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# Police Motorcycle Bulletin

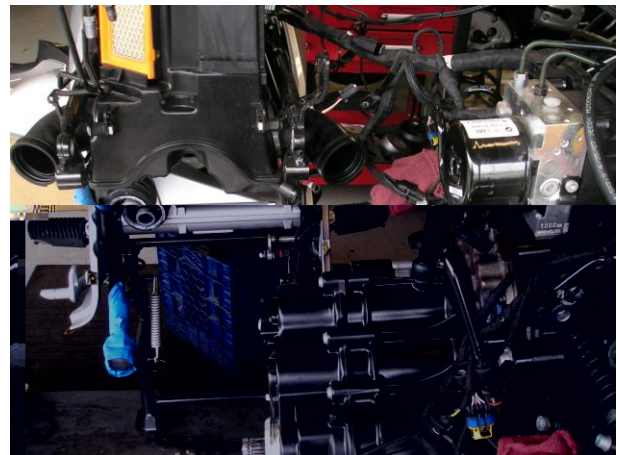
## Subject: Radio & Electrical Accessory Installation R 1200 RT-P Models

**Concern:** Recent examinations of police motor electrical equipment installations have revealed some improper connects as well as high parasitic loads on the main and auxiliary batteries. These connection errors result in the motor electrical system's inability to maintain proper battery charge levels, resulting in improper function of radios, radar, video systems, notebook computers, modems and thermal printers as well as basic LED emergency light and siren functions. Additionally, improper routing of cables and connections greatly increase service and maintenance times because components cannot be removed as intended.

**Issues:** Installers of these accessories are not familiar with the pre-wired circuits, connection points, cable pathways and overall function of the motor charging system. Additionally, available information on the BMW police motors website is not being reviewed prior to installation. We feel that this lack of information exchange is behind many of the installation errors recently found.



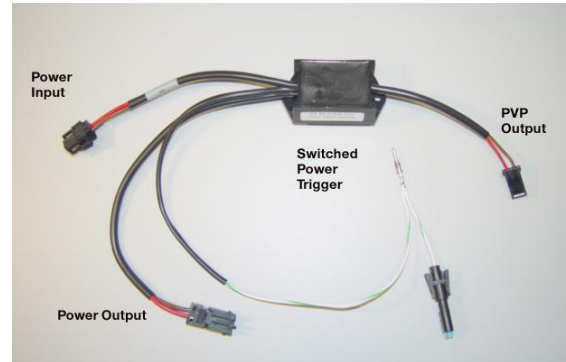
**Basic Rule:** The BMW R 1200 RT-P motor is constructed with eight separately fused circuits plus a ninth heavy circuit cable between the auxiliary battery and the radio box area (installed for CHP radio accessory installation). These circuits should be more than sufficient for any of the accessories noted above without running separate cables to the auxiliary battery. These circuits provide disconnect points in the proper locations so that (for example) removal of the radio box and associated wiring is not needed to replace the clutch. With all wiring (radio head cable or radar antenna cables, etc.) routed along the left side main cable pathway, the motor can simply be split in two, with the rear end swung around to the left, without disconnecting any police equipment, saving hours over traditional methods. Additionally, equipment can be removed for maintenance and repair with minimal disconnection of wiring, again saving maintenance dollars while improving the quality of work performed.



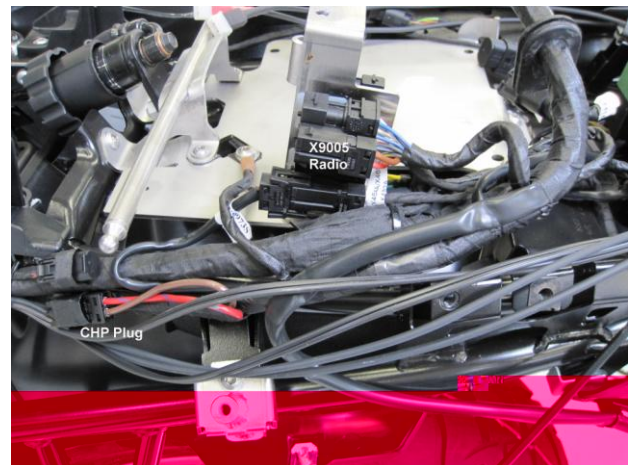
**Tip #1:** Don't connect any accessory to the main battery! The main battery has a full-time job and must be maintained at the proper voltage if all systems including ABS are to work properly.

**Tip #2:** All connections for accessories should be made to existing prewired BMW circuits using the proper connection plugs. All of these connections are available in the BMW accessory listing on the motor pricing spreadsheet and on the police motors website under installation instructions.

