+3dBm.
3	Loss	TTL level, indicates low when the input optical power decrease below LOSS optical power, typical -12dBm.
4~7	NC	No connector
8	+5V	+5V power supply
9	GND	Power GND. The body is connected to GND inside.
10	+12V	+12V power supply
F connector	RF output	Metric female, can be customized.
Port 1	optical I/O	1550nm at this Port 1, detected and amplifier by the circuit. 1490nm signal input from Port 1, output at Port2. 1310nm signal input from Port2 and output at Port1.
Port 2	optical I/O	

Note: see Figure 2 for detail.

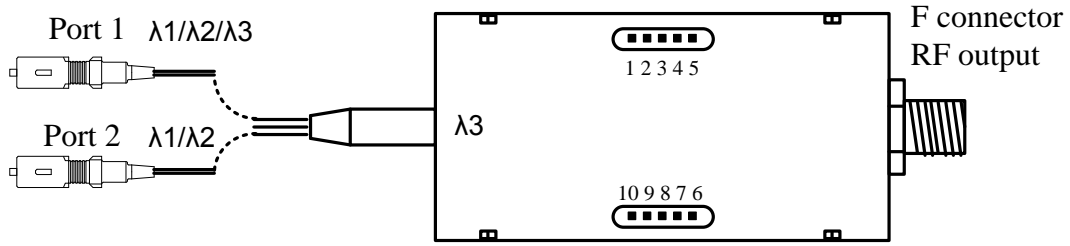
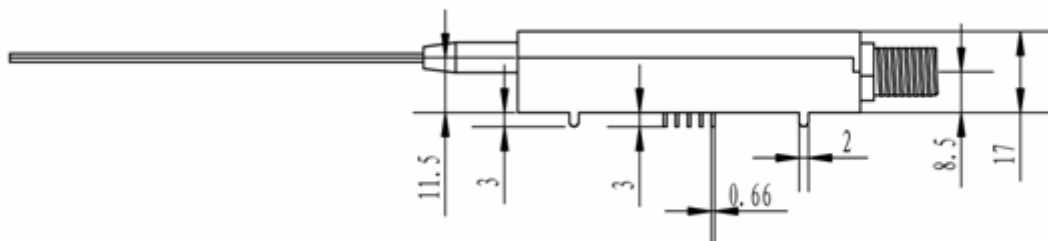
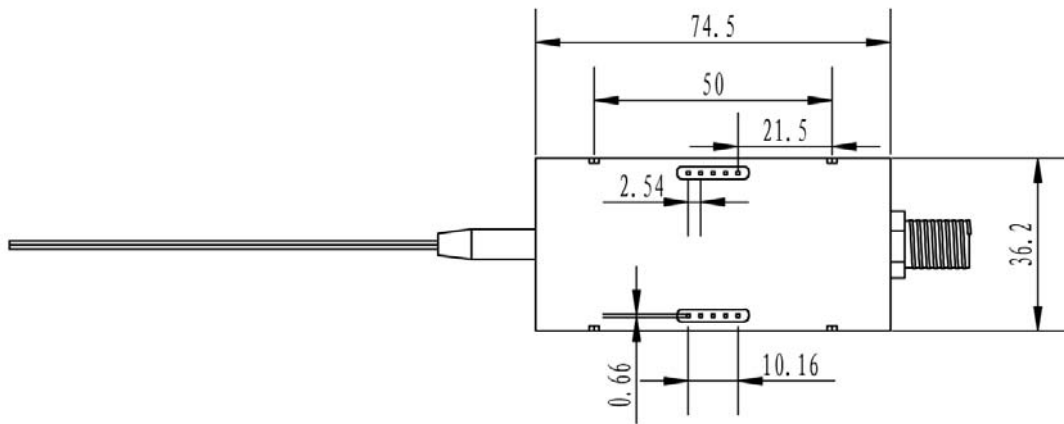


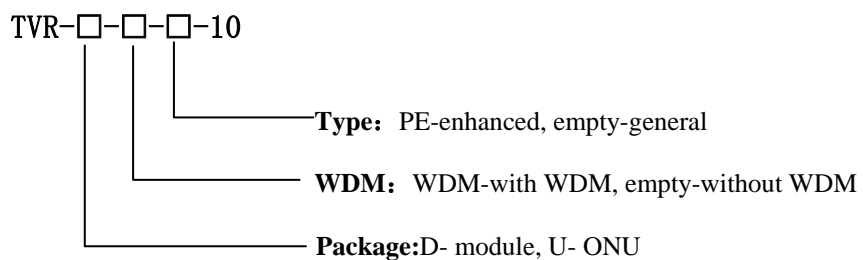
Figure 2. Pins and ports definition (bottom show)

Mechanical Drawing

Parameter	Description	Unit	Notes
Mechanical Dimensions	74.5×36.2×20	mm	
Fiber type	SMF28e - Φ0.9mm		
Fiber Length	0.5±0.1	m	Can be customized
Optical connector (common Port)	SC/APC		
Optical connector (reflect Port)	SC/APC		



Order Information



Part No.	Product Description
TVR-D-WDM-PE-10	enhanced CATV optical receiver module, with WDM inside.
Note: The optical connector type and fiber length can be customized.	