VIPER SC POWER SAVE MODE FEATURE

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Technical Service Support Bulletin

APPLICATION

The CalAmp Corp. Viper SC wireless modem now offers a Power Save Mode with the release of version 3.4 firmware. The normal power consumption is as follows:

Rx Current Drain at 25°C		DC Input 10V	DC Input 20V	DC Input 30V
		520 mA (max) 450 mA (typ)	270 mA (max) 240 mA (typ)	190 mA (max) 170 mA (typ)
Tx Current Drain at 25°C	Power Out	DC Input 10V	DC Input 20V	DC Input 30V
	Max Pwr	5.8 A (max) 3.6 A (typ)	2.5 A (max) 1.8 A (typ)	1.6 A (max) 1.2 A (typ)
	30 dBm (1W)	1.6 A (max) 1.2 A (typ)	0.8 A (max) 0.6 A (typ)	0.6 A (max) 0.4 A (typ)

Using 20 VDC input as an example, typical RX Current Drain is 240 mA. Power consumption at this level is 4.8 Watts. With the Power Save Mode (PSM) enabled power consumption will drop to less than 2 watts providing a power saving >40%.

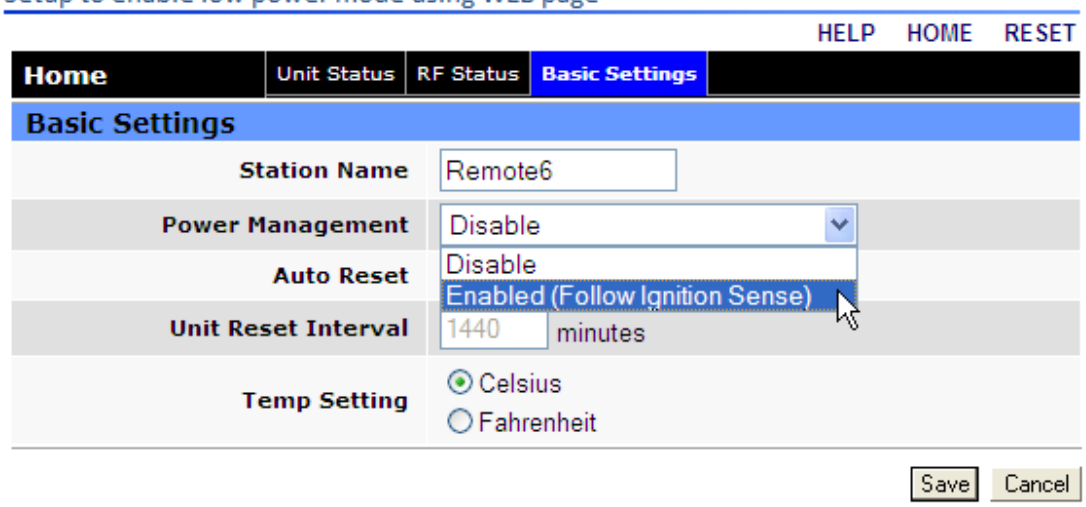
PSM allows for much faster start-up (wake-up) time. Normal wake-up time is approximately 30 seconds from a cold start (power off). With PSM wake-up time is between 2-5 seconds for full operation.

The following functions are turned off during PSM:

- Transmit and Receive; the radio will not receive nor transmit a message while in PSM
- Communication Ports are inactive; the Ethernet and Serial Ports are not functional during PSM

PSM is enabled by programming the “Power Management” feature in the Viper SC. See fig. 1.

Setup to enable low power mode using WEB page



Setup to enable low power mode using CLI command

set low.power.mode=0 (disable)
set low.power.mode=1 (enable, mode follows the state of the signal "Ignition sense")
save

Fig. 1

Select "Power Management" to "Enable (Follow Ignition Sense)" as shown in Fig. 1. This setting allows the White 'Ignition Sense Line' to control the PSM.

Normally the White ignition sense line or "Enable" line is tied to B+ supply along with the Red B+ wire. When used in PSM the white wire is connected to a line that will toggle from B+ to "OFF". When B+ is applied the Viper SC will be powered up as normal. When B+ is removed "sleep mode" is enabled in <500 msec.

