

# TRAILER BATTERY CHARGING MODULE

TBCM-40A

## FEATURES

- The TBCM senses the alternator charge voltage, sending charge current to the trailer battery.
- Disconnects trailer battery from vehicle's charge wire when not charging, (engine is not running) preventing a dead start battery.
- Works with existing 12V trailer wiring, including on-board 110VAC chargers. Handles most towing vehicle alternators.
- Mount the TBCM in the trailer battery box or engine compartment, connect only three wires.
- The TBCM doesn't have a .75V drop to sulfate your battery like RV type isolators.

## DESCRIPTION & OPERATION

The TBCM-40A connects the vehicle's auxiliary battery charge wire and the trailer battery positive wire together only when the vehicle's engine is running and the alternator is putting out charge current. When not charging, both vehicle and trailer batteries remain isolated, preventing both from discharging when a trailer load is left on. This isolation continues even if the ignition switch or lights are left on. The TBCM-40A relay handles the charging current supplied to the trailer battery only.

The TBCM-40A is powered by the red main battery wire, (drawing less than 2 mA continuous current). When the alternator output voltage exceeds 13.5 volts ( $\pm .1V$ ), the TBCM switches on the relay, lighting a LED, sharing the charge current between the two batteries. To prevent short cycling of the relay, the TBCM does not de-energize the relay unless the combined battery voltage drops below 12.9V, (the result of any of the following: the motor turning off, the starter being energized, or the battery voltage settling back to a fully charged condition). If short cycling occurs, it is a result of the trailer battery being discharged enough that a voltage drop occurs across the vehicle's 12V wire that feeds the vehicle's trailer plug due to the charging current being delivered to the trailer battery. This short cycling protects the vehicle's wiring and will stop as the trailer battery charges. If the main battery is almost fully discharged, the TBCM waits until the main battery's charging voltage exceeds 13.5 volts before connecting the second battery.

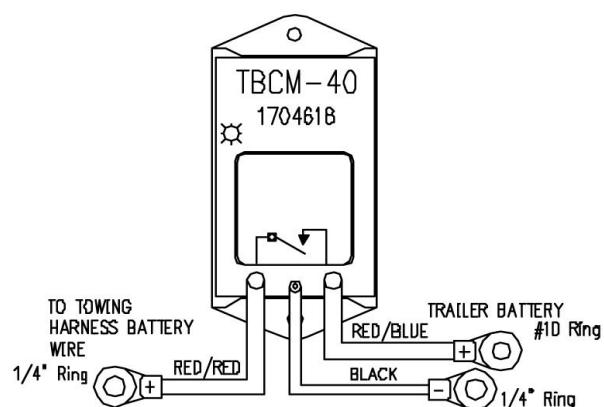
The TBCM-40A is thermally protected to disconnect in case of internal arcing or other high temperature conditions. **Do not use on any system other than a 12VDC. For higher current applications use the DBCM-70A.**

