COM-POWER

INSTRUCTION MANUAL

For the

ACS-181

150 kHz to 80 MHz

100W Power Amplifier

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Introduction

Com-Power model ACS-181 series broadband amplifiers operate from 150 kHz to 80 MHz. This amplifier can be used for EMI immunity testing that requires generating electric fields. This small and lightweight amplifier utilizes class AB linear power devices that provide high gain, and wide dynamic range. By employing advanced components, the Com-Power ACS-181 amplifier is able to achieve high efficiency operation and reliability.

Product Specifications

Frequency Range:	…	150 kHz - 80 MHz
Power Output:		
Rated Output	…	100 watts into 2:1 VSWR
Power Protection Limit	…	150 watts
Limit@ 1dB compression	…	120 watts
Gain	…	50 dB ± 5 dB
Input for rated output	…	0 dBm Typical
Input:		
Impedance	…	50 ohms, Nominal
VSWR	…	1.25 maximum
Modulation on input:	…	AM, FM, or pulse modulation
Connector	…	Type N on Front Panel
Output:		
Impedance:	…	50 ohms, Nominal
VSWR	…	1.7 maximum
Harmonic distortion	…	-20 dBc at 75 watts (Worse case -12dBc)
Mismatch Tolerance *	…	VSWR of 5:1
Connector	…	Type N on Front Panel
Noise Figure (above 1.0 MHz)	…	10 dB typical (*TBD)
3 rd Order Intercept Point	…	58 dBm typical

Line Power: Single-phase

Type: Universal	…	100-240 Volts ac, 47-63 Hz, 500 VA Power
Display and Interfaces:		USB Remote Interface
Front panel display:	…	Temperature, Current, Input / Output Power, VSWR and Gain
Remote Interlock (optional)	…	2-pin Din

Mechanical:

Cooling Requirement:	…	Forced air (self contained fans)
Size:	…	19" Rack 4U
Weight	…	18 Kg (40 lb.)
Operating Temperature	…	-10° C to 50° C

Notes: 1. Amp will operate without damage or oscillation with any magnitude and phase of source and load impedance.

2. It provides continuous (a) Temperature, (b) current, (c) Input / Output Power (d) Gain and (e) VSWR monitoring. Limits can be individually set by custom requirement.

Important Safety Precautions

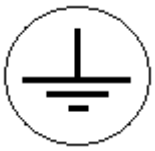
- Do not attempt to disassemble the instrument. Please contact our service department.
- AC Power Input should be within the range specified on the rear panel. Please ensure that the correct fuse is installed prior to applying voltage for the first time.
- To avoid electrical shock, the power cord protective grounding conductor must be grounded.
- In order to protect against fire, replace the fuse with the specified type only. Make sure to disconnect the power cord before replacing the fuse. A blown fuse is indicative of a problem with the instrument. The problem must be repaired before replacing the fuse.
- Since the RF measurement is highly sensitive and in order to ensure accurate measurement, it is important to always keep the front panel connectors clean.
- Disconnect the AC power cord from the instrument before cleaning. Use a soft cloth dipped in a solution of mild detergent and water. Do not spray any liquid onto the unit. Do not use any cleaners containing benzene, toluene, xylene, acetone and/or any other harsh chemicals.
- Do not exceed +3 dBm into the RF INPUT.
- Do not place heavy objects on top of the instrument.
- Avoid any rough handling that could damage the ACS-181 unit.
- Use electrostatic discharge precautions while handling and making connections to the ACS-181 unit.
- Do not place wires into the connectors of the ACS-181. Make proper connection with mate connectors and adapters.

- Do not block or obstruct the cooling fan vents located on the front and rear panels of the unit.

Safety Symbol Guide

The following symbols may appear on the unit:

