



ACION™ 8000 Series A8KFT3UD-15 1550nm (1.2GHz) Dual Forward Optical Transmitter

The ACION 8000 A8KFT3UD-1550nm is a head-end 1.2GHz dual forward optical transmitters (Tx) for HFC or FTTH applications. The A8KFT3UD-1550 Tx has two transmitters integrated in one module which can transmit RF signals over a fiber length up to 30km. This compact and cost-effective Tx module is 3RU in height and up to 12 Tx modules (i.e. 24 transmitters) can be integrated in the 19-inch high-density chassis (A8KMF3).

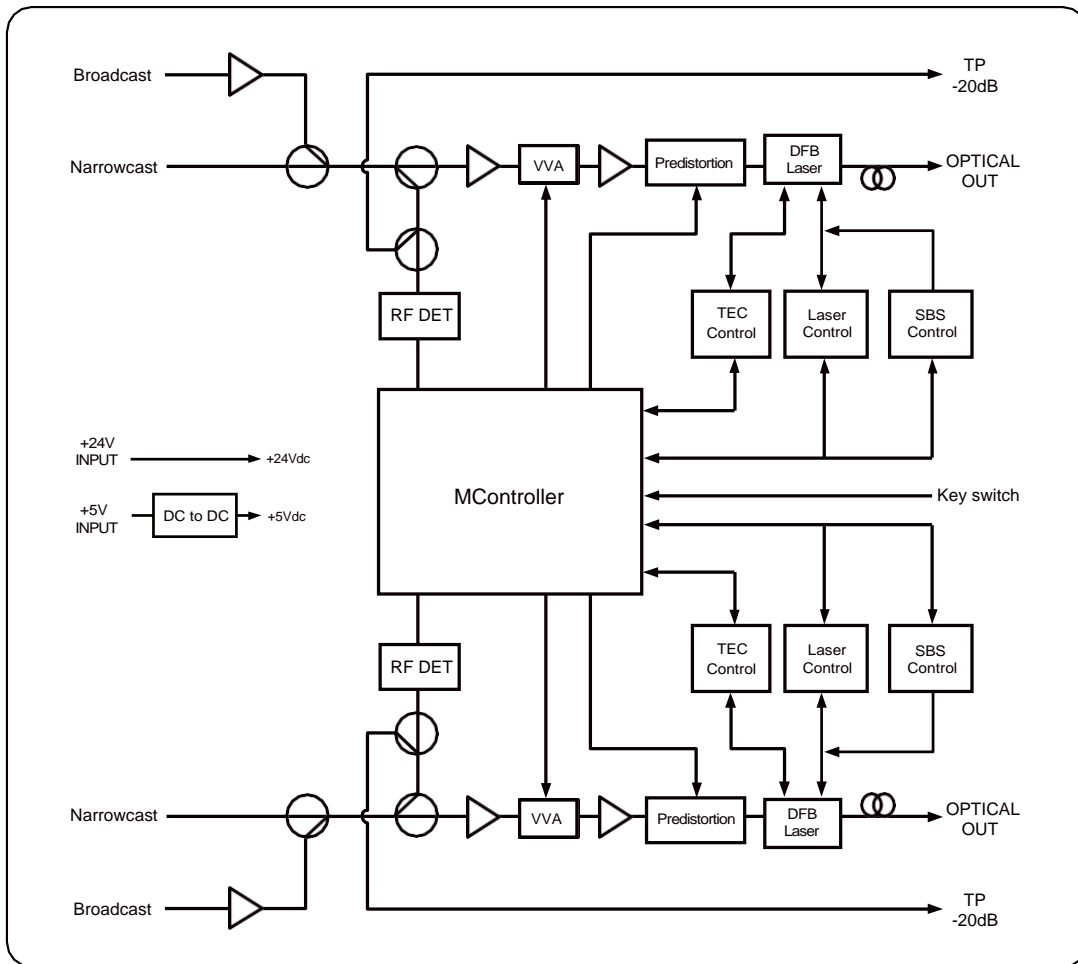
The transmitter's RF path employs several stages of RF amplification that includes single ended low noise high linear amplifiers and low noise push-pull amplifier from G7/EU brand name vendors.

The Transmitter's adjustable OMI level and user defined AGC setting features make it very convenient in field application with a wide range of RF input loading from analog loading, analog and digital loading or full digital loading.

