

CARM INTERNATIONAL TOWING MODULES

(TA100/200 Instructions Revision = 1)

Each Towing Module (if ordered with Loom Pack) is shipped with:

A/ These instructions

B/ 1 x Towing Control Module

C/ 1 x high current output loom (1.6m sheath) to connect between Control Module & Trailer Socket

D/ 1 x low current input loom (60cm sheath) to connect between the Control Module & Vehicle Rear Lights

E/ 1 x Single Red wire (6.5m sheath) to connect between +12 Volt Vehicle Battery & Male Spade on Control Module

F/ 1 x Single White (50cm sheath) to connect between Control Module & Vehicle Chassis.

G/ 1 x Fuse Pack containing:

1 x 25 Amp Blade Fuse for 12V models (15 Amp for 24V models)

1 x inline water resistant Fuse Holder with integral Cover

1 x large blue eyelet crimp lug (M6 hole diameter 6.4mm) connect to the car battery +12V terminal

1 x small blue eyelet crimp lug (M5 hole diameter 5.3mm) to attach to the earthing wire

1 x blue 6.3mm male crimp lug (to supply +12V from the vehicle battery to the Control Module)

2 x Tek Screws (one for mounting the Control Module & one to earth the loom)

1 x Metal Star Washer (install under the eyelet of the 3mm square Earth Loom to the Chassis)

6 x Cable Ties to neatly secure looms in the vehicle's boot

Different Models suit different applications. The Model Number is clearly labelled on the bottom of each module:

TA200-12V-P (12 Volt operation) & TA200-24V-P (24 Volt operation)

Will operate with ALL vehicles (well, we are yet to come across a vehicle that can detect these sophisticated modules).

Use with trailers that run either filament bulbs or LED lights & where vehicle runs filament bulbs. 12 Volt, 25 Amp (or 24 Volt, 15 Amp) Trailer Towing Module designed for newer vehicles that do test for blown brake & tail lights and vehicles that will detect any extra load being applied to the rear brakes, indicators, tail lights or stop lights. LEDs light very quickly & the "P" module contains specialised electronics to "hold out the fast test pulses" that are sent by the engine management system when testing for blown bulbs.

TA200-12V (12 Volt operation) & TA200-24V (24 Volt operation)

Always use when both trailer & vehicle run LED lights. 12 Volt, 25 Amp (or 24 Volt, 15 Amp) Trailer Towing Module designed for newer vehicles that will detect any extra load being applied to the rear brakes, indicators, tail lights or stop lights.

TA100-12V & TA100-24V

For older vehicles where trailer & vehicle both run filament bulbs. 12 Volt, 25 Amp (or 24 Volt, 15 Amp) Trailer Towing Module designed for older vehicles that do not test for blown brake or tail lights and do not detect a small increase in the load being applied to the rear brakes, indicators, tail lights or stop lights.

THE SOCKET IS CONNECTED TO THE VEHICLE & THE PLUG IS CONNECTED TO THE TRAILER!

7 Pin Round Plug & Socket

PIN No.	CIRCUIT	COLOUR
1	Left-hand turn	Yellow
2	Reversing signal	Black
3	Earth return	White
4	Right-hand turn	Green
5	Service brakes	Blue
6	Stop lamps	Red
7	Rear lamps, clearance & side marker lamps	Brown



7 Pin Plug



7 Pin Socket

7 Pin Flat Plug & Socket

PIN No.	CIRCUIT	COLOUR
1	Left-hand turn	Yellow
2	Reversing signal	Black
3	Earth return	White
4	Right-hand turn	Green
5	Service brakes	Blue
6	Stop lamps	Red
7	Rear lamps, clearance & side marker lamps	Brown



7 Pin Plug



7 Pin Socket

INSTALLING THE CARM INTERNATIONAL TOWING MODULE

The standard wiring terminal positions & colours are shown on the previous page and these should be matched against the terminal connections printed on the Towing Module. The full wiring diagram can be found on the next page. **Note that the earth connection on the trailer connector must have TWO white wires connected into it!**

Always install the Towing Module & towbar in accordance with the official standards applicable in the country of use.

We recommend & sell a limited range of Narva trailer plugs & connectors. More connector types (and their pin-outs) are shown on their website at www.narva.com.au/products/browse/wiring-diagrams

1/ Connect both the input & output looms to the Towing Module before installing the unit into the boot (trunk) of the vehicle. The input loom is the shorter one & the output loom is the longer one. Ensure when inserting the wires under each screw terminal that no wire strands straddle any adjoining terminals. Tighten the screw terminals quite firmly but not so tight as to cut through any of the wire strands.