Earth (Ground) Terminal



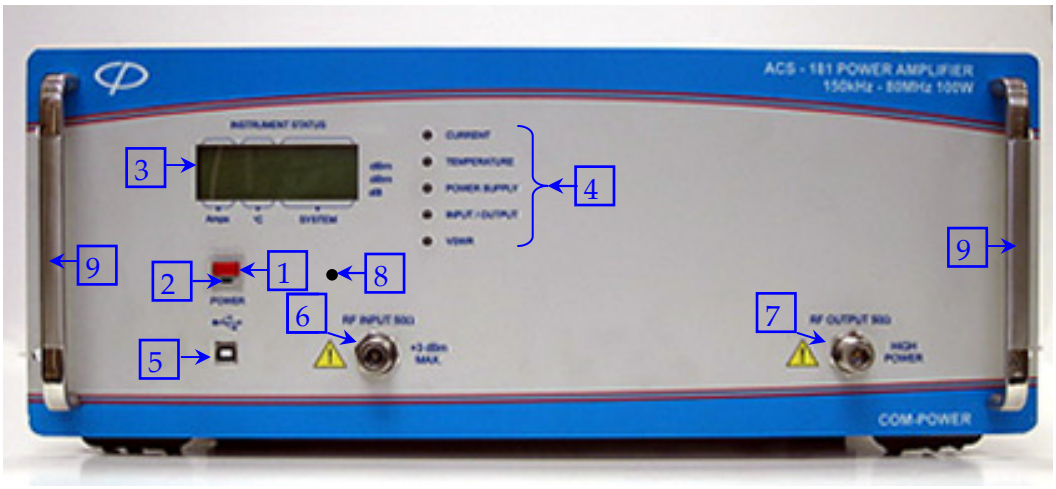
Protective Conductor Terminal

ATTENTION
Refer to Manual

DANGER
High Voltage

ACS-181 Components

Front Panel:

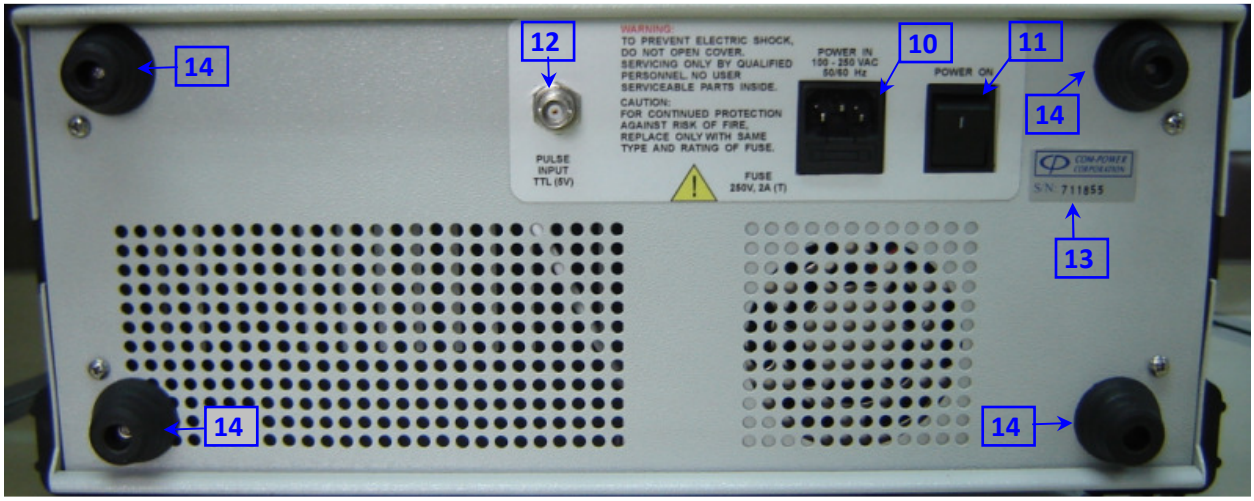


1. ON/OFF Switch
2. Indicates Power is ON when Green Light is lit
3. LCD Display
4. Fault Indicator
5. USB Interface- for remote sensing and external data controls.
6. RF Input- makes the connections required for the 50 Ohm system before turning on the unit.

   Caution: Do not apply signal more than +3dBm.
7. RF Output- Connect to 50 Ohms connection before powering on the unit.

   Caution: High Power output handle with care.
8. Buzzer- becomes active when a fault is detected in the unit.
9. Handel

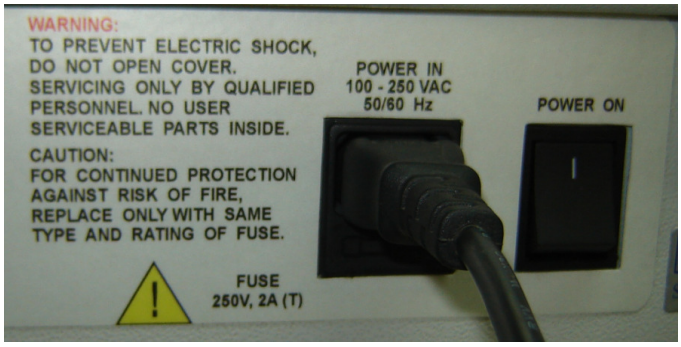
Rear Panel:



