

## ACION 1100 Series One or Two Output Optical Node



The ACION 1100 Optical Node is a cost-effective, versatile platform with flexibility for use in HFC, passive and MDU architectures.

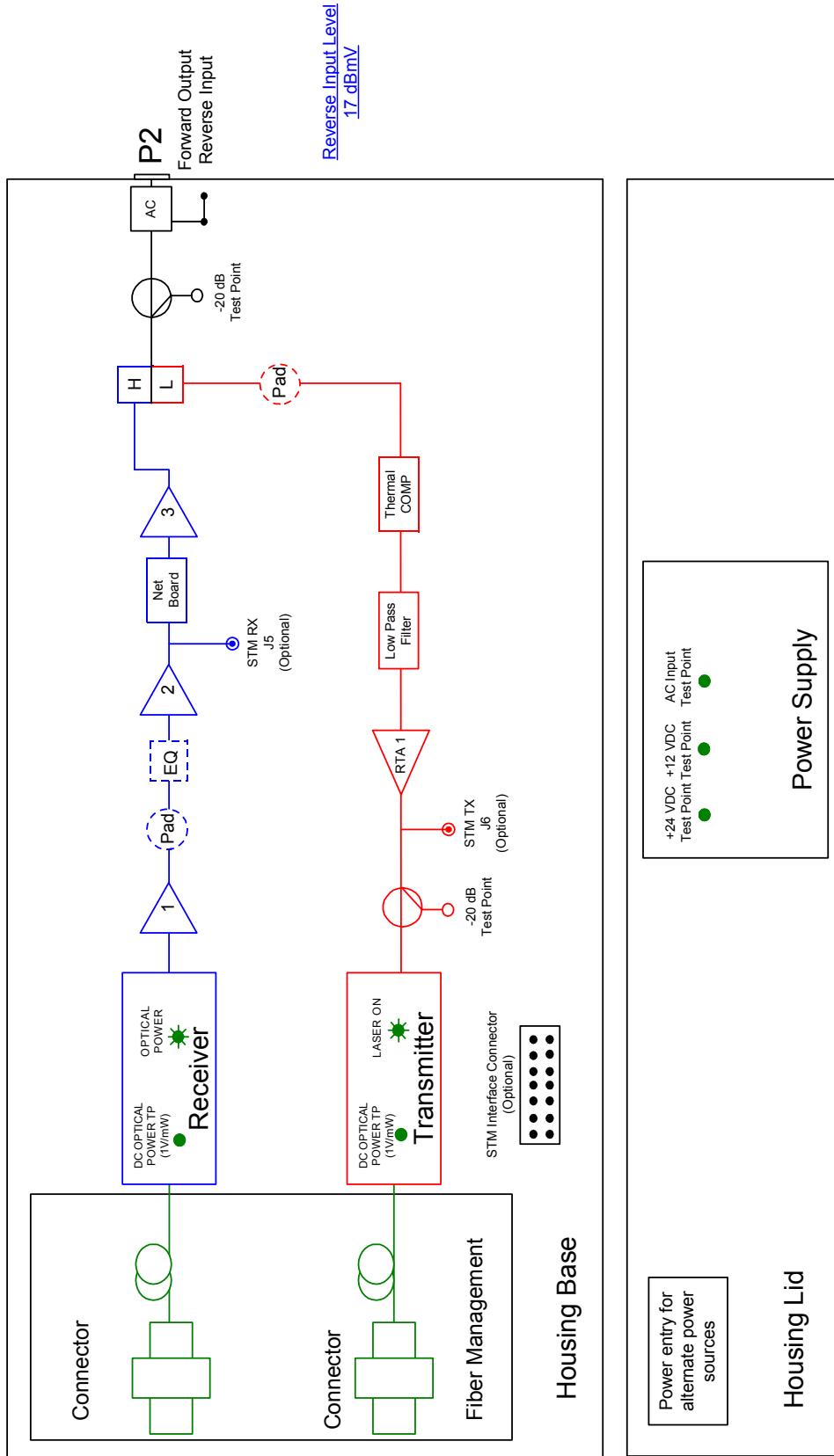
### Features

- One (1) driven output or Two (2) splits output
- Modular RF / Optics section / Power supply
- Plug-in attenuators and pads
- -20 dB directional coupler test points
- Optional redundant receiver
- Optional FP or DFB transmitter
- 40 to 90 VAC (cable), 90 to 240 VAC (mains)

