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HPC Radiator Fan Control Kit

Models Covered

102002, 102003, 102004, 102005, 102006, 102007



The HPC Radiator Fan Control kits provide automatic control over one or more electric radiator fan(s). These kits include a complete pre-made wiring harness for ease of installation. The module uses a temperature sensor installed in the engine to determine when to energize relays to turn on the fan(s). In addition, the module also has a remote override wire which may be connected to an existing air conditioning system or a toggle switch to turn on the fan(s).

HPC Radiator Fan Control Kits are built with automotive grade XLPE wire for engine bay heat resistance. All kits feature a sealed electrical disconnect for the radiator fan. Kits 102002 through 102005 are built with 12 gauge fan wiring. Kits 102006 through 102007 are built with 10 gauge fan wiring.

102002	For single radiator fans	30 AMP
102003	For two radiator fans that turn on and off at the same time	2 x 30 AMP
102004	For two radiator fans with staggered activation	2 x 30 AMP
102005	For two radiator fans with low and high speed operation	2 x 30 AMP
102006	For single radiator fans	60 AMP
102007	For single fan with two speed operation (Ford MK VIII fan)	50 AMP

This manual covers the 102002-102007 series of single and dual fan wiring kits. For kits including *only* the control module and sensor see the 102001 kit at www.hpcontrols.ca. We can build setups for triple fans, high power fans, kits with all sealed relays, sealed fuses and more. For custom built wiring harnesses, contact sales@hpcontrols.ca .

What’s Included

All 102002 thru 102007 Kits Include:



1 x Fan Control Module



1 x Sensor Harness (8ft)



1 x 3/8”NPT
Temp Sensor



1 x Packet of
Terminals



10 x Wire
Ties

102002 Kit



1 x Single Fan Harness 30A




1 x 40/30A
Relay



1 x 30A
ATO Fuse

102003 Kit



1 x Dual Fan Harness 2x30A



2 x 40/30A
Relay



2 x 30A ATO
Fuse

102004 Kit



1 x Dual Fan Harness 2x30A



2 x 40/30A
Relay



1 x 30A
ATO Fuse

102005 Kit



1 x Dual Fan Harness 2x30A



3 x 40/30A
Relay



2 x 30A ATO
Fuse

102006 Kit



1 x Single Fan Harness 60A




1 x 80/60A
Relay




1 x 60A
JCASE Fuse


102007 Kit



1 x Single Fan Harness 50A



2 x 80/60A
Relay



1 x 50A
JCASE Fuse


HPC offers a series of temperature sensors all compatible with the HPC fan control module.

Optional Sensors (Sold separately)

				
1/8" NPT PN 102015	3/8" NPT (Included) PN 102011	M12x1.5 PN 102012	M14x1.5 PN 102014	M16x1.5 PN 102016

HPC offers replacement parts for all of the fan control kits. We stock modules, relays, fuses, electrical connectors and more. Visit our website or contact us for other parts.

Optional Parts (Sold Separately)



External trigger expander wire – allows for two high speed and one low speed isolated override inputs.
PN 102010

Important Notes

Installation should only be attempted by someone who is completely comfortable with automotive wiring and general cooling system operation. Professional installation is highly recommended.

Failure to properly follow the instructions in this manual could result in personal injury or may damage the vehicle, either electrically or mechanically. If you are uncomfortable, have a professional install it for you.

This kit **REQUIRES** a spare 3/8" NPT port on the engine cylinder head or intake manifold that enters the water jacket for the coolant temperature sensor to be mounted. Often engines will have a spare port for bleeding air from the system. This kit does not make use of the radiator fin probe type sensor as these sensors may cause damage to the radiator, are more likely to succumb to damage and less accurate. The sensor included in the kit is a factory style temperature sensor that provides better accuracy and longevity. If no spare port is free this kit will **NOT** be able to be installed in the vehicle. See optional sensors above for other temperature sensor options. See the installation instructions for more information.

It is strongly recommended to have a coolant temperature gauge or at minimum a functioning temperature warning lamp. Failure to properly install, test and monitor for correct operation of your cooling system could result in severe engine damage. Watch your gauges.

Harris Performance Controls accepts no liability for injury, damages or otherwise caused by or related to the installation and use of its products.

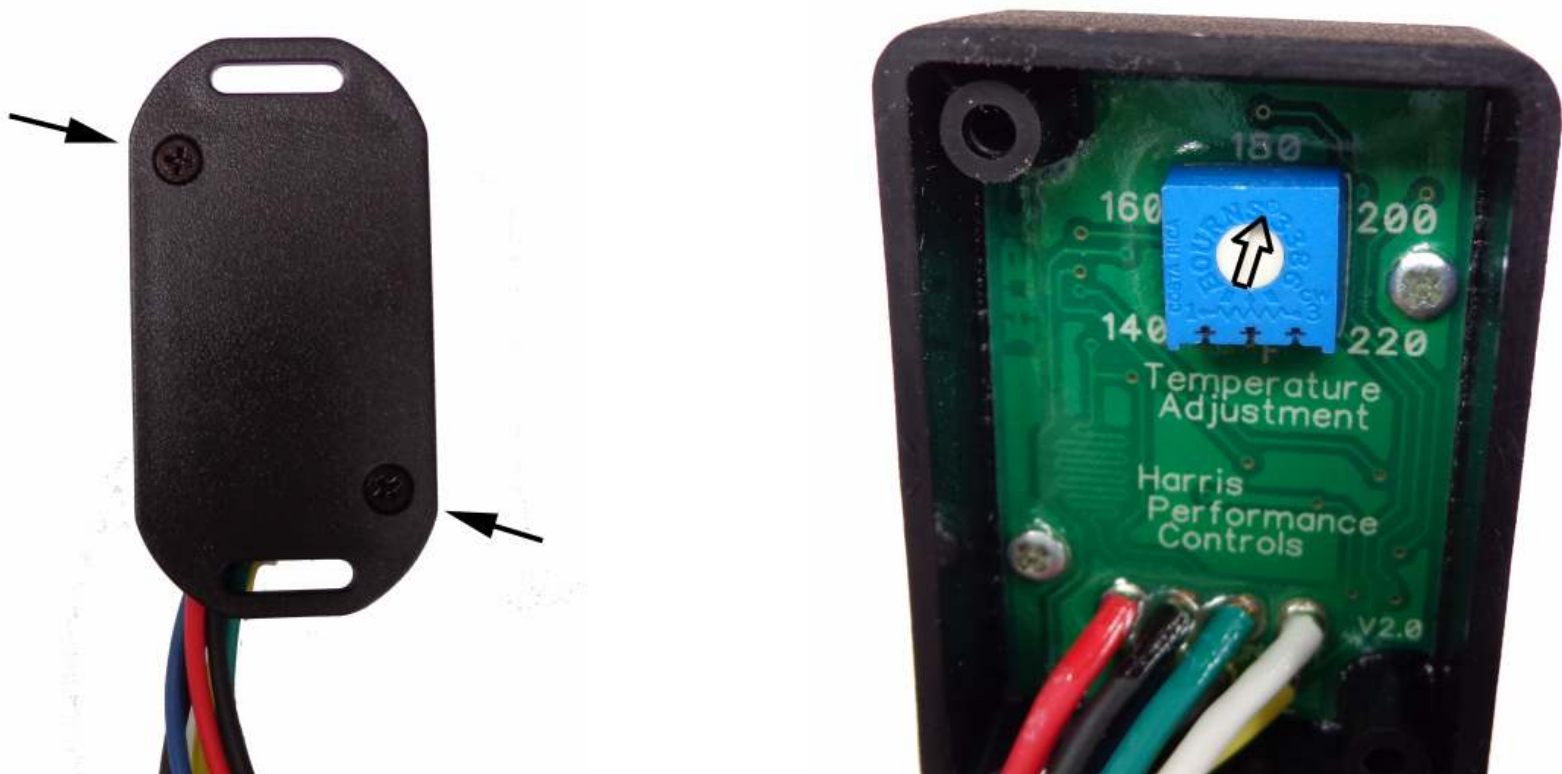
The use of after market electronic devices will void most new vehicle manufacture warranties. If your vehicle is still under warranty, please contact the warranty provider to determine whether the use of this device is compliant with their warranty terms.