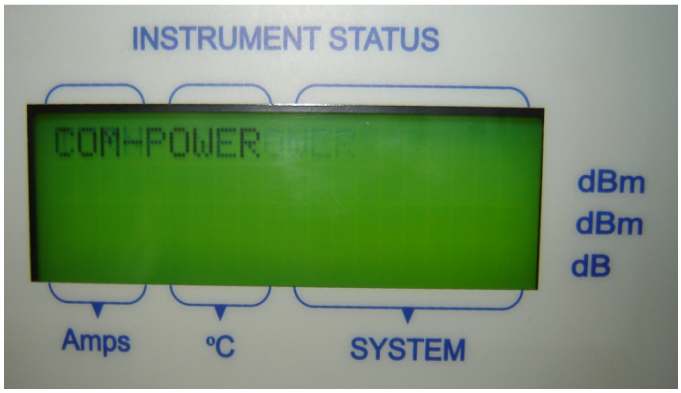
10. Mains power input to unit with inbuilt fuse socket (100 VAC - 230 VAC)
11. AC Supply power ON switch
12. Pulse input
13. Serial number of unit.
14. Buffer for protecting unit.

Operating Procedures

1. Before turning on the unit, make sure the RF Input and Output connectors on the front panel are terminated with 50 Ohms system.
2. Turn on power from rear panel.

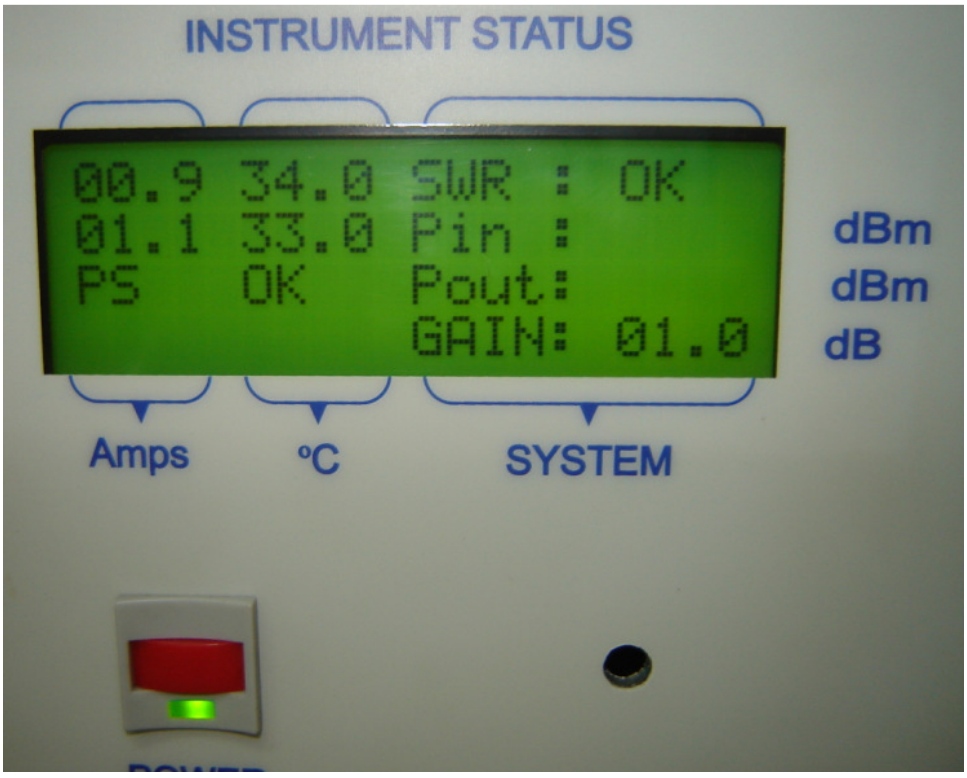


Following message will display on LCD.