**Tip #3: Measure your parasitic loads!** Understand how many mA of load you have with ignition “off” (measure between fuse blades with fuse removed). Most police accessories were originally developed for use in police cars and fire trucks, which have much larger batteries and have a much higher threshold for parasitic load. Motorcycle batteries are tiny by comparison and require thoughtful connections. High parasitic loads drain the auxiliary battery so that it cannot ever receive a full charge, while taxing the alternator of power needed for proper battery maintenance. The stock BMW / Code 3 siren and LED light module draw only 2.5 mA. If your parasitic load is beyond 12 mA, we recommend using a **power management module (PMM)** to manage the load. The PMM will terminate the load 30 minutes after the motor is turned “off”. This timer / relay system enables normal officer use and function of radios, radar, video, helmet headset interface, computers, etc. without draining the battery when the motor is not in use. The PMM has a switched power trigger, sensing when the ignition key is turned “on”, thereby closing the “relay”, providing direct power to whatever accessories are connected to it. When the ignition is turned “off”, the relay remains closed, providing power to the connected accessories for 30 minutes. If the ignition is not turned back “on” within the 30 minutes, the timer / relay opens, shutting “off” all accessories connected to it (and all parasitic loads). The PMM comes with proper plug connections for the radio circuit or the “CHP heavy cable” from the auxiliary battery.



**Tip #4: Radios and other police accessories don't need connection cables heavy enough to jump-start the bike!** Ohm's Law still applies – most radios don't transmit over 15W, which is a little more than one amp! Check the accessory manual for the maximum fuse rating as well as power consumption when operating and when at idle. Since police motors encounter periods of low voltage after lengthy violator stops, calculate at least 25% higher amperage for your circuit to keep from blowing fuses. BMW provides a heavy duty 2.5 mm power and ground cable wired to the radio power plug connection. Using this connection point allows the radio power to be disconnected and radio box removed without removing the radio itself.



**Tip #5: Understand how everything operates!** You cannot properly trouble-shoot a problem if you don't understand what every switch does and how they interact with the wiring diagram. The vast majority of calls received for assistance with police motors are from technicians who have spent hours working to resolve a minor or non-problem. Consult the information available on the police motors website at [www.bmwmc.net](http://www.bmwmc.net).

**Tip #6:** Ensure that all plug connections can be unplugged below the floor of the radio box (other than antenna) or easily unplugged from the specific component within the radio box to facilitate easy removal for servicing without disturbing tied cable bundles. Always think of how you will remove something for service when you install it! Cables should only exit the radio floor plate through the “U” cut cable pathways.

**Tip #7:** Discuss the motor operation with the officer if they experience problems with battery life / accessory operation. Particularly during violator stops:

1. Turn-off the ignition switch, allowing the radio, emergency lights and other accessories to operate from the auxiliary battery. The purpose is to maintain maximum energy in the main battery for restarts.
2. Many officers will turn-off the engine kill switch, leaving the ignition on, headlight on, everything on, causing significant drain to the main battery. If the officer needs to keep the scene illuminated with the headlight, then keep the engine running at idle or install the BMW take-down lights, which only draw 42 W (3 A @ 13.8 V) in steady-burn mode.
3. The R 1200 RT-P produces 27 Ah at idle, which is more than sufficient to maintain the main battery. The auxiliary battery is not being charged at idle. The latest software closes the charging relay (to the auxiliary battery) at 1,800 rpm and keeps it closed to idle, but only for 4.25 minutes, after which the relay opens and auxiliary battery charging stops. This means that the motorcycle must be ridden to recharge the auxiliary battery or manually recharged using a battery charger when parked if no riding time is possible to recharge the battery.
4. When parked running radar, use the 30 minutes of the PMM to power your accessories, keeping the motor ignition “off” / or keep the motor running at idle (see bulletin regarding wiring radar power so that radar doesn’t recycle / lose locked speed when engine is restarted). Once a violator is spotted, the officer will have plenty of battery power to start the engine and catch the violator / or simply ride away. Leaving the motor ignition on with the engine kill switch activated can create a reduced voltage condition when restarting, possibly causing the ABS to not pass self-test during a moment when officer may not be focused on the dashboard warning lights.
5. We have observed many police motors with aftermarket auxiliary driving lights fastened to the fork legs. Upon examination of these system, we have observed that in most cases, these aftermarket lights are connected to the main battery and activated during violator stops. These lights typically have a draw of over 120W (9 A @ 13.8 V) and therefore consume too much power for that application. We strongly recommend using the BMW take-down lights, which operate from the auxiliary battery, have much reduced power consumption and have the additional function of white forward-facing wig-wag lights as well.