Please ensure all parts of the particular kit you have ordered have been included. A list of included components can be found in the 'What's Included' section above.

Read the entire contents of this manual before proceeding with installation. If anything is unclear, contact Harris Performance Controls at support@hpcontrols.ca for clarification.

Temperature Setting and Operation

The fan control module temperature is adjustable from 140F to 220°F. To set temperature, remove the two Phillips screws from the back side of the module. The potentiometer within can be easily turned with a small screwdriver to the desired temperature (pointer exaggerated for clarity).



The temperature setting is the temperature that the low speed fan will engage at. The fan will turn off when the temperature drops 10°F below the set point. The secondary fan (if equipped) will engage at 10°F over the set point, turning off once the temperature drops back to the set point. Generally speaking, if the sensor is installed in the engine the temperature setting should be at least 10°F over the thermostat temperature to ensure the fan does not run continuously. If the sensor is installed in the radiator the setting may be lower.

When using two speed fans, these are the low and high speed settings.

	ON	OFF
FAN 1	Set Temp	Set Temp – 10°F
FAN 2	Set Temp + 10°F	Set Temp

The remote input wire (blue wire) will engage the fans when it is grounded. If the wire is connected directly to ground, either through an override switch or A/C system, the system will run all fans at full speed.

Installation Instructions

Ensure you have the correct tools for the job. Read the instructions completely before starting to ensure you are properly equipped for the job. Disconnect the battery before beginning.

Ensure you have enough wire to reach to your coolant temperature sensor, fan(s), battery and the location that you will mount the relays and control module before proceeding.

1. Set desired temperature on the control module. Refer to temperature setting and operation information above.

2. Install the temperature sensor. Locate a free 3/8” NPT port in the cylinder head, intake manifold or radiator that enters the cooling system. The closer to the top of the engine or thermostat the better the reading will be. Install the sensor with thread sealer to avoid leaks.

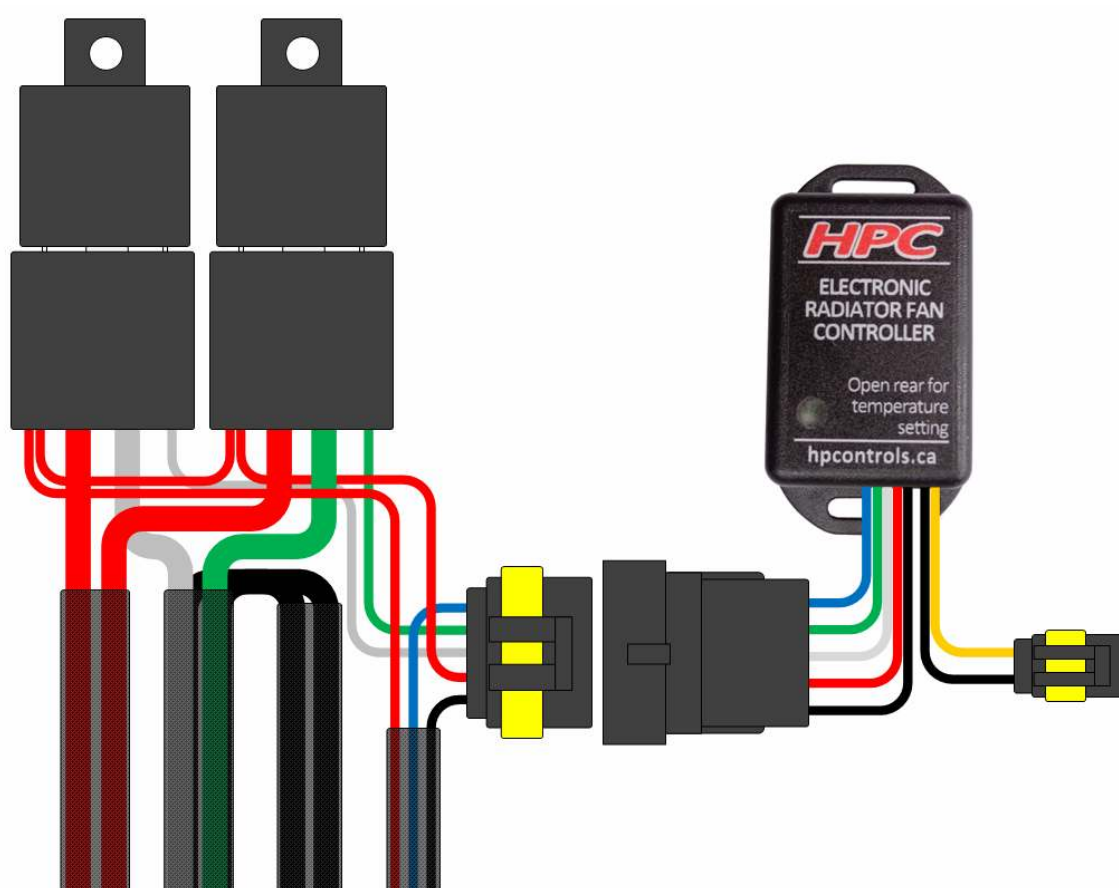


If there is a plug in the location currently, remove it. If there is a plug of a larger size, you will need a reducer bushing to reduce the hole to 3/8" NPT. These can be obtained from HPC at www.hpcontrols.ca or most hardware or plumbing stores. It is recommended that brass reducers be used when possible. For a list of alternative sensors from HPC, see the optional accessories section above. Do not remove an existing sensor, as doing so will either disable a dash light/gauge or compromise the ECU's ability to correctly meter fuel and other functions.

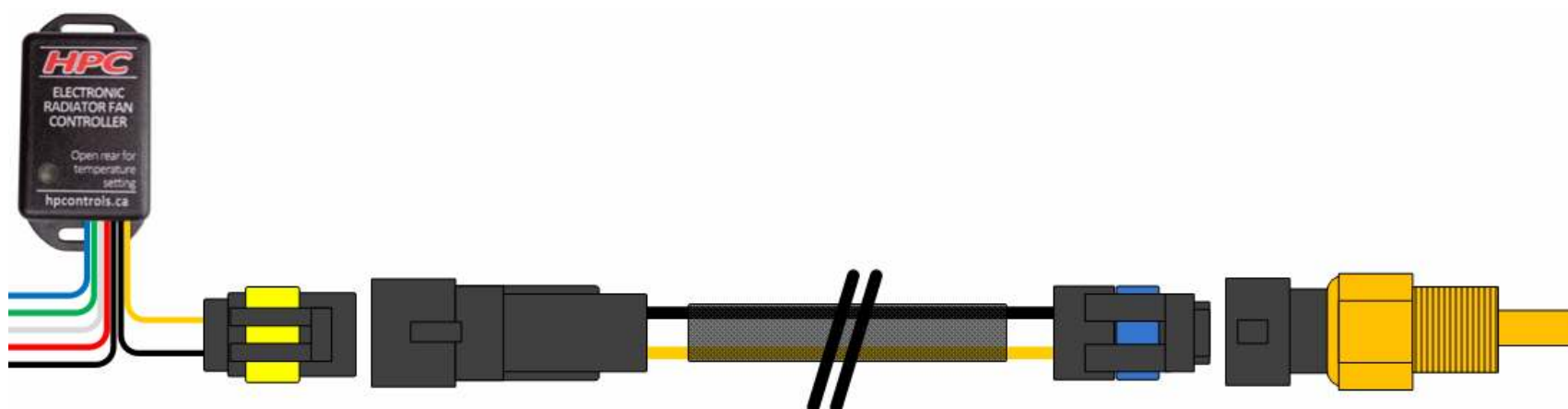
IMPORTANT

- If teeing into heater hoses for temperature sensor installation, it is important to ensure the sensor is not in the return side from the heater as the temperature will not be accurate. Additionally, do not install the sensor in heater hoses if the heater controls stop the flow of water to the heater with a valve.
- Do not install the sensor in the engine in a location that has stagnant coolant as this will affect the temperature sensor reading.

3. Mount relays and control module. Install these components near the battery and away from sources of heat. Use self tapping screws or wire ties to secure the relay(s) to the vehicles inner fender. If using screws, ensure the area to drill is safe and does not have hidden harnesses or vapor canisters behind it. Connect the module to the five pin connector in the relay harness.