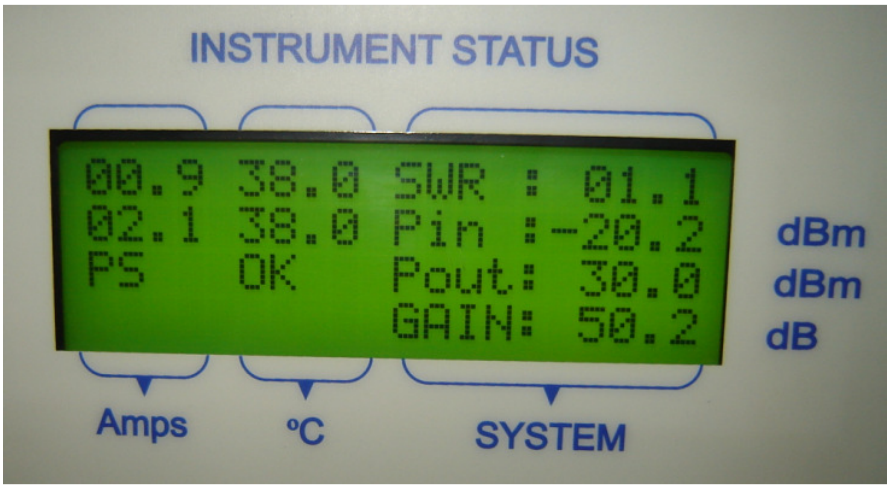
3. Turn on Switch from the front panel as shown in picture.

4. Unit runs in Self test mode. LCD screen will display the bias settings, temperature, SWR, Gain, Pin & Pout of the module and driver after finishing self test mode.



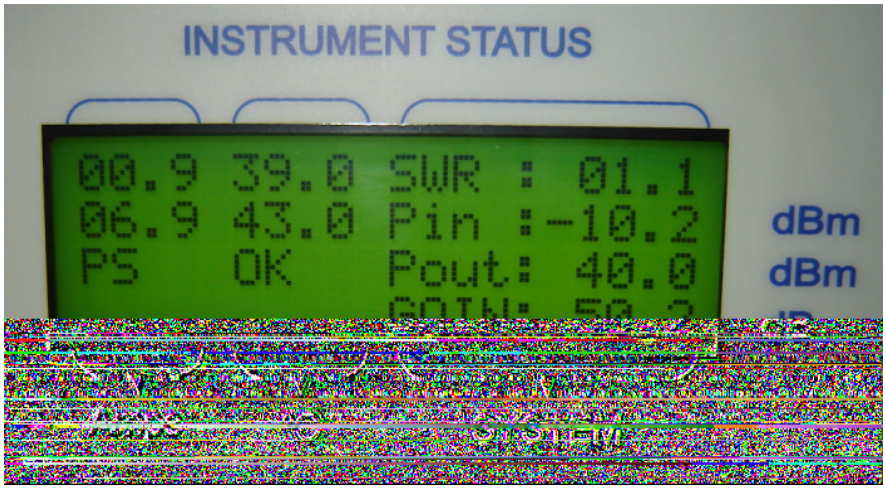
Please note that initially, there is no RF input given to the Power Amplifier so it will not show any value for Pin, Pout, SWR and Gain.

5. When RF input is applied, the front panel LCD updates values of Pin, Pout, SWR, Gain, Current and temperature status of PA and Driver. Pin, Pout and gain will be display when RF input grater than or equal to -40dBm.

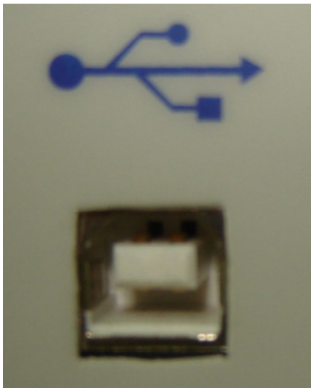


Displays and its meaning:

Driver	=	Driver Current and Driver Temperature (Line 1 in LCD)
PA	=	Module Current and Module Temperature (Line 2 in LCD)
PS OK	=	Power Supply OK (Line 3 in LCD)
SWR	=	SWR of unit (Line 1 in LCD)
Pin	=	Input Power to the unit (Line 2 in LCD)
Pout	=	Output Power to the unit (Line 3 in LCD)
Gain	=	Gain of the unit (Line 4 in LCD)

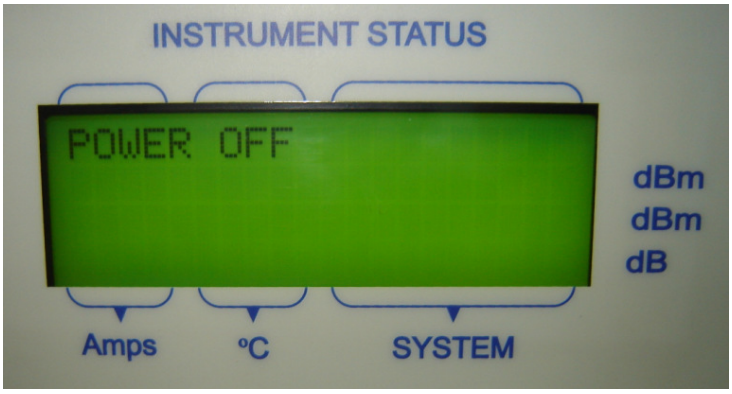


6. Connect USB cable between Unit and Computer to operate unit in Remote operation. For more details, check commands list.