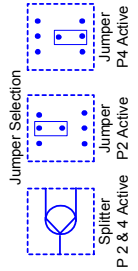
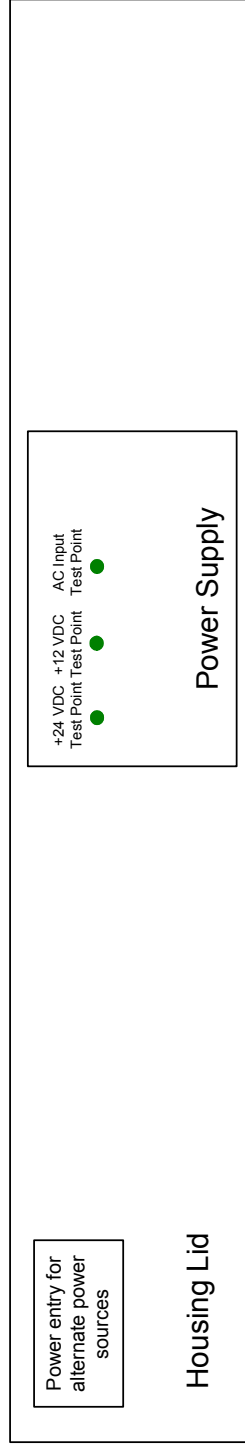
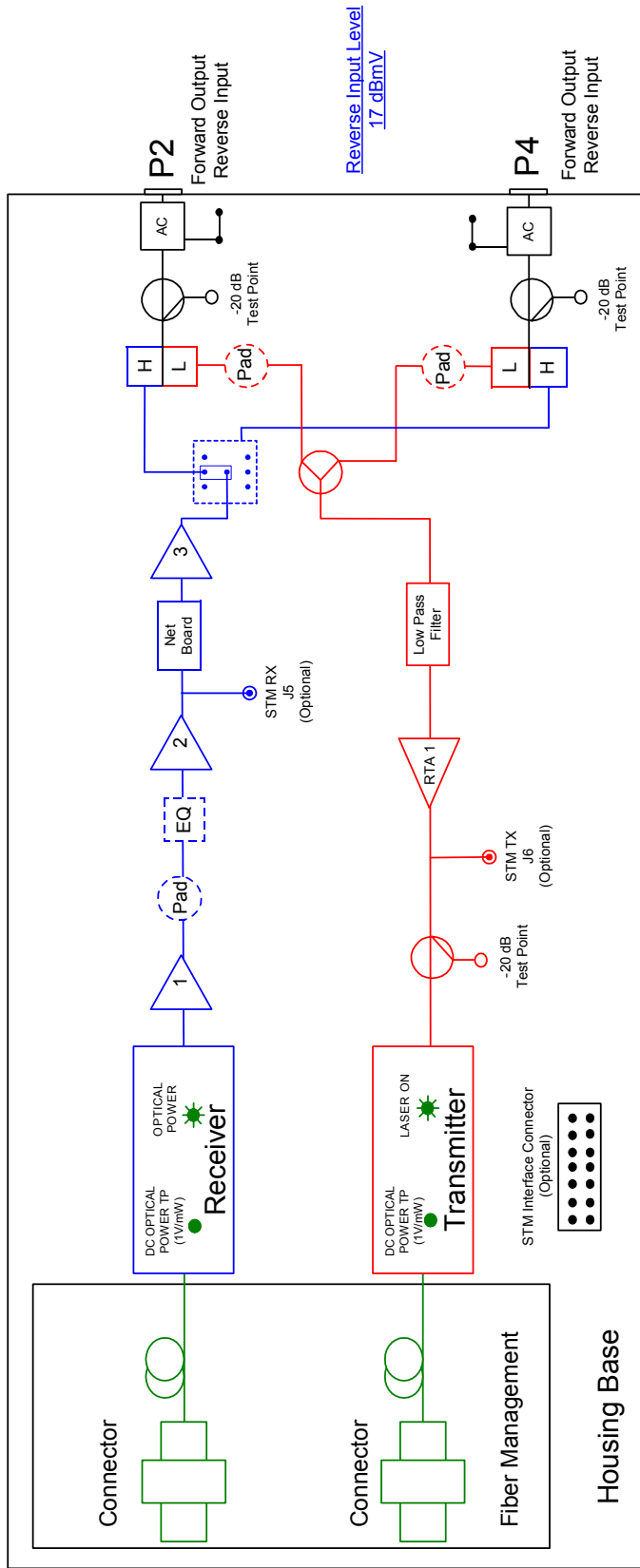
### Benefits