2/ Securely crimp the 6.5 metre red +12V feed wire to the blue female crimp lug, then firmly push this onto the 6.3mm male spade connector on the Towing Module. This connector is rated at 30 amps & it is a tight fit. Use some pliers to carefully “ease it all the way home” if required.

3/ Peel back the carpet in the boot (trunk). Check to see if there is a water drain plug (rubber grommet) in the lowest part of the boot. If so, carefully cut a hole in the centre of it to allow the output loom & the red +12V power lead to pass through to the underside of the vehicle. Sometimes it is easier (or safer) to feed the red +12V power lead under the rear seat & under either the carpet or the bottom door trim panels all the way to the front of the vehicle (assuming the battery is at the front of the vehicle). **It is important to ensure that any holes used to exit the looms from the boot are filed smooth with no burrs to prevent any short circuits from occurring at some later time due to vibration.**

4/ Connect the output loom to the trailer connector before attaching the connector to the vehicle (follow the wiring diagrams on the other pages of these instructions). This will allow you to pull the output loom further from the vehicle making the connections to the trailer connector much easier. **Note that a second white wire (thick 3mm square) also needs to be connected into the earth pin of the vehicle's trailer connector. Crimp the smaller eyelet provided to the other end of this white wire, then securely affix it to the vehicle ensuring the metal star washer is placed between the eyelet & the vehicle's chassis. Firmly tighten the TEK screw. This is the trailers current return wire & it must be well connected to the vehicle's chassis. Do not connect this TEK screw through any plastic or through any sound dampening material as this earth is likely to fail at some later time. If the metal panel is thin, instead of using the provided TEK screw, use the provided metal star washer with a metal threaded screw & nut to ensure a long life connection. If the vehicle has a fibreglass chassis, a 3mm square earth return wire must be run all the way to the negative terminal of the vehicle's battery.**

5/ Securely attach the trailer connector to the vehicle ensuring there is room between it & the towbar to allow for easy hook-up of the trailer. Pull back into the boot any excess loom & cable tie the output loom in place as it exits the boot on its way to the trailer connector.

6/ Remove the rear cover to the vehicle's RHS light assembly to gain access to the wires that operate it. Using a digital multimeter (12V filament test lamps can trigger fault codes in some modern vehicles) set to the 20 volt DC range, locate the brake light, tail light, reversing light, RHS indicator wires. Turn off the vehicle's ignition & then (one wire at a time) carefully strip back the insulation and attach the input loom of the Towing Module to their corresponding inputs. Solder the connections, then carefully insulate them with insulation tape. Make sure that the quality of the insulation tape is of good quality as the temperature in the boot can rise in summer to more than 50 degrees Celsius.

7/ Remove the rear cover to the vehicle's LHS light assembly to gain access to the wires that operate it. Follow the same procedure as in 6/ above to locate & connect the LHS indicator wire to the towing module's yellow wire.

8/ The Towing Module should be positioned into the boot near the vehicle's right hand side (RHS) light module. **Ensure that the carpet is cut away from the unit to ensure good ventilation (none of the side or top holes should be covered). Do not place the Towing Module in the lowest point of the boot as this is likely to allow water entry should the boot leak at some time in the future. This towing module is capable of handling considerable current & heat build-up will occur. Therefore, do not block the ventilation holes & do not place flammable materials up against the unit. Allow a minimum clearance of 4cm around the entire module to allow for sufficient convection cooling. Secure in place by using one of the supplied TEK screws through the mounting lug on the plastic box.**

9/ Secure the red power feed +12 volt wire in the boot, then all the way up to the vehicle's battery. Extra cable ties may be required for this. Cut this red wire to the correct length so that it can be easily be connected (via the fuse holder) to the +12 volt battery terminal.

10/ Cut the looped fuse wire and solder one end to the red power feed +12 volt wire, then tape this connection securely with high quality insulation tape (or alternatively use heat-shrink tubing).

11/ Securely crimp the large eyelet to the other end of the fuse holder. Do not insert the fuse at this time. Remove the bolt that attaches the vehicle's +12 volt main power lead to the positive battery terminal. Be careful not to short this terminal to the chassis when undoing it with a spanner as this will cause a high current short. Now insert the bolt through the large eyelet & securely reinstall the +12 volt battery bolt.

12/ After ensuring that all the connections are carefully insulated, install the supplied fuse (25 amp for 12 volt operation & 15 amp for 24 volt operation).

13/ Fully test each circuit by activating them on the vehicle & testing the output on the trailer connector. A 12 volt test lamp or a digital multimeter can be used for this. Remember that any "P" version Towing Module will delay the trailer lights output by around 70ms to ensure any fast pulses being generated by the vehicle's ECU (to test for blown filament bulbs) do not activate the trailer's LED lights.