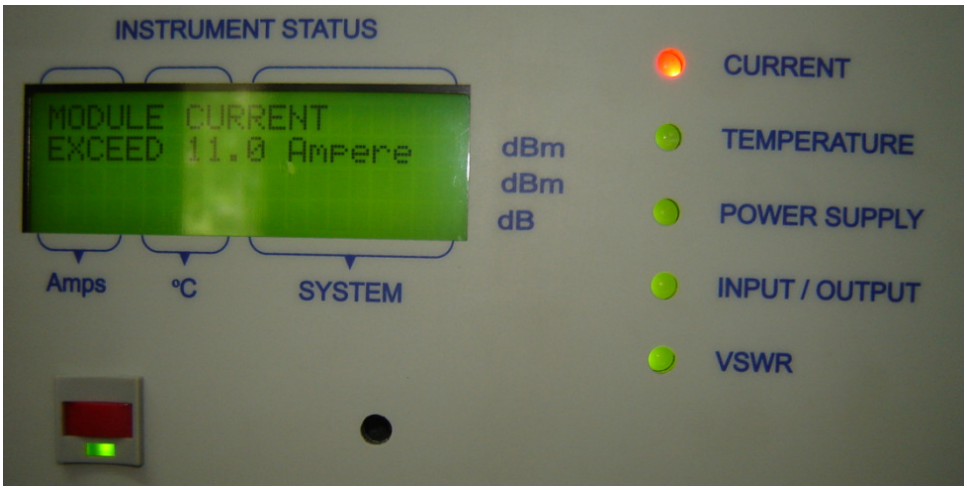


SR.#.	*COMMAND*	*DESCRIPTION*
1	70H	Displays the serial number of the unit
2	A0H	Displays the current and temperature of the unit.
3	C0H	Power amplifier and power supply shut down.
4	8AH	Detecting USB Port.
5	Any other value	Invalid Command

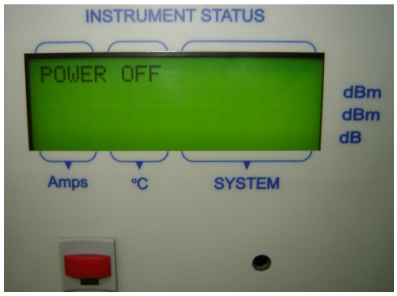
7. Before switching off the power from the front panel, make sure the RF output reduced to a safe level (-50dBm) or completely removed input from RF Input.
8. In the event of any fault occurring, the unit is automatically shut down and turns off RF DC power.



9. Red LED lit with appropriate Fault message on front panel LCD.



10. In order to restart the unit, turn off Front panel switch first and restart the unit.



11. To check fault conditions, please refer to Diagnostics chart as given below:

SR.#.	*FAULT LIGHT LIT*	*MESSAGE ON LCD SCREEN*	*FAULT*	**POSSIBLE CAUSE**
1	Current	PA CURRENT RANGE EXCEEDED OR DRIVER CURRENT RANGE EXCEEDED	Indicates that the current range of the module is 10.0 Ampere or the driver is higher than 1.25 Ampere	* Exceeds Power Limit of the unit * Mismatch on 50 Ohm System * VSWR of the system is high
2	Temperature	PA TEMPERATURE RANGE EXCEEDED OR DRIVER TEMPERATURE RANGE EXCEEDED	Indicates that the temperature range of the module or driver has risen higher than 70^{o}C	* Exceeds Power Limit of the unit * Mismatch on 50 Ohm System * VSWR of the system is high
3	Power Supply	POWER SUPPLY BAD	Indicates that the DC power supply has broken down.	* DC Power supply fails * AC input zero cross detector fails * Device Failure draws more currents
4	Input /Output	RF INPUT EXCEED + 3dBm OR RF OUTPUT EXCEED + 52dBm	Indicates exceeding of input or output range of the power limit	* Signal Generator having Higher output. * Output may exceed Power limit.
5	VSWR	SWR > 7.0	Indicates System has High VSWR	* Check output connection of PA with system

Software Installation