- Economical price
- Compact size
- 51 dBmV out at 870 MHz on the single output version
- Ideal for passive architectures or MDU applications
- Common plug-ins with other ACI nodes and amplifier products
- Configurable to your specific needs

ACION 1100  
One [1] Driven Output Optical Nodes



ACION 1100  
Two [2] Split Output Optical Nodes



ACI Communications, Inc.			ACION 1100 Optical Node ([1] Driven Output or [2] Split Outputs)	
STATION PARAMETERS:				
	CONDITIONS	UNITS	SPECIFICATION	NOTES
Housing passband		MHz	5 to 1,000	
Frequency range		MHz	50 - 870	
Hum modulation	Time domain @ 0 AMPS	-dBc	65.0	Cable power only (40-90 VAC)
Hum modulation	Time domain @ 12 AMPS	-dBc	65.0	Cable power only (40-90 VAC)
Hum modulation	Time domain @ 15 AMPS	-dBc	65.0	Cable power only (40-90 VAC)
Return loss Port 2	Worst case	-dB	16.0	17 Typical
Return loss Port 4	Worst case	-dB	16.0	17 Typical
<b>Test Points</b>				
Test point type	Directional coupler			
Test point level(s)		- dBc	20.0	
Test point accuracy	Forward TP	±dB	0.75	
Test point accuracy	Reverse TP	±dB	1.75	
<b>Station Gain</b>				
Station passband		MHz	54 to 870	
Station flatness - feeder out	Peak-to-valley	dB	1.5	
Gain: 1 output / 2 outputs	@ 870 MHz +1, -0	dB	45.5 / 42.0	
Output stability		dB	1.5	
Gain control type			Plug-in pads	
Gain control range		dB	15.0	
Gain control steps	Pad value steps	dB	0.5	
<b>Station Slope</b>				
Slope control type	Linear equalizers	dB	Plug-in EQ's	
Slope control range		dB	0 to 15.0	
Slope control steps	Equalizer value steps	dB	1.5	
<b>Operational Specifications with a -2.0 dBm optical input</b>				
Operational level	@ 870 MHz	dBmV	51.0	47.5 for Split version
Operational slope	@ 54 / 550 / 870 MHz	dB	0 / 9.0 / 14.7	
<b>Station Output Levels</b>				
Distribution out	@ 54 / 550 / 870 MHz	dBmV	36.3 / 45.3 / 51.0	Split 32.3 / 41.3 / 47.5
<b>Station Noise Figure - values for RF portion of node only. Complete values dependent upon link.</b>				
Noise figure (NF)	@ 54 MHz	dB	4.1	
Noise figure (NF)	@ 550 MHz	dB	5.1	
Noise figure (NF)	@ 870 MHz	dB	6.2	
<b>Station Distortions with Link</b>				
550 MHz analog channel loading, 79 channels + 350 MHz digital channel loading 256 QAM at -6 dBc relative to its associated visual carrier				
			Worst Case	
Composite Triple Beat (CTB)		-dBc	65.0	
Composite Second Order (CSO -)	(Vc + 0.75 & -1.25 MHz)	-dBc	62.0	
Composite Second Order (CSO +)	(Vc ± 0.75 & -1.25 MHz only)	-dBc	62.0	
Cross Modulation (XMOD)		-dBc	63.0	
Carrier-to-Intermodulation Noise (CIN)		-dBc	51.0	
Bit Error Rate	QPSK (1.5 Mbps)	BER	≤10 <sup>-6</sup>	
<b>Station Group Delay</b>				
Group delay	Channel 2 (Std)	nSec / 3.58 MHz	30	25 Typical
Group delay	Channel 3	nSec / 3.58 MHz	16	
Group delay	Channel 4	nSec / 3.58 MHz	10	
Group delay	Channel 5 & >	nSec / 3.58 MHz	3	