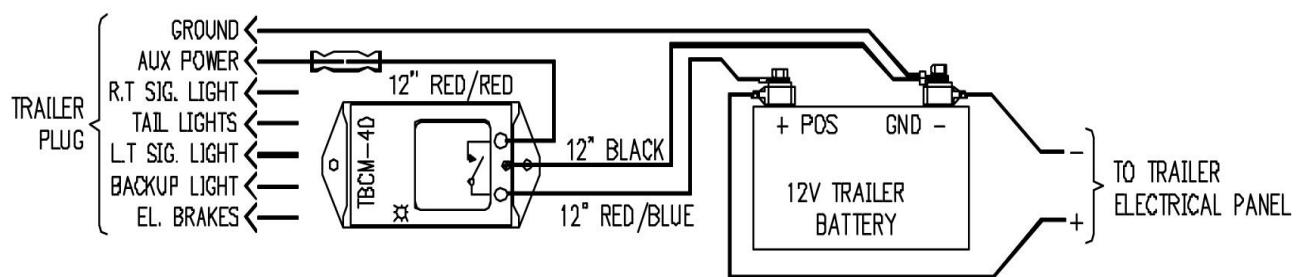


## SPECIFICATIONS

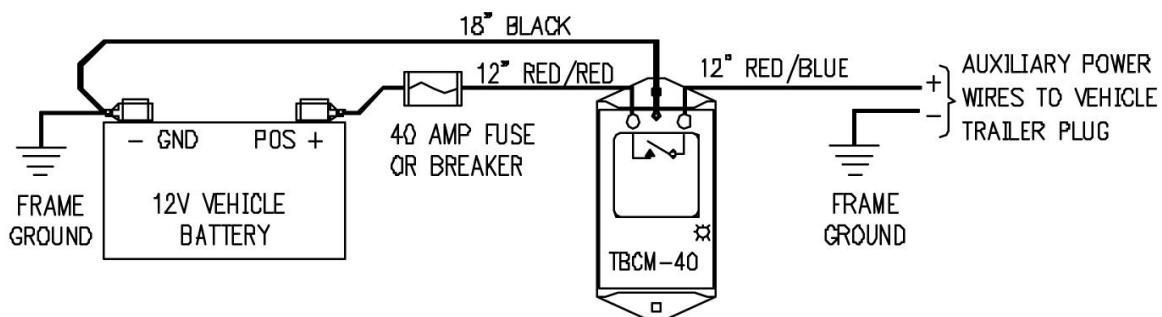
SIZE:	2.1"W x 4.0"L x 1.3"H
WEIGHT:	10 ounces with 40 AMP contactor and wiring
ENCLOSURE:	Epoxy potted in PVC plastic to weatherproof and vibration resistant
MOUNTING:	2 #8 x .35" L screws or double stick tape (not provided).
POWER:	9 to 15 VDC from vehicle's battery
CONNECTIONS:	R/R 12" #10 AWG charge wire R/BL 12" #10 AWG trailer +Bat wire BLK 18" #16 AWG trailer - Bat wire
CURRENT CONSUMPTION:	Sleep mode $\leq 2$ mA Charge mode $\leq 120$ mA
THRESHOLD:	On @ 13.5VDC $\pm 0.1$ VDC Off @ 12.9VDC $\pm 0.1$ VDC
INDICATION:	LED indicates charge mode
CAPACITY:	Up to 40 AMPS CAR1AP40DC12-S Hasco relay rated @ 40 AMPS
THERMAL PROTECTION:	In-operative above 85°C
TEMPERATURE:	-30 to 75°C

## INSTALLATION CONFIGURATION



**APPLICATION 1 - MOUNTING IN TRAILER BATTERY BOX**

The vehicle battery should be continuously connected to the alternator output. The auxiliary or trailer battery and crank battery are connected thru the TBCM-40A relay to charge the trailer battery only when the alternator is charging.

**APPLICATION 2 - MOUNTING TBCM-40 IN TOWING VEHICLE ENGINE COMPARTMENT**

The TBCM-40A senses when the alternator is charging the vehicle battery and closes its contact, passing the alternator charge current to charge the trailer battery. The TBCM-40A isolates the trailer battery from the vehicle battery when the alternator is not charging.

**INSTALLATION INSTRUCTIONS****BATTERY BOX TRAILER INSTALLATION**

1. Trace your trailer's battery wires to make sure which is the positive and negative battery wires.  
Use a meter to measure 12VDC for positive and negative terminals if necessary.
2. Connect the 12" #10 AWG Red/Blue wire with the ring connector to the trailer battery positive terminal.
3. Crimp the 12" #10 AWG Red/Red wire with the barrel connector to the trailer's towing harness battery wire.
4. Connect the 18" #16 AWG Black wire to the trailer battery negative terminal.
5. Secure the TBCM module to the inside of battery box with the double stick tape or 2 #8 3/8 screws.

**TOWING VEHICLE INSTALLATION**

1. Trace your vehicle's battery wires to make sure which is the positive and negative battery wires.
2. Locate the fused auxiliary battery wire going to the trailer plug.
3. Connect the 12" #10 AWG Red/Red wire to a fused towing vehicle positive wire or battery fused connector. Replace the barrel connector if necessary.
4. Connect the 12" #10 AWG Red/Blue wire to the battery wire going to the trailer plug.
5. Connect the 18" #16 AWG Black wire to the towing vehicle battery negative terminal or the vehicle's frame.
6. Secure the TBCM module by screwing the module to the vehicle firewall or other acceptable location.

Your TBCM will now monitor the alternator and switch charge current to the trailer battery whenever the alternator is charging. It isolates the batteries when the engine is off. If the trailer battery is discharged, the TBCM will go thru several 5 second cycles until the trailer battery voltage comes up enough to stay constantly on.