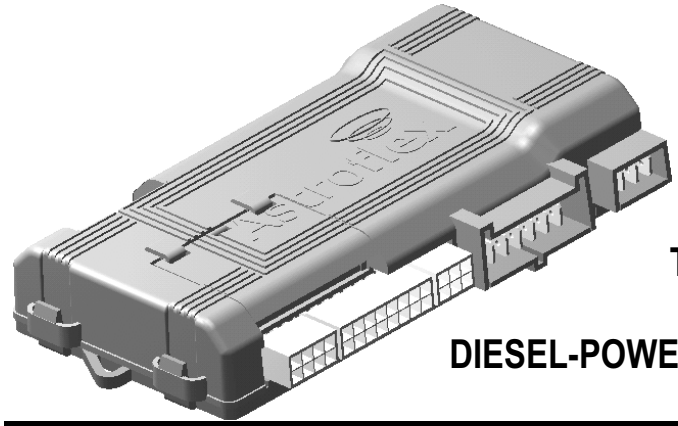
Astroflex

REMOTE CONTROL ENGINE STARTER

Installation Manual

Models 800, 1100, 2100, 4100



FOR ALL AUTOMATIC TRANSMISSION GAS- AND DIESEL-POWERED VEHICLES

NOT FOR USE ON VEHICLES EQUIPPED WITH MANUAL TRANSMISSION!

THIS PRODUCT MUST BE INSTALLED BY A QUALIFIED INSTALLER.

(Instructions en français au verso)

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IMPORTANT NOTICE TO INSTALLERS!

The remote starter module included in this kit **DOES NOT** monitor the position of the gearshift lever prior to starting the engine since this function is featured on the majority of recent vehicles.

To ensure that the installation of this product is safe, **you MUST** make the following safety checks.

Verifications :

1. Ensure that the vehicle **cannot** be remote started when in gear;
2. Ensure also that the gearshift lever **cannot** be moved out of the "Park" position without first applying the brakes.

If it is possible to crank the engine while the gearshift lever is in gear, or to move the gearshift lever out of "Park" position without applying the brakes, contact our Technical Assistance Department at **1-800-461-8223**. A technical advisor will help you with an appropriate and safe solution that will take into account the make and model of the vehicle on which you are working.

If you have any questions or comments, do not hesitate to call our Technical Assistance Department toll-free at 1-800-461-8223.

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Quick Guide for Professionals

This section of the installation manual is intended for experienced installers of remote starter and mobile security products. Only the most frequently needed information is included in this section of the manual. It has been designed to allow you to quickly access connection and operational details to maximize your installation performance.

Since most of the programming is set for popular defaults, you will not need to make major, complex changes.

Note concerning vehicles equipped with an immobilization system

When the remote starter is installed on a vehicle equipped with a transponder type immobilization system, it is preferable to complete the installation of the **control module** and to test it **before** proceeding with the connection of the interface that neutralizes the vehicle's immobilization system (anti-start).

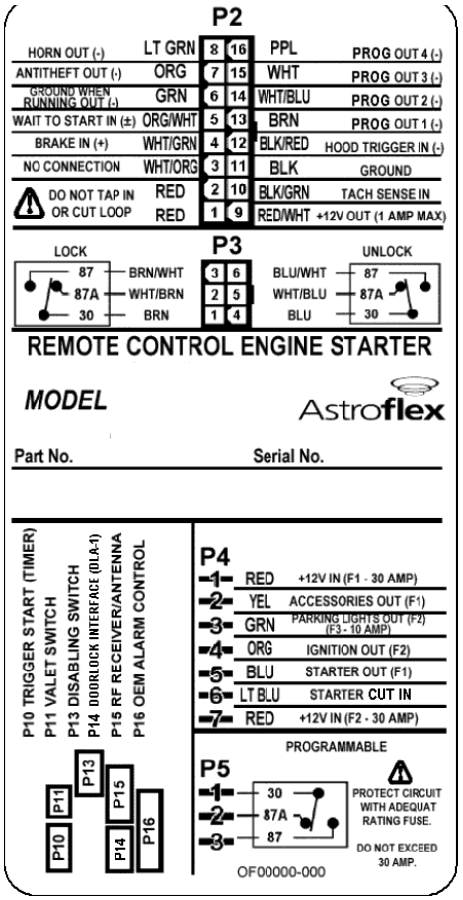
Once the installation is completed, insert key in ignition, then, **without turning the key,** see if the vehicle will remote start.

- If it does not start, find the cause of the failure to start and correct the situation accordingly.

Then connect the immobilizer neutralization interface.

- Once connection of the interface is completed, confirm that the vehicle remote starts, but this time without the key in the ignition.

This way, it will be much easier to diagnose any installation problem.



Each wire that provides a (-) output can supply only one single standard Bosch style automotive relay.

DESCRIPTION OF CONNECTORS

P2 – Start inputs/outputs
P3 - Un/Lock relays
P4 – Power inputs/outputs
P5 - Programmable function relay
P10 - Programmable timer
P11 – Valet switch
P13 – Disable switch
P14 – Un/Lock output (Model 800 - DLA-1)
P15 – Receiver
P16 – Interfaces

The following charts show the purpose of each wire on each connector and list the color code and pin position. Each of the first four charts are for a single connector. The last chart lists the connectors for the plug-in accessories.

Whenever you encounter a wire that needs further explanation, or need to access the virtually unlimited programming flexibility of this AstroStart product, a reference to the detailed installation instructions found later in the manual will help you understand all of the connection and programming options available.

