



# Amplifiers

DATA SHEET

iDEN Multi-Carrier Power Amplifier

MCPA-850-200



- Overcomes losses from combining multiple base stations and increases power to the antenna
- Provides coverage for the Full iDEN Band 851 - 869 MHz
- Modular construction with LED-based operational status indicators
- High linearity
- High reliability

## Overview

The Multi-Carrier Power Amplifier MCPA-850-200 manufactured by Communication Components, Inc. (CCI) is a linear, feed-forward power amplifier that operates in full iDEN frequency band from 851 MHz to 869 MHz. The amplifier can simultaneously transmit multiple carriers, with better than -65dBc third order intermodulation distortion (IMD). It is designed for use in iDEN BTS systems and is ideally suited for use in Motorola base stations. One amplifier MCPA-850-200 can provide more than 200 watts of combined power with multiple iDEN carriers.

## Technical Description:

The primary application of MCPA is to compensate for the RF power lost in hybrid combiners and to increase the power per channel transmitted from Quad Base Radios (Q-BR) to antenna. Implementation of amplifiers in existing and future iDEN systems allows carrier achieve required channel power balance between Legacy BR and Q-BR in a very efficient way even in high capacity sites where several Q-BR must be combined to operate on one antenna. The modules are also capable of parallel operation to produce higher power output. By-pass module, which is a part of the system allows for fail-safe operation. Redundant amplifier option is also available. This compact solid-state system occupies only 3U of rack space and designed to provide trouble-free operation with minimum maintenance. The system's modular construction and clear visual LED-based operational status and fault indicators help minimize downtime and allow easy system monitoring. The turn-on and turn-off sequences of voltages are fully automatic, as is overload protection and failure mode recycling. There are no requirements for manual adjustments or controls after system is launched in operation. The amplifier module has a status connector for monitoring the amplifier from laptop computer in the field. The front panel of the amplifier has status/fault visual indicators and one DC ON/OFF switch. Primary power for the amplifier is +29 VDC. MCPA must be powered by dedicated power supply PSU-48-28-1, which is connected to -48 VDC power distribution panel located on the site.



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## Applications

- In areas with high capacity requirements overcome the RF power lost from combining multiple base radios
- In rural locations with large coverage areas compensate for loss from long feed lines and increase the power per channel transmitted to antenna
- Ideal for urban setting where reducing the number of antennas required is critical



# Amplifiers

## SPECIFICATIONS

### iDEN Multi-Carrier Power Amplifier

MCPA-850-200

#### Electrical Specification

Combined Output Power	200 Watts
Number of iDEN Channels	Unlimited
Operating Frequency Range	851 - 869 MHz
Input VSWR	1.35:1 max.
Factory Gain Setting	12.9 dB $\pm$ 0.5 dB
Instantaneous Bandwidth	20 MHz
Intermodulation Distortion	-65 dBc typical, -63 dBc minimum
Harmonics	-55 dB
Gain Flatness	$\pm$ 0.5 dB
Gain Variation with Temperature	$\pm$ 0.5 dB
Minimum Channels Spacing	Contiguous to 18 MHz
Insertion Loss in By-Pass Mode	0.4 dB
Maximum Reflected Power	100 Watts
Operating Temperature	0 to 50°C
Input Voltage	29.5 - 31.5 VDC
DC Supply Current (RF Off)	14.0 - 18.0 A DC
DC Supply Current (RF On)	47.0 - 55.0 A DC
Monitoring and Alarms	Overheating, RF overdrive, VSWR, DC Power, PA failure
Visual Alarm	Front Panel LED's for alarm indication
Monitoring Signal	Dry form A contact closure alarm. Open contact indicates failure
Front Panel Indicator	Front Panel LED's for status indication
Front Panel Control	DC ON/OFF Switch

#### Mechanical Specification

RF Input/Output Connections	Type N Female
Dimensions (HxWxD)	3U or 5.1 x 19.0 x 17 in. (129.5 x 482.6 x 431.8 mm)
Weight	50 lbs max. (22.7 Kg)
Front Panel Finish	Epoxy Paint
Chassis Finish	Gold Irridite





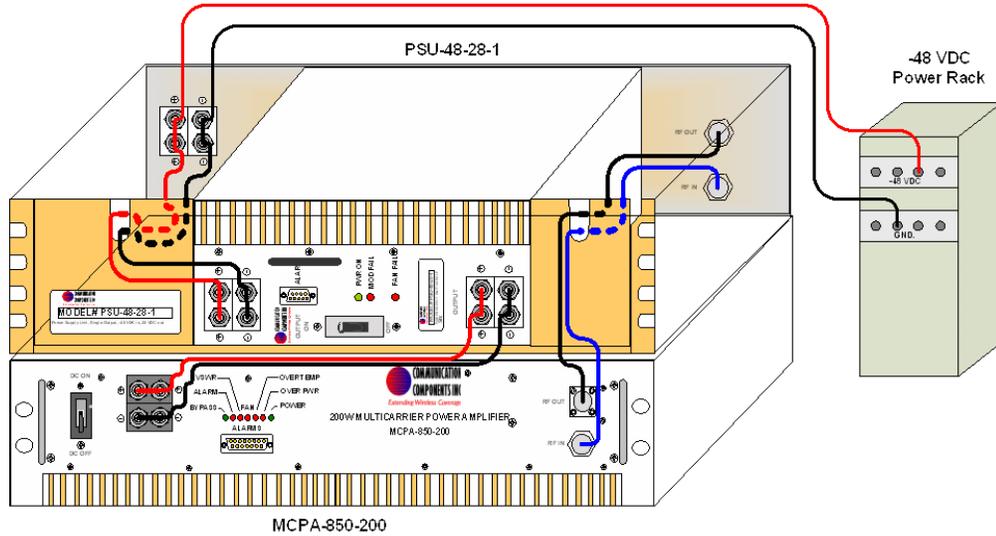
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## SPECIFICATIONS

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#### Block Diagram



MCPA-850-200 Interconnect Diagram

#### MCPA-850-200 Alarm Description

Indicator Light	Description
L1: Green (DC Power)	Solid = Normal Slow Blinking = Standby
L2: Red (RF Over Power)	Solid = Over Drive Fast Blinking = Minor
L3: Red (Over Temp)	Solid = High Temperature Fast Blinking = Minor
L4: Red (Fan)	Solid = Multiple Fan Failure Fast Blinking = 1 Fan Failure
L5: Red (Output Mismatch)	Solid = High Mismatch
L6: Red (Alarm)	Solid = Major Fast Blinking = Minor
L7: Green (Bypass)	Solid = Bypass activated Fast Blinking = Bypass Failed



# Amplifiers

ORDERING

iDEN Multi-Carrier Power Amplifier

MCPA-850-200

Parts & Accessories

**MCPA-850-200** iDEN Multi-Carrier Amplifier

**PSU-48-28-1** Power Supply for iDEN Multi-Carrier Amplifier



# Amplifiers

STANDARDS &  
CERTIFICATIONS

iDEN Multi-Carrier Power Amplifier

MCPA-850-200

Certifications

Federal Communication Commission (FCC) Part 15 Class B, CE, CSA US