4. Install temperature sensor wiring harness. Plug the two pin temperature sensor harness into the temperature sensor and route it along existing wiring harnesses back to the control module. Secure the wire with supplied zip ties. If the harness is deemed too long, it may be coiled out of the way, or cut and reconnected with the two supplied pink heat shrink butt connectors.

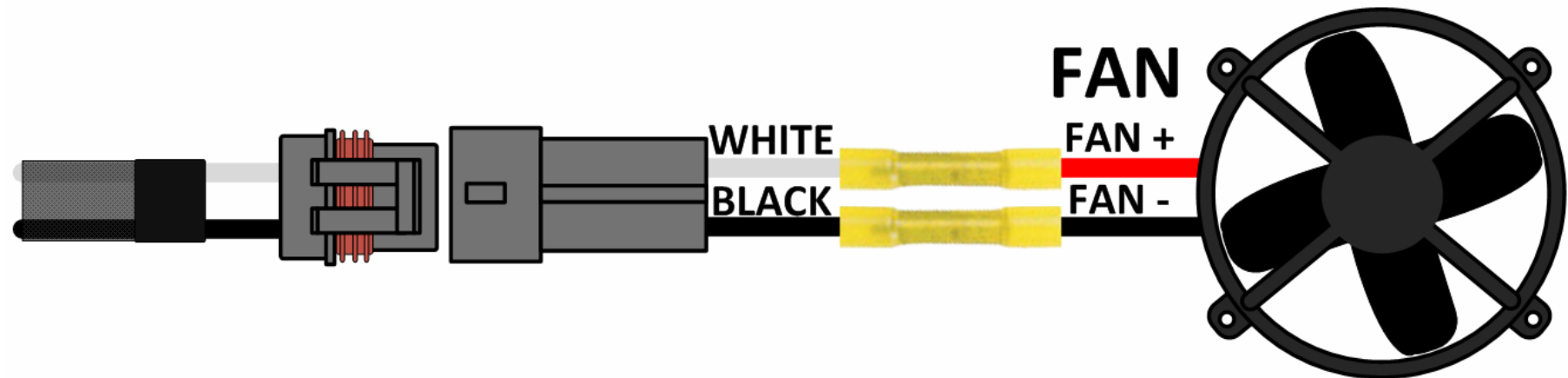


5. Route fan power wire(s) to the fan(s). Follow existing wiring harnesses when possible and stay away from significant sources of heat. Be sure to keep this harness well secured where it will be close to the radiator fans to avoid chafing against the fan blades while the fans are in operation.

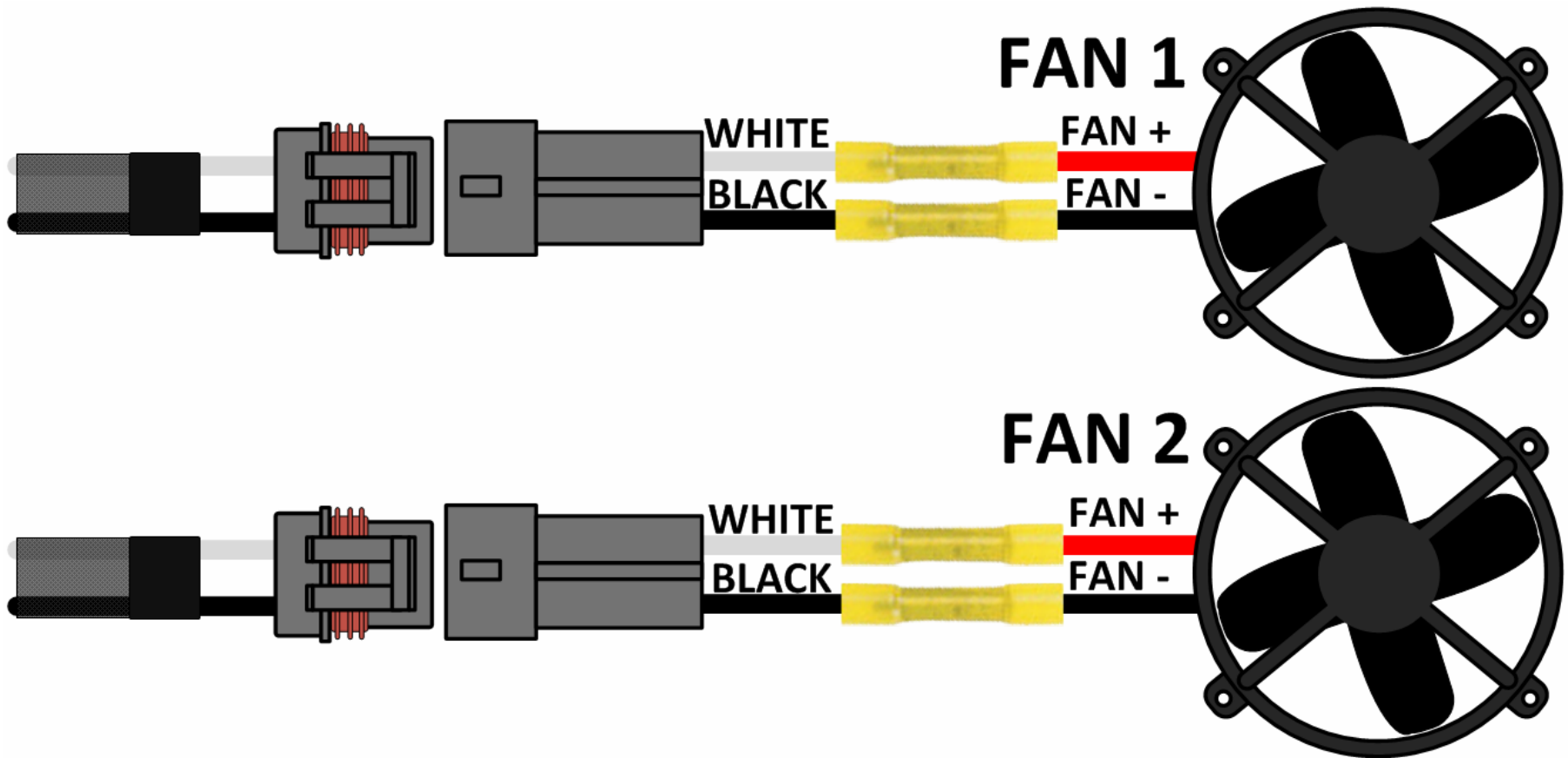
6. Connect fan(s) to the wiring harness. The fan wiring harness is supplied with a disconnect which may be permanently connected to the radiator fan. Use the supplied yellow butt connectors. The supplied butt connectors have integral shrink tubing which may be shrunk with a heat gun to obtain a watertight seal. Refer to chart and diagrams below for your particular kits application.

	102002	102003	102004	102005	102006		102007
Fan 1 Negative (-)	BLACK	BLACK	BLACK	BROWN	BLACK	Fan Negative (-)	BLACK
Fan 1 Positive (+)	WHITE	WHITE	WHITE	WHITE	WHITE	Fan Low Speed (+)	WHITE
Fan 2 Negative (-)	-	BLACK	BLACK	BLACK	-	Fan High Speed (+)	GREEN
Fan 2 Positive (+)	-	WHITE	GREEN	GREEN	-		