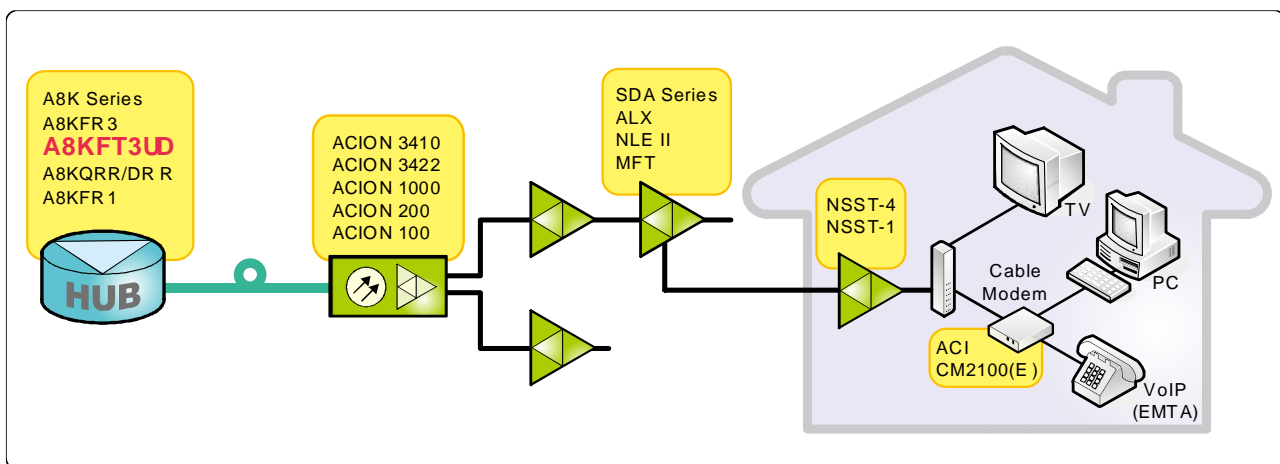
Features

- ◆ Transmission bandwidth up to 1.2GHz.
- ◆ Dual transmitters in one module.
- ◆ Fiber distance up to 30km
- ◆ Cooled DFB laser diode with isolator.
- ◆ AGC/MGC selection
- ◆ 1550nm, Standard ITU Ch15 to Ch72, 100GHz Spacing
- ◆ Video/CW Mode selection
- ◆ OMI level adjustments
- ◆ User defined AGC setting
- ◆ Hot - swappable
- ◆ -20 dB RF front-panel test point
- ◆ Remote control and monitor functions via HMS or SNMP

Block Diagram



Application:



Specifications

ACI		ACION 8000 Series A8KFT3UD-1550nm 1.2GHz Dual Forward Optical Transmitters		
PARAMETERS	CONDITIONS	UNITS	SPECIFICATION	NOTES
Optical Specification				
Laser Type			Cooled DFB LD with Isolator	
Optical Wavelength		nm	1520 - 1565	DWDM (1)
Optical Power		dBm	10	Standard
Optical Power Tolerance		dBm	-0 to +2	
Optical Connector			SC/APC (standard) FC/APC, E2000/APC (optional)	
RF Parameter				
Operating Bandwidth		MHz	50 - 1218	
Channel Loading	Analog + Digital	Channel	79ch NTSC Analog + 47ch 256-QAM + 2x192MHz OFDM	
	All Digital		125ch 256-QAM + 2x192MHz OFDM	
RF Input Level BroadCast (BC) port	Analog	dBmV/ch	15	Combined Input
	Digital 256-QAM		9	(2)
	192MHz-OFDM		24	(3)
RF Input Level NarrowCast (NC) port	Digital 256-QAM	dBmV/ch	15	
	192MHz-OFDM		30	(3)
RF Return Loss	75 ohm, All Ports	dB	-16	Worst Case
Flatness		dB	± 0.6	
AGC Range	AGC Mode	dB	15	
MGC Range	MGC Mode	dB	0 to 15	
Test Point Level		dB	-20 ± 0.5	
Test Point Flatness		dB	± 0.6	
Port-to-Port Isolation	NC to BC port	dB	50	Minimum
	BC to NC port	dB	15	Minimum
Optical Specification				
TX1 to TX2 isolation: NC to NC, BC to BC	50 to 1000 MHz	dB	50	Minimum
	1000 to 1218MHz		45	
Test Point to Test Point isolation	50 to 550 MHz	dB	50	Minimum
	550 to 1218MHz		40	
Spurious	Max.	dB	-65	