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Revision Date: 01/08/2009

ACI Communications, Inc.			ACION 1100 Optical Node One [1] Driven Output or Two [2] Split Outputs				
REVERSE SPECTRUM:							
Reverse - General		CONDITIONS	UNITS	SPECIFICATION	NOTES		
Station passband			MHz	5 to 42			
Station flatness		Peak-to-valley	dB	1.0			
Reverse - Station Gain							
Gain 1 output / 2 outputs		+2 , -0	dB	21 / 18			
Gain control type			n / a	Plug-in pads			
Gain control range			dB	12			
Gain control steps		Pad value steps	dB	0.5			
Reverse - Station Output Levels							
@ Input to transmitter		Typical	dBmV	40	With 17 dBmV at housing port		
Reverse - Noise Figure							
Station noise figure			dB	7.5			
Reverse - Bit Error Rate							
Bit error rate		QPSK (1.5 Mbps)	BER	≤10 <sup>-6</sup>			
Reverse - Station Group Delay							
Group delay		5.5 MHz	nSec / 1.5 MHz	36			
Group delay		10.0 MHz	nSec / 1.5 MHz	16			
Group delay		33.5 MHz	nSec / 1.5 MHz	7			
Group delay		38.5 MHz	nSec / 1.5 MHz	5			
Power Requirements: For cable powered							
Station configuration		1RX + 1TX over temperature range of -40 to +140 °F (-40°C to +60 °C)					
Power requirements		Worst case	W	25.4			
AC Voltage							
Input ranges		Selectable	VAC	40 - 90			
Current Draw (Cable powered 40-90 VAC)							
@ 40 VAC		Maximum	A	0.95			
@ 50 VAC		Maximum	A	0.79			
@ 60 VAC		Maximum	A	0.69			
@ 70 VAC		Maximum	A	0.63			
@ 80 VAC		Maximum	A	0.58			
@ 90 VAC		Maximum	A	0.54			
Environmental							
Operating temperature			°F (°C)	-40 to +140 (-40 to +60)			
Physical							
Dimensions (H X W X D)			in. (cm)	5.8 X 9.25 X 5.94 (14.73 X 23.50 X 15.10)			
Weight			lbs. (kg)	8.7 (3.95)			
ACI Communications, Inc.			ACION 1100 Optical Node Transmitter Specifications				
GENERAL	UNITS	TRANSMITTER SPECIFICATIONS					NOTES
TRANSMITTER MODEL NUMBER		090607-01XXX 3.0 mW	090607-02XXX 2.0 mW	090607-03XXX 1.0 mW	090606-06XXX 0.5 mW	090606-02XXX 2.0 mW W/Isolator	WHERE XXX= CONNECTOR TYPE
Laser type	NA	Uncooled DFB	Uncooled DFB	Uncooled DFB	Fabry-Perot FP	Fabry-Perot FP	
Optical connector	NA	SC/APC, SC/UPC, FC/APC, FC/UPC					
Operating bandwidth	MHz	5-200					
Optical wave length	nm	1310 ± 20	1550 ± 20	1310 ± 20	1310 ± 20	1310 ± 20	
Optical power test point	V / mW	1.0 / 1.0					
Optical power range	mW	2.8-3.2	1.8-2.2	1.0 Min	0.45-0.55	2.0 min	At 25° C
Laser ON/OFF status indicator	-dBmV	3					Relative to initial optical power at 25° C
RF impedance	Ohms	75					
Peak-to-valley frequency response	dB	1.0					Over operating bandwidth
Operational temperature	°F (°C)	-40 to +140 (-40 to +60)					