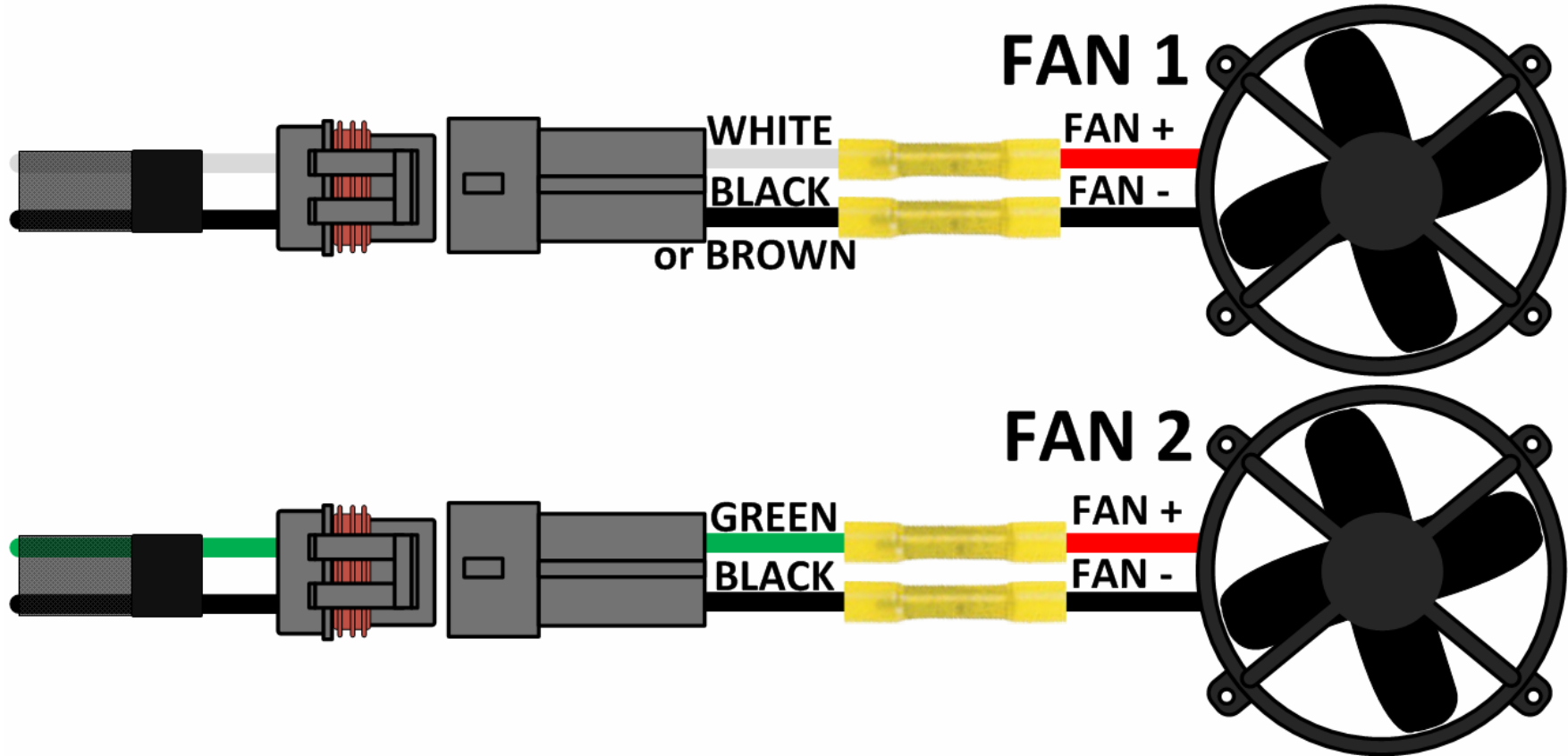
Kit 102002 – With Single Fan



Kit 102003 – With Dual Fans

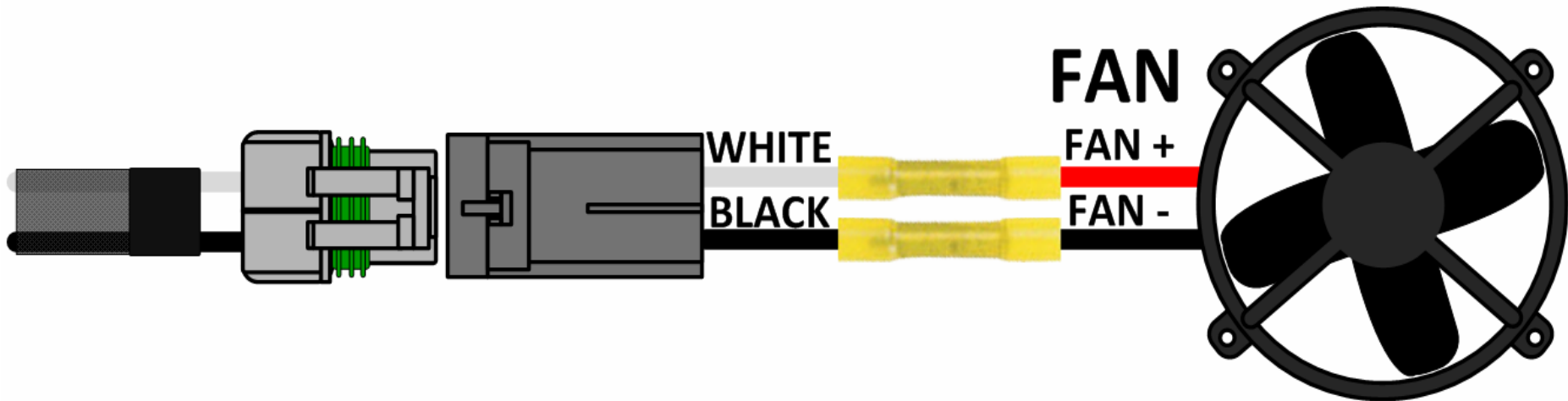


Kit 102004/102005 - With Two Fans

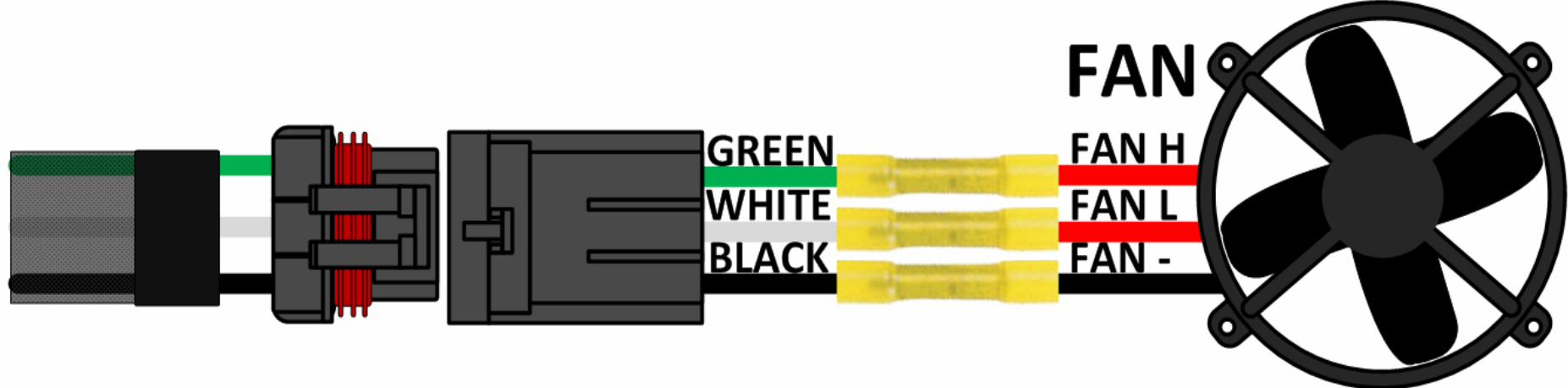


*102004 may also be used on a single low/high fan only if high and low may be simultaneously active.

Kit 102006 – With Single High Current Fan

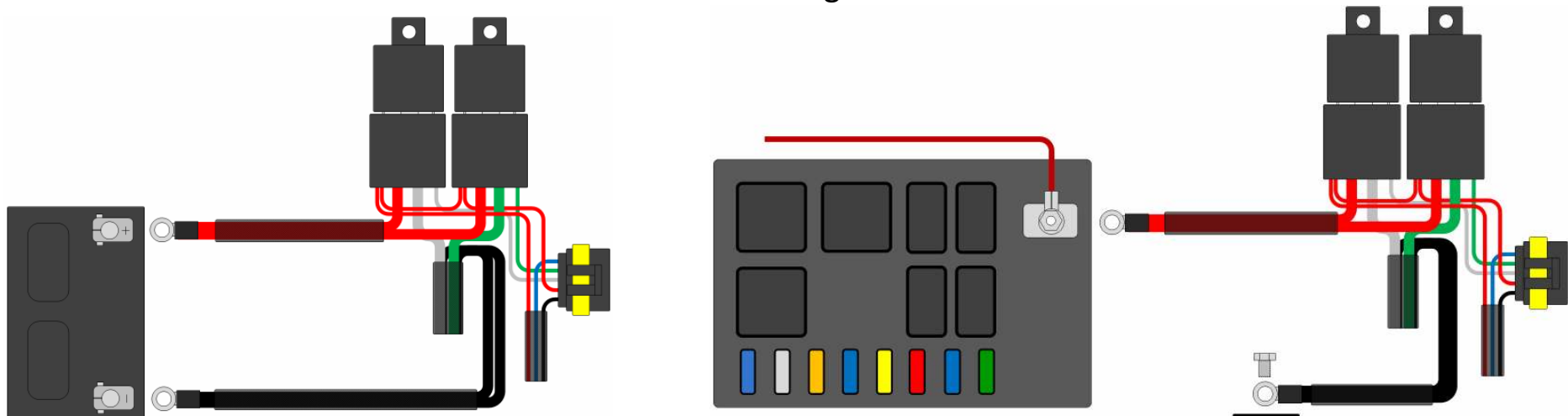


Kit 102007 – With Single Two Speed Fan (Ford “MK VIII” Style)