When B+ is reapplied to the White wire, the Viper SC will wake up and be in full operation mode in approximately 1 second if VPN is not used. If VPN is used wake up time will be ≤ 5 seconds. Wake-up time may increase if the system is congested since the VPN needs to get the keys updated from the VPN server.

The following chart shows the maximum current drain used by the White wire. Input voltage is from +10 to +30 VDC. This will allow the user to size the DC switching line to control this feature.

Enable/Ignition Sense					
Input Voltage Current Draw		10		30 0.7	V mA

Figure 2 shows the Viper SC power connector and pin-out.

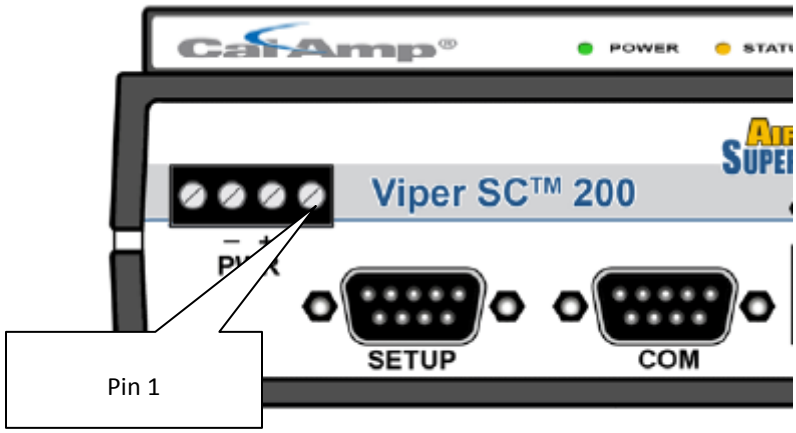


Fig. 2

The amount of current drain will vary for each radio. Initial testing has shown a current drain of approximately 130 mA at 12 VDC input. This is a power consumption of <1.6 watts. These are average readings and are not a guaranteed specification. Please contact CalAmp Corp. Wireless Networks Technical Support with any questions. Technical Support can be reached at:

Email: wngsupport@calamp.com

Phone: 507-833-6701 Option 1 for Fixed and Legacy products.

FAQS

- Is PSM currently available in the Viper SC product line?
    - Yes. Version 3.4 firmware has been released and all units leaving the factory will have version 3.4 or newer firmware installed.
- Can I put PSM into a Viper that is not an “SC”?
    - No, you must use the Viper SC to have PSM

- Where can I obtain firmware version 3.4 for my Viper SC units already implemented in the field?
    - Contact CalAmp Corp. Wireless Networks Technical Support
    - Email: wngsupport@calamp.com
    - Phone: 507-833-6701
- Can I use my RTU/PLC to control PSM?
    - Yes.

A scenario would be for the remote PLC to activate the "Enable" line of the power connector, wait a few seconds then send and receive the data. Once the response/poll is completed it puts the Viper back into sleep mode by removing B+ from the White wire.

- Can I have the Viper SC listen for RF carrier to wake up the radio?
    - No.

In this case the remote Viper SC will not wake-up since the Viper Radio is asleep and does not listen to incoming RF messages. The Ignition Sense Line must be toggled from "Off" to B+ to wake up the radio.

- Is there any other power save modes available in the Viper SC that I can utilize in my system?
    - No. Currently there is no other power save modes available.
- Can I use PSM on a 'Report by Exception' system?
    - Yes. A report by exception polling routine is an excellent opportunity to take advantage of PSM. The Viper SC can be allowed to 'sleep' until a condition occurs that triggers the PLC to send a response. The radio can be awakened, message sent, response received and then PSM enabled again.
- My system polling is based on strict controlled timed poll responses. Is PSM of any advantage in this application?
    - Yes. As an example, each remote is polled every 60 minutes. At the end of a polling cycle the SCADA server could issue a command to the PLC telling it to put the Viper radio to sleep for 55 minutes. The Viper will go to sleep for 55 minutes then wake back up just before the next poll request is scheduled to come.