## ACION 1100 Configuration Sheet

Customer: \_\_\_\_\_

Created By: \_\_\_\_\_ Order Date: \_\_\_\_\_

### ORDERING MATRIX

January 9, 2009

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<b>PART NUMBER</b>	1	K													

- |  |   |
|--|---|
| <p>3 <input type="checkbox"/> <b>BASIC CONFIGURATION</b><br/>S = One output port only (1 Rx &amp; 1 Tx)<br/>D = Two output port (1 Rx &amp; 1 Tx)</p> <p>4 <input type="checkbox"/> <b>RECEIVERS</b><br/>0 = No Receiver<br/>1 = Single Receiver</p> <p>5 <input type="checkbox"/> <b>TRANSMITTERS</b><br/>0 = No Transmitters<br/>1 = Single Transmitter</p> <p>6 <input type="checkbox"/> <b>DIPLEX FREQUENCY SPLIT</b><br/>4 = 42/53<br/>5 = 55/70<br/>6 = 65/85<br/>7 = 40/50</p> <p>7 <input type="checkbox"/> <b>OPTICAL CONNECTOR TYPE</b><br/>1 = SC/APC (Standard)<br/>2 = SC/UPC<br/>3 = FC/APC<br/>4 = FC/UPC</p> <p>8 <input type="checkbox"/> <b>TRANSMITTER TYPE</b><br/>0 = NONE<br/>P = UNCOOLED 1310 nm 0.5 mW FP<br/>H = UNCOOLED 1310 nm 2.0mW FP W/ISOLATOR<br/>J = UNCOOLED 1310 nm 1.0 mW DFB<br/>B = UNCOOLED 1310 nm 3.0 mW DFB<br/>C = UNCOOLED 1550 nm 2.0 mW DFB<br/>E = UNCOOLED 1550 nm 2.0 mW DFB with WDM</p> | <p>9 <input type="checkbox"/> <b>STATION SLOPE</b><br/>0 = 0 dB @ 750 &amp; 870 MHz<br/>3 = 10.7 @ 750 MHz &amp; 12.5 dB @ 870 MHz<br/>4 = 12.5 dB @ 750 &amp; 14.7 @ 870 MHz (Standard)</p> <p>10 <input type="checkbox"/> <b>POWER SUPPLY INPUT TYPE (See Note 5)</b><br/>C = 40 TO 90 VAC (Cable powering)<br/>L = 90 to 240 VAC (Mains Power Non-UL)<br/>M = 90 to 240 VAC (Mains Power UL)</p> <p>11 <input type="checkbox"/> <b>POW</b><br/>0 = NONE<br/>1 = North America<br/>2 = International/Europe<br/>3 = Japan<br/>4 = Australia<br/>5 = Argentina<br/>X = Custom (Contact Product Management)</p> <p>12 <input type="checkbox"/> <b>STATUS MONITORING</b><br/>N = NONE (Standard)<br/>M = Status Monitoring Upgradeable (See Note 6)<br/>C = CHEETAH (Tollgrade)</p> <p>13 <input type="checkbox"/> <b>HOUSING TYPE</b><br/>0 = NO HOUSING OR POWER SUPPLY<br/>N = NORMAL (Standard)<br/>C = CHROMATE FINISH</p> <p>14 <input type="checkbox"/> <b>SURGE PROTECTION (See Note 7)</b><br/>A = Recommended Plug-in Sidactor<br/>N = None</p> <p>15 <input type="checkbox"/> <b>CUSTOM</b><br/>Blank = Not custom<br/>X = Determined by Product Management<br/>H = High Gain Reverse (Thermal Compensation By-Passed)<br/>F = high Gain Forward (Split Output 51 dBmV)</p> |
|--|---|

### NOTES:

- All ACION 1100 units are 870 MHz
- The ACION 1100 is offered as a 1 output only or a 1 or 2 output node. The 1 output version will have a single output with no provisions to activate the second port. The 1 or 2 output version will be shipped as a 2 output node that can be converted to a 1 output device with the installation of a 1 port conversion kit (P/N KIT-A1P1).
- All ACION 1100 units will be set up to the chosen slope (14.7 dB @ 870 MHz is standard). Optionally, further adjusting of this slope can be accomplished with plug-in EQs.
- To complete 180 degree rotation of inner module, a power cord extension is required. (P/N 240314)
- The "M" version of the AC powered unit has an external UL listed 90-240 VAC to 24 VDC external transformer. The "L" version has an internal 90-240 VAC switching power supply and is not UL listed.
- The standard ACION 1100 node will not have the connectors required for upgrading the node in the field to have status monitoring.
- The optional surge protecting sidactor is only offered on the 40-90 VAC cable powered node.