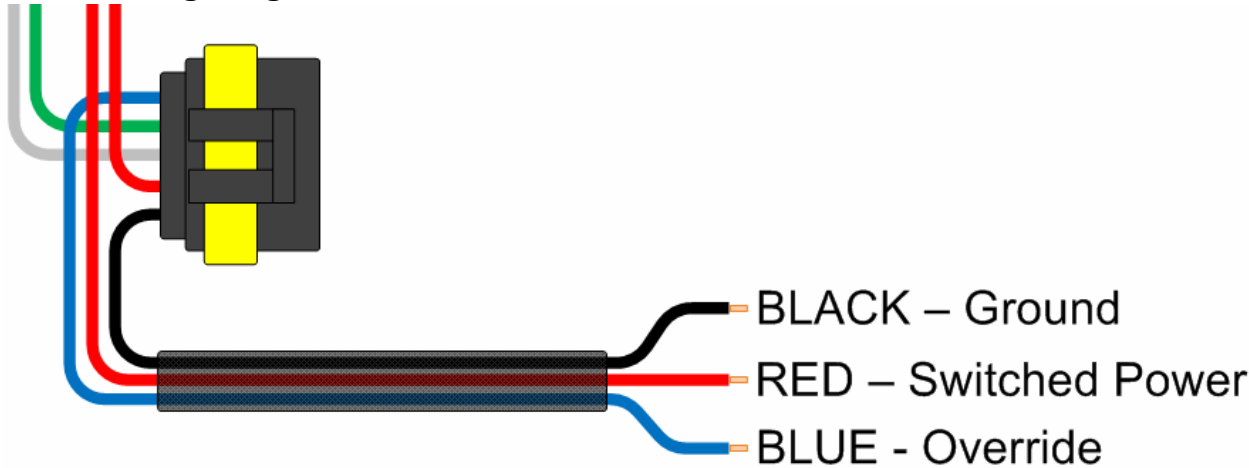


*102007 has non-overlapping outputs. This means when it switches to high speed the low speed circuit is turned off; both circuits are not simultaneously active.

7. Connect to battery power and ground. Route the 12 or 10 gauge red wire from the relay(s) to the battery, fender mounted starter solenoid or the vehicles power distribution center (fuse box). Connect the ring terminal either directly under the battery clamp bolt, or to the main lug in the power distribution box or starter solenoid. Connect the 12 or 10 gauge black wire from the fan harness to a suitable clean body ground or to the battery negative terminal. These wires will be the thick red and black wires with ring terminals on the ends as shown below.



8. Connect switched power and signal ground. Connect the wiring harness to a switched ignition feed, to ground and if desired, to an existing A/C input or a toggled override switch. The 18 gauge RED wire is to be connected to a switched 12 volt feed. This wire draws very little current and may be directly piggybacked from the existing engine bay wiring. The 18 gauge BLACK wire is to be connected to ground. Similarly, very little current will traverse this wire, so it may either be attached to the chassis or to an existing ground wire in the engine bay. The 18 gauge BLUE wire is a ground triggered input to the module. This may optionally be wired into the ground side of an A/C compressor clutch relay or extended into the vehicle cabin for a toggle switch. Refer to wiring diagrams at the end of the manual for more information.



Refer to the end of this manual for complete wiring diagrams specific to the harness in your kit.

Now all the electrical connections should be complete and all equipment installed. Verify all connections are secure and correct, and that there are no leaks from the temperature sensor. Install the relay(s) and fuse(s) if not already done. Reconnect vehicle battery.

Test for correct operation

Re-connect the battery and start the vehicle. To verify fan(s) are functioning, unplug the temperature sensor. The fan(s) should now be running at full speed. Plug the sensor back in, the fan(s) should stop. Watch the temperature gauge as the engine warms up. Once it reaches the fan turn-on temperature, ensure the fan does cycle and that the engine cools down and the fan shuts off. Remember, there will be some variance between a vehicles temperature gauge when the fans start due to sensor placement and the sensors themselves.

If the fan(s) do not start, shut off the engine - do not allow it to overheat!
Refer to the troubleshooting section below.

Troubleshooting

The fan control module is programmed to fail-safe if the temperature sensor is either disconnected, shorted or reads outside the normal range. In this scenario, the fans will run at full speed.

No green light on module.

- No ignition power. Check circuit fuse and confirm power with test light.
- Bad ground.

Blue light on module flashing.

- Temperature sensor circuit shorted to ground, 12v or disconnected.
- Faulty temperature sensor. Check resistance against chart to right.

Fan does not come on, blue light on module lit.

- Check power to fuses and to relays. Repair broken wires or bad connections.
- Bad relay contacts. Replace relay.
- Bad fan motor.

Fan does not come on, blue light on module not lit.

- Incorrect temperature setting, try lowering 10°F and retest.
- Coolant sensor in air pocket or incorrectly installed.

Fan comes on at correct temp, and does not shut off.

- Temperature set too low. Turn off temp must be above thermostat temp.
- Undersized cooling fan.
- Stuck thermostat or other cooling system limitation.

Fan stays on always with ignition off.

- Check that green light on module turns off. If not, connect power feed to a switched ignition circuit.
- Relay contact welded shut. Replace relay.

Fan stays on always when ignition on.

- Remote turn on wire grounded, disconnect blue wire and recheck.
- If blue light flashing, see above.

Fuse supplying fan blows immediately.

- Damaged wiring.
- Bad/Shorted fan motor.

Fuse supplying fan blows after some time.

- Worn out fan motor drawing too much current.
- Oversized fan for this kit.