PARAMETERS	CONDITIONS	UNITS	SPECIFICATION	NOTES
Distortion Performance (See Note 4)				
79ch NTSC analog only				
Carrier to Noise Ratio (CNR)	Min.	dB	52	
Composite Second Order (CSO)	Max. (typical)	dBc	-60 (-65)	
Composite Triple Beat (CTB)	Max. (typical)	dBc	-62 (-67)	
Cross-Modulation	Max.	dBc	-65	
79ch NTSC analog + 47ch 256-QAM + 2x192MHz OFDM, (digital channels are -6dB from analog), with 30km fiber link maximum				
Carrier to Noise Ratio (CNR)	Min.	dB	51	Analog channels (4)
Composite Second Order (CSO)	Max. (typical)	dBc	-60 (-65)	
Composite Triple Beat (CTB)	Max. (typical)	dBc	-62 (-67)	
Cross-Modulation	Max.	dBc	-65	
Pre-FEC Bit Error Rate (BER)	Max.		1×10^{-9}	Digital channels (4)
Modulation Error Rate (MER)	Min.	dB	40	
All digital loading (125ch 256-QAM + 2x192MHz OFDM), with 30km fiber link maximum				
Modulation Error Rate (MER)	Min.	dB	40	(4)
Pre-FEC Bit Error Rate (BER)	Max.		1×10^{-9}	
Environmental / Mechanical				
Optical Output Ports	Independent Tx		2	
RF Input Ports	Narrow Cast port		2	Independent inputs
	Broad Cast port		2	
RF Connector	Rear Panel		F-type female	
Module Width		Slot	1	
Dimensions	D x H x W	in. (mm)	16.1 x 5.0 x 1.0 (410.0 x 127.0 x 25.9)	
Operating Temperature		°F (°C)	32 to 122 (0 to 50)	
Storage Temperature		°F (°C)	-40 to 149 (-40 to 65)	
Relative Humidity	Non-condensing	%	0 to 95	
Power Consumption	0 to 50°C Max.	W	6.5	

Notes:

- (1) DWDM ITU Standard ch15 to ch72, 100GHz spacing, ± 0.1 tolerance
- (2) Digital channel is -6dB from analog after combined with Broadcast Input
- (3) OFDM level shown represents the total power of a 192MHz wide OFDM "channel block". This is equivalent to the power of 6MHz (CEA) (Consumer Electronics Association) $+10 \cdot \log(\# \text{ of ch})$ or $9\text{dBmV} + 10 \cdot \log(32)$
- (4) 3.2% OMI, digital channels are -6dB from analog, Rx optical power = 0dBm, 10km, 20km and 30km options are tested with 10km, 20km and 30km of fiber, respectively. Digital signal source MER ≥ 45 dB.

Ordering Matrix

A8KFT3UD-15 Dual Forward Optical Transmitter Configuration Sheet

Customer: _____

Created By: _____

ORDERING MATRIX

October 15, 2020

Position		1	2	3	4	5	6	7	8	9	10	11	12	13	14
PART NUMBER	A8KFT3UD-15	—	1	0	—			—							

2-3

OUTPUT POWER
10 = 10 dBm (standard)

5-6

CONNECTOR
SA = SC/APC with shutter (standard)
LA = LC/APC with shutter
FA = FC/APC
EA = E2000/APC

8-9
10-11

TX1 DWDM CHANNEL
TX2 DWDM CHANNEL

00 = no transmitter

ITU Ch	Wavelength (nm)	Freq (THz)
15	1565.500	191.5
16	1564.700	191.6
17	1563.860	191.7
18	1563.050	191.8
19	1562.230	191.9
20	1561.419	192.0
21	1560.606	192.1
22	1559.794	192.2
23	1558.983	192.3
24	1558.173	192.4
25	1557.363	192.5
26	1556.555	192.6
27	1555.747	192.7
28	1554.940	192.8
29	1554.130	192.9
30	1553.330	193.0
31	1552.524	193.1
32	1551.721	193.2
33	1550.918	193.3
34	1550.116	193.4

ITU Ch	Wavelength (nm)	Freq (THz)
35	1549.315	193.5
36	1548.510	193.6
37	1547.715	193.7
38	1546.917	193.8
39	1546.119	193.9
40	1545.322	194.0
41	1544.526	194.1
42	1543.731	194.2
43	1542.936	194.3
44	1542.142	194.4
45	1541.349	194.5
46	1540.557	194.6
47	1539.766	194.7
48	1538.976	194.8
49	1538.186	194.9
50	1537.397	195.0
51	1536.609	195.1
52	1535.822	195.2
53	1535.036	195.3
54	1534.250	195.4

ITU Ch	Wavelength (nm)	Freq (THz)
55	1533.465	195.5
56	1532.681	195.6
57	1531.898	195.7
58	1531.116	195.8
59	1530.334	195.9
60	1529.550	196.0
61	1528.770	196.1
62	1527.990	196.2
63	1527.220	196.3
64	1526.440	196.4
65	1525.660	196.5
66	1524.890	196.6
67	1524.110	196.7
68	1523.340	196.8
69	1522.560	196.9
70	1521.790	197.0
71	1521.020	197.1
72	1520.250	197.2

12-13

FIBER DISTANCE
10 = 10 km 20 = 20 km 30 = 30 km

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RF Transmission Bandwidth
C = CATV Band (50-1218 MHz) only

NOTES:



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