14/ Assuming that the tests in 13/ above are all correct, re-install both the LHS & RHS light modules rear panels.

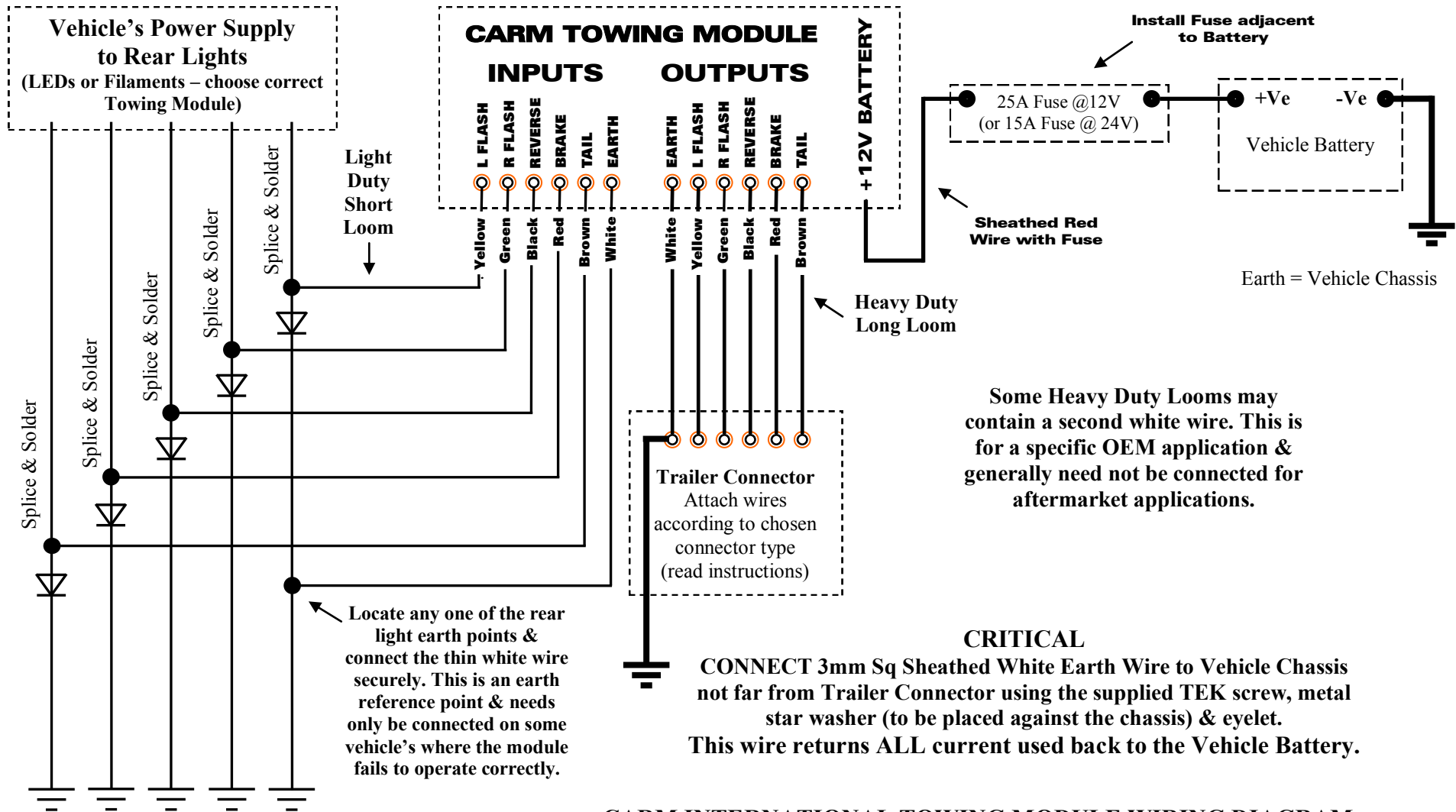
15/ Once all the tests are complete, move around any excess loom material in the boot to minimise any carpet disturbance. Now seal the access hole in the bottom of the boot with silicon, allow to dry, then re-lay the carpet in the boot. **Ensure no carpet is placed closer than 4cm to the Towing Module & that no ventilation holes on the Towing Module are covered over (you will probably need to cut a small section from the carpet to allow for correct clearance to the Towing Module).**

16/ Now connect the trailer plug to the vehicle & retest for correct operation.

Please note that the Carm International Towing Adaptors do not turn off vehicle rear mounted sensors or cameras. Many vehicle manufacturers disable these sensors & cameras (when the vehicle is in reverse) by using an extra link that is inserted into the vehicle's trailer plug. Often a search on the web will advise you where this link must be inserted to turn off these sensors when a trailer is connected.