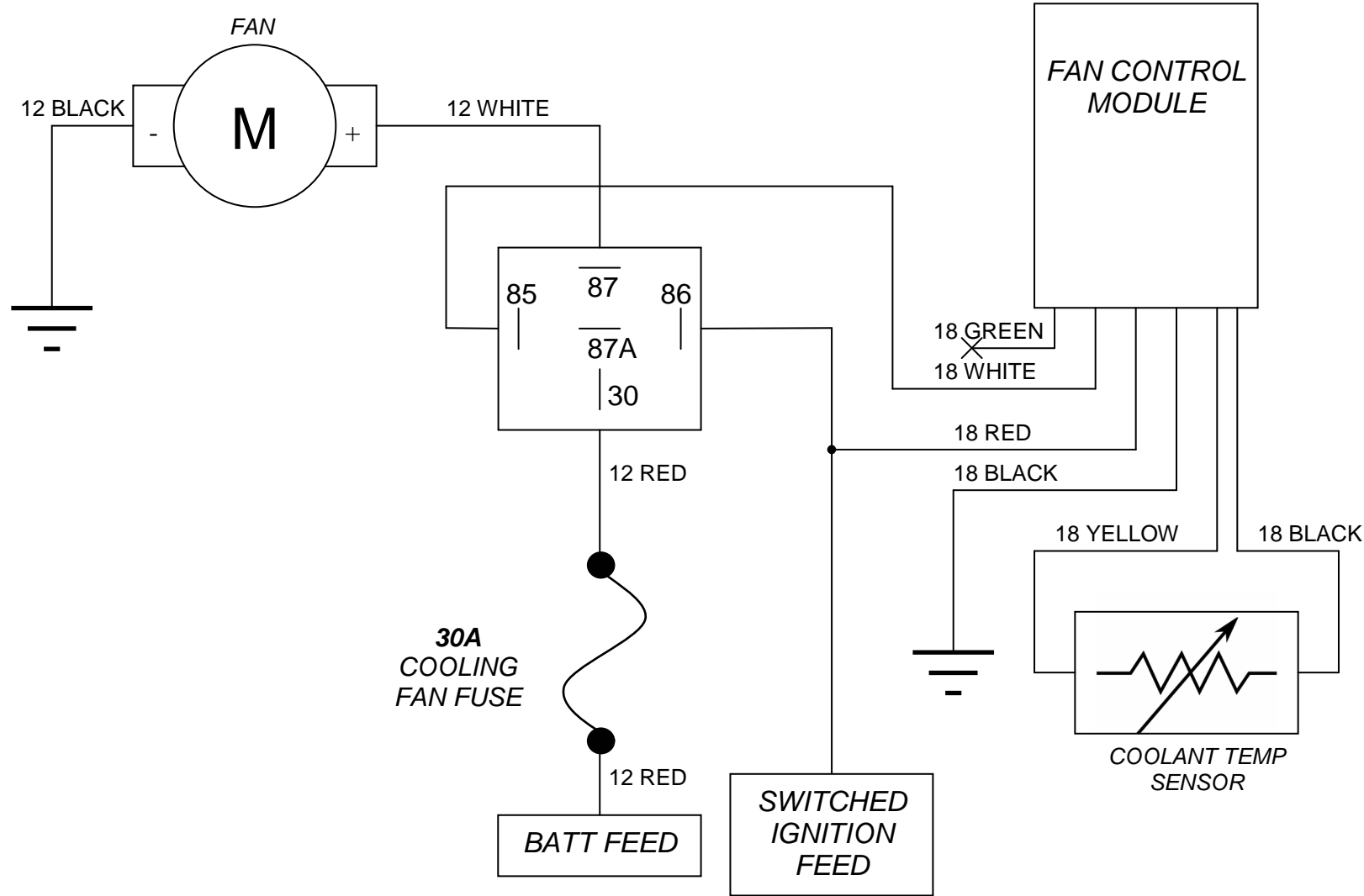
Temperature sensor

Temperature vs. Resistance		
20°F	-7°C	11k-15k Ω
60°F	16°C	3.9k-4.5k Ω
100°F	38°C	1.5k-1.7k Ω
140°F	60°C	650-730 Ω
180°F	83°C	302-334 Ω
220°F	105°C	159-172 Ω

If the above fail to resolve the issue, it may be due to a failed control module or another problem.
Please contact support@hpcontrols.ca for assistance.

Wiring Diagrams

Single Fan Configuration (102002, 102006*)

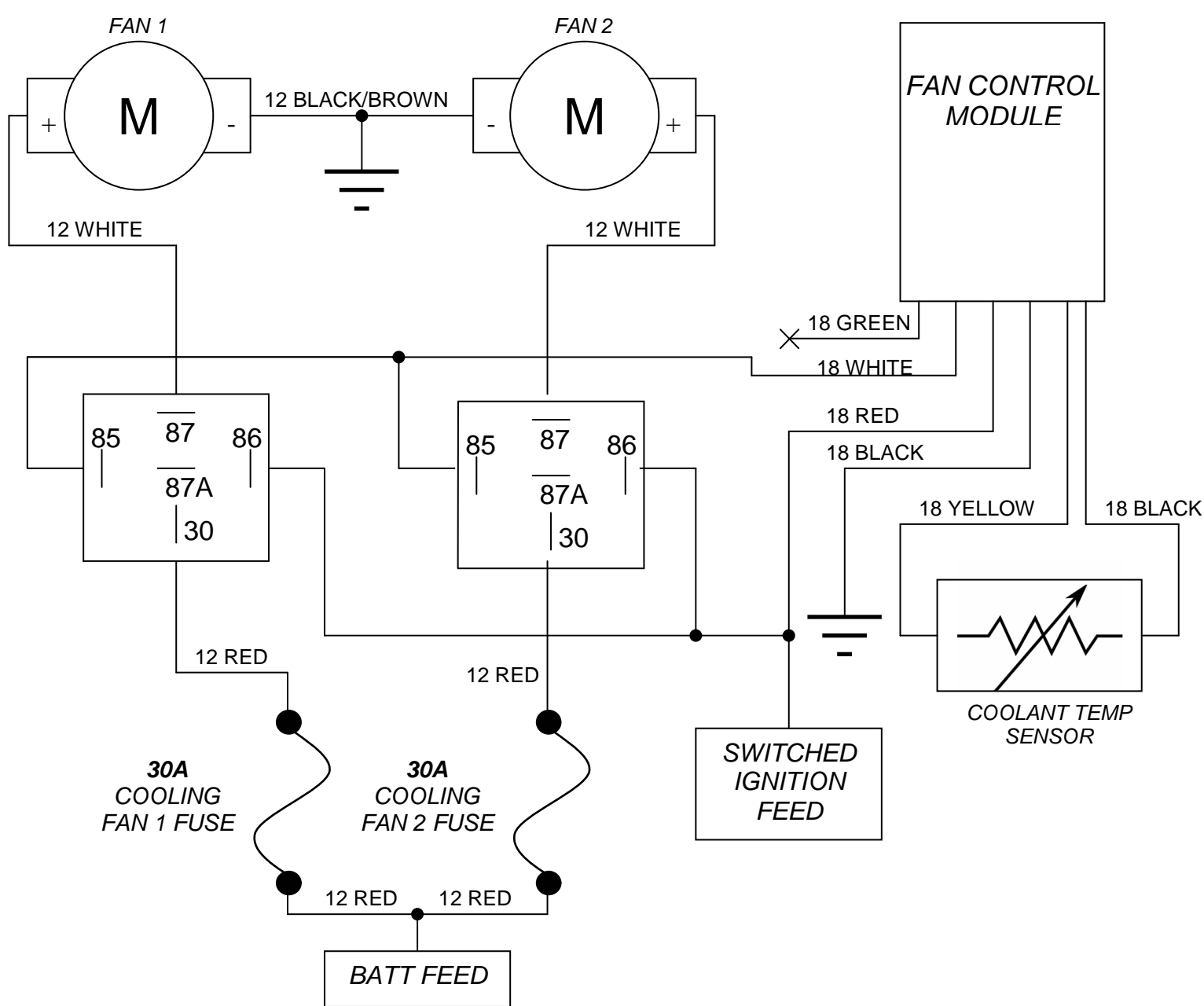


In this configuration, the one fan is run at the lower of the fan on/off points. If desired, the fan may be operated at the high fan on/off points by connecting the green wire, instead of the white wire to the relay.

***Note:** Kit 102006 utilizes 10 gauge wire in place of 12 gauge and a 60A fuse in place of a 30A fuse.

Simple Dual Fan Configuration (102003)

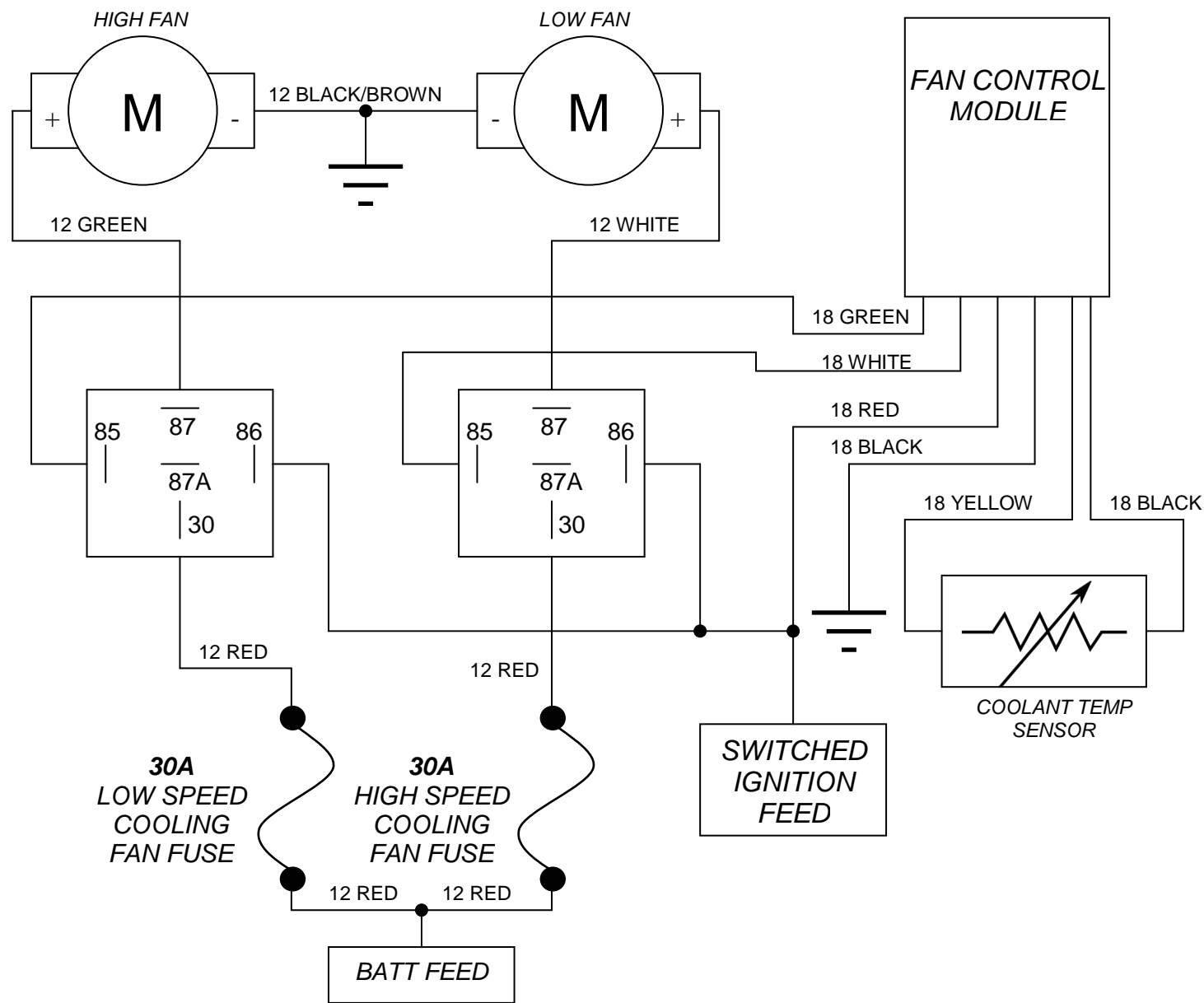
Both fans run at same time.



In this configuration, two fans are connected, but operate on the same control signal from the fan control module. This means they both turn on and off at the same time.

Dual Fan Configuration – Sequential (102004)

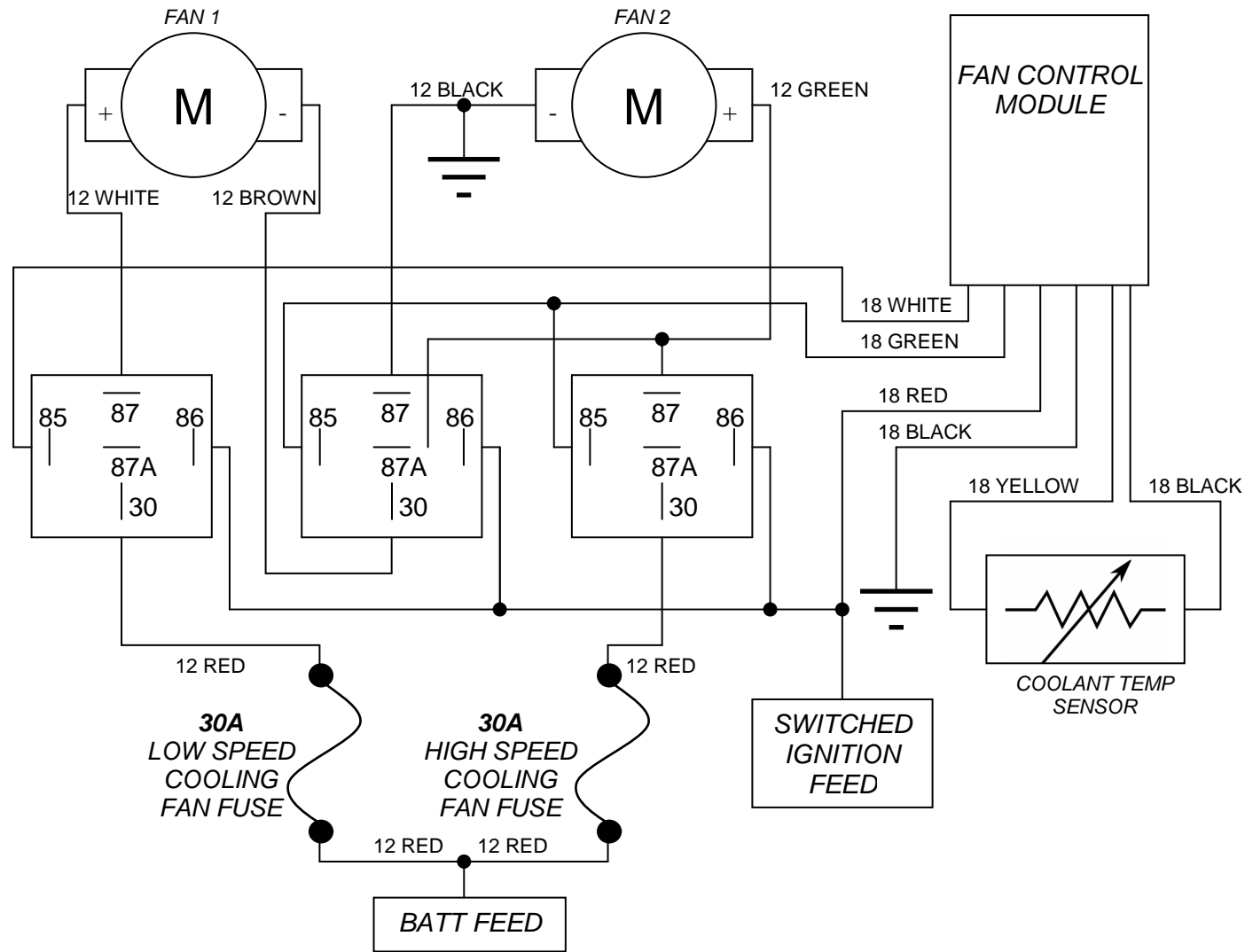
One runs at lower temperature, the second turns on at higher temperatures.



In this configuration the low fan turns on at lower temperatures, joined by the higher fan at higher engine temperatures. It is suggested that the fan shroud either have a divider between the fans, or that the fans have their own fan shrouds so that efficiency is not compromised.