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www.gore-research.com.au



CARM INTERNATIONAL TOWING MODULE WIRING DIAGRAM

Do not install a fuse greater than 25 amps (for 12 volt models) or 15 amps (for 24 volt models).

Designed & Manufactured in Australia by Gore Research Pty Ltd

Phone: 61 8 8362 4866 Website: www.gore-research.com.au

CARM INTERNATIONAL TOWING MODULE SPECIFICATIONS (1) (March 2012 Rev = 0)

MODEL NUMBER	INSTALL ON MODERN VEHICLES THAT CHECK FOR BLOWN FILAMENT BULBS IN REAR LIGHT CIRCUITS	INSTALL ON MODERN VEHICLES THAT CHECK CURRENT DRAIN IN REAR LIGHT CIRCUITS	SUITABLE FOR OLDER VEHICLES THAT DO NOT CHECK CURRENT DRAIN IN REAR LIGHT CIRCUITS	SUITABLE FOR OLDER VEHICLES THAT DO NOT CHECK FOR BLOWN FILAMENT BULBS IN REAR LIGHT CIRCUITS	NOMINAL VOLTAGE OPERATION (VOLTS)	NUMBER OF LIGHT CIRCUITS	MAXIMUM FUSE CURRENT CAPACITY	MINIMUM CONSTANT OPERATING VOLTAGE (VOLTS)	MAXIMUM CONSTANT OPERATING VOLTAGE (VOLTS)
TA100-12V	NO	NO	YES	YES	12	5	25	9.9	15.7
TA100-24V	NO	NO	YES	YES	24	5	15	18.8	30.1
TA200-12V	NO	YES	YES	YES	12	5	25	9.8	15.5
TA200-24V	NO	YES	YES	YES	24	5	15	18.5	29.5
TA200-12V-P	YES*	YES*	YES	YES	12	5	25	9.8	15.5
TA200-24V-P	YES*	YES*	YES	YES	24	5	15	18.5	29.5

***The TA200-12V-P (for 12 volt operation) & TA200-24V-P (for 24 volt operation) offer the highest input impedance (so the vehicle ECU is not likely to detect them). These two models also hold out fast ECU filament test pulses from affecting trailer light operation. If unsure which model is required for your vehicle, ensure you choose one of these.**

CARM INTERNATIONAL TOWING MODULE SPECIFICATIONS (2) (March 2012 Rev = 0)

MODEL NUMBER	TOWING MODULE DC CURRENT DRAIN NO LIGHT CIRCUIT INPUTS ACTIVE*	TOWING MODULE INPUT RESISTANCE AS SEEN BY VEHICLE ECU (OHMS)	SINGLE CIRCUIT MAXIMUM RELAY SWITCHING CURRENT		MAXIMUM DRIVE PER SINGLE OUTPUT @ 50 DEGREES C	MAXIMUM TOTAL WATTAGE @ 50 DEGREES C	3 YEAR WARRANTY	DESIGNED & MANUFACTURED IN AUSTRALIA
			25 DEGREES C	50 DEGREES C	NOTE THIS CRITICAL MAXIMUM	NOTE THIS CRITICAL MAXIMUM***		
TA100-12V	0.0mA @12V	400	15A	10A	146W @14.6V	365W @14.6V	YES	YES
TA100-24V	0.0mA @24V	1600	15A	10A	146W @29.2V	365W @29.2V	YES	YES
TA200-12V	0.83mA @12V	15200**	30A	15A	168W @14.6V	365W @14.6V	YES	YES
TA200-24V	1.77mA @24V	15200**	30A	15A	168W @29.2V	365W @29.2V	YES	YES
TA200-12V-P	0.83mA @12V	15200**	30A	15A	168W @14.6V	365W @14.6V	YES	YES
TA200-24V-P	1.77mA @24V	15200**	30A	15A	168W @29.2V	365W @29.2V	YES	YES
					Add up the wattage of ALL trailer bulbs in a SINGLE circuit. The TOTAL MUST NOT EXCEED that listed above.	Add up the wattage of ALL trailer bulbs in ALL circuits. The TOTAL MUST NOT EXCEED that listed above.		

***High Technology Design ensures that the Towing Module will not flatten the vehicle's battery when owner is on holiday for extended periods.**

**** Below 7.0 volts no fixed DC resistance is detectable by the vehicle's ECU. Above 7.0 volts the fixed DC resistance is 15200 ohms.**

***** THE CRITICAL MAXIMUM WATTAGE PER TA100/TA200 IS DICTATED BY THE TOTAL HEAT THE PLASTIC CASE CAN DISSIPATE @ 50 DEGREES CELSIUS. NEVER EXCEED THIS MAXIMUM RATING OR FAILURE WILL LIKELY RESULT.**