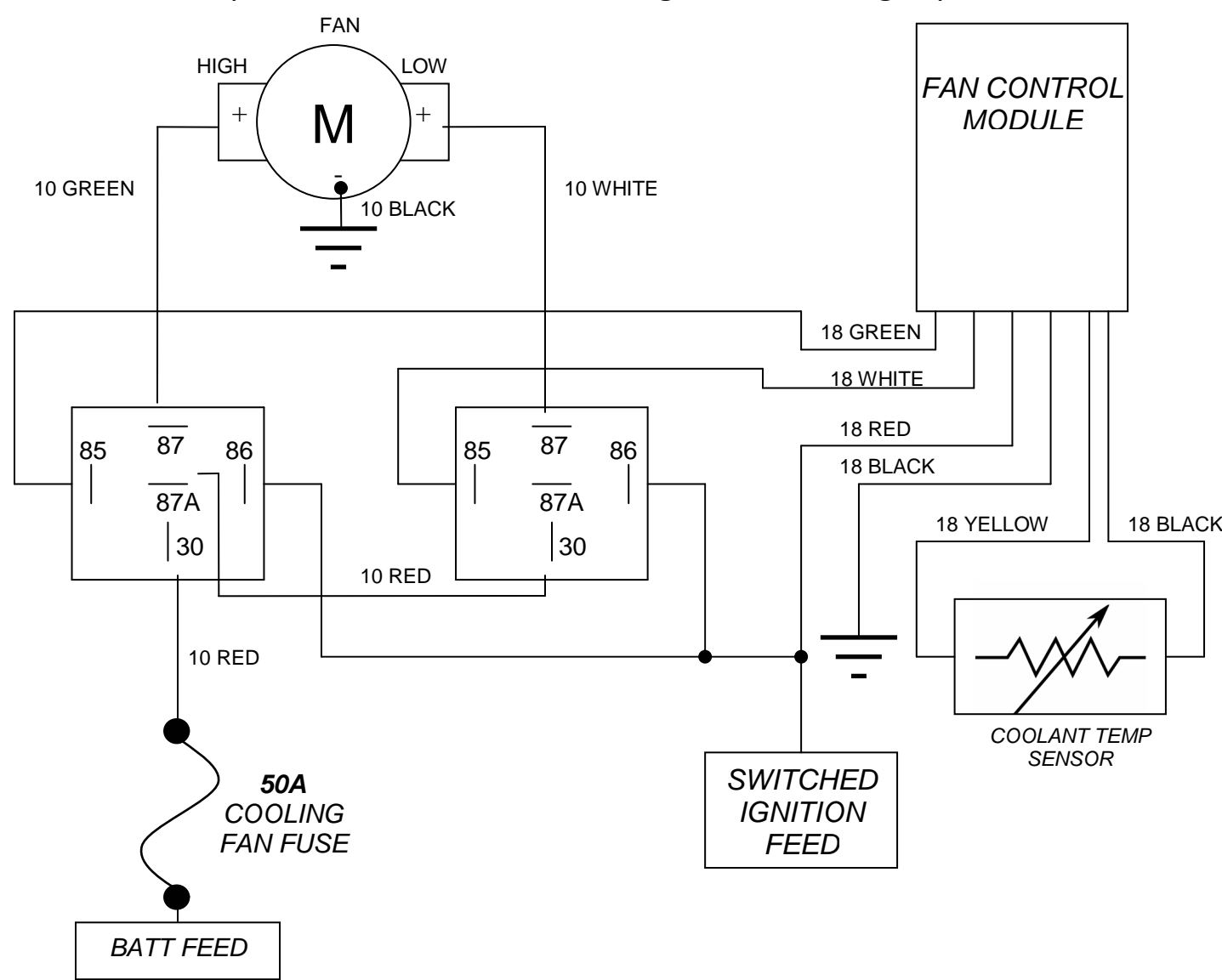
Dual Fan Configuration – Two Speed Control (102005)

Both fans run at low speed (series) at low temp, high speed (parallel) at high temp.



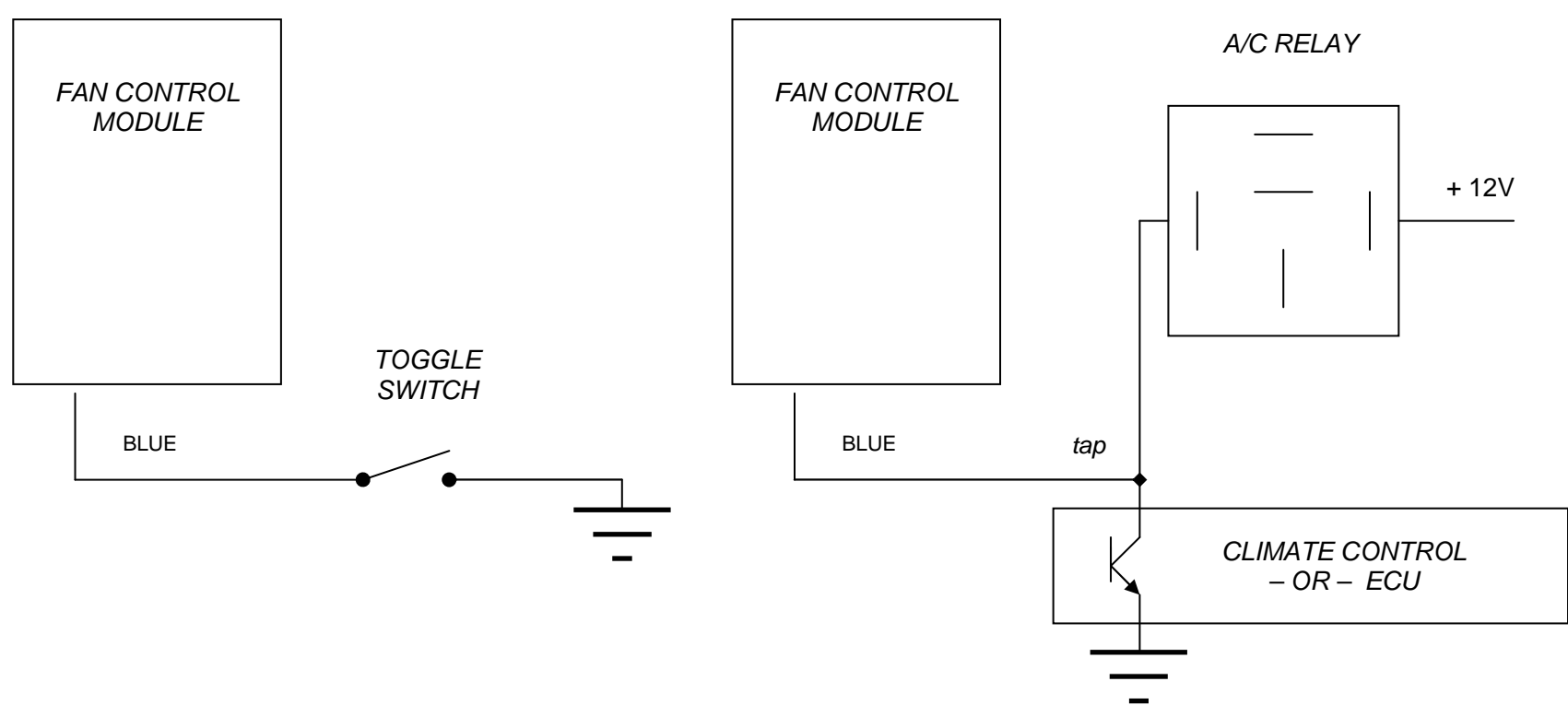
This configuration is the preferred method of fan control for systems with two radiator fans. It allows both fans to be connected in series at lower temperatures and parallel at higher temperatures. This allows the fans to run at a lower speed and consequently operate far quieter. The other benefit of this setup is that at low speed, the fans will be drawing only half of the normal load of a single fan. Three relays are required to accomplish this series/parallel switching, however only two fuses are required.

Single Two Speed Fan “Ford MK VIII” (102007)
One fan with two separate internal motor windings for low or high speed



This configuration will activate the low speed input of the fan at lower temperatures, and switches over to the high speed circuit at higher temperatures. It does not allow both fan circuits to be powered at once. This has been specifically designed for Ford two speed fans commonly used for electric fan conversions.

Remote Turn-on Wire Hookup – Optional
The blue wire may be connected to a ground to turn on the fans.



If the vehicle has air conditioning, the fan(s) should run when the compressor is running to cool the condenser. To accomplish this, the blue wire from the fan control module may be connected to a switched ground signal from the A/C system. Most A/C compressor relays use a switched ground and may be tapped as indicated above. Otherwise, if desired, the blue wire may be used as an override to the fan control module and may be connected to a toggle switch in the vehicle which grounds the wire. If neither is desired, the wire may be left disconnected.

If more than one manual trigger source is desired, HPC part number 102010 may be purchased to allow for two high speed and one low speed isolated inputs. This allows the operator to have a low and high speed toggle switch to manually activate both speeds as well as retain an input from the A/C system simultaneously. See the instructions for 102010 for more details.

Warranty Information

Harris Performance Controls accepts no liability in the event of damage, injury, loss of use, or other burdens and perils due solely or in part to installation and use of its products.

At the sole discretion of HPC, units found to be faulty due to manufacturing error or defect will be warranted for replacement only for one year from the date of purchase. Units damaged by misuse, abuse or incorrect installation are not covered. Additionally, this product requires the installation of the supplied fuse protection for this coverage. The customer must contact HPC prior to submitting an item for a warranty claim. Product sent without proper approval will be denied and may not be returned. The customer is responsible for any shipping or handling fees when returning the product, CODs will be denied. The customer must provide proof of purchase date when contacting HPC if their purchase is not already on file with HPC. Warranty is for HPC supplied part only, warranty does not cover labor or related parts. For further clarification or to submit a claim for consideration, please contact support@hpcontrols.ca

Please send us you feedback, comments & suggestions! **sales@hpcontrols.ca**