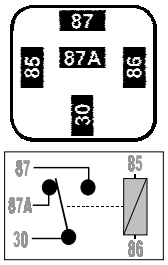
Additional information is available on the AstroChart CD ROM.

P2 CONNECTOR (800, 1100, 2100, 4100)			
PIN	**NAME**	**COLOR**	**PURPOSE**
1	-	Red	N/A - **Do not** tap in or cut!
2	-	Red	N/A - **Do not** tap in or cut!
3	-	-	N/A - **No connection**
4	Brake (+)	White/ Green	**Input** (+) connected to the brake light circuit of the vehicle to cancel remote start operation. ***Do not connect into cruise control cancel switch.*** **SAFETY CIRCUIT -** must be connected!
5	Glow Plug or Delayed Start (±)	Orange/ White	**Input** (±) allows remote start to remain in stand-by mode until Glow plug (diesel engine) has preheated (up to 60 sec.). If not connected, start will occur after a 60-second delay (programmable at 30 sec. at level 3) when polarity is set on "negative" (-) in level 3 programming. **Default is (+).**
6	Output (-) when running	Dark Green	**Output** (-) used to interface with OEM antitheft devices. Activated 1 sec. before the ignition circuit, and remains until 1 sec. after ignition is shut off.
7	Antitheft (-)	Orange	**Output (-)** used to activate an external starter-cut device or an antitheft status indicating LED. See "ANTITHEFT OUTPUT" on page 13.
8	Horn (-)	Light Green	**Output** (-) used to activate the factory horn. This is a low level output. An external relay may be required on certain vehicles. See page 14 for additional details.
9	+12V	Red/ White	**Output** used to provide fused +12 volts for additional relays (coils). Protected by a 1A auto reset fuse (PTC). **Note**: Not for 2nd Ignition or 2nd Starter applications
10	Tach input	Black/ Green	Connected to circuit in vehicle that provides a pulsed signal (tach signal) **Default: 1 cyl, 800 RPM.** See Page 15 for programming options.
11	Ground	Black	Main Ground. Connect to **left kick panel** or **firewall *only***.
12	Hood pin input (±) N.O. or N.C.	Black/ Red	Programmable polarity (±) **input** used to detect opening of the hood. **Default: Normally closed** (when hood opened). See Page 16 for programming options. **SAFETY CIRCUIT - *must be connected!***
13	Programmable (-) output #1	Brown	Programmable output (-) #1 to control relay. See note below this chart. **Default: Pulse Before Start.** See Page 10 for programming options.
14	Programmable (-) output #2	White/ Blue	Programmable output (-) #2 to control relay. See note below this chart. **Default: 1-minute Pulse After Shutdown.** See Page 10 for programming options.
15	Programmable (-) output #3	White	Programmable output (-) #3 to control relay. **Default: Trunk Release.** See Page 10 for programming options.
16	Programmable (-) output #4	Purple	Programmable output (-) #4 to control relay. **Default: Dome Light.** See Page 10 for programming options.

NOTE CONCERNING CONNECTOR P16:

The majority of AstroFlex interfaces that connect into P16 call for the default settings of programmable outputs 1 & 2, namely "Pulse before" and "Pulse after".

If programmable outputs with settings other than "Pulse before" or "Pulse after" are required, consider using programmable outputs 3 & 4 (P2-15 & P2-16).

P3 CONNECTOR (1100, 2100, 4100)				
PIN	**FUNCTION**	**COLOR**	**BUILT-IN RELAY DESCRIPTION**	
1	LOCK Common - 30	Brown		Contacts 85 and 86 are polarized through the module internal circuits. Each relay is controlled by the function "Locking" or "Unlocking".
2	LOCK NC - 87A	White/Brown		
3	LOCK NO - 87	Brown/White		
4	UNLOCK Common - 30	Blue		
5	UNLOCK NC - 87A	White/Blue		
6	UNLOCK NO - 87	Blue/White		

REMARKS:

The P3 Connector accesses two standard Bosch style relays that are intended for power door lock interface.

FOR ALL ABOVE WIRES PLEASE SEE PAGE 16 FOR FURTHER DETAILS

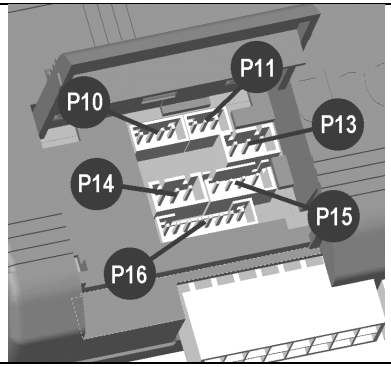
P4 CONNECTOR (800, 1100, 2100, 4100)			
PIN	**NAME**	**COLOR**	**PURPOSE**
1	Power **input**	Red	+12V power input, protected by a 30A fuse (F1), supplies "Accessory-Yellow Wire" and the "Starter-Dark Blue Wire".
2	Accessory **output**	Yellow	Feeds vehicle accessory circuit (Heater / AC circuit).
3	Parking light **output**	Green	Protected by a 10A fuse (F3), used to feed parking light circuit.
4	Ignition **output**	Orange	Feeds ignition circuit. **THIS CIRCUIT IS PART OF A SECURITY DEVICE; it must be connected directly to vehicle's *main* ignition circuit.**
5	Starter **output**	Dark Blue	Connects to vehicle "Starter" circuit. Starter-cut option (2100, 4100 only) Connects to starter side of starter motor circuit. This output is controlled by the "ignition wire". Allows starter circuit to be shut off when vehicle is remote started to prevent "grinding" the starter motor. Also provides antitheft function.
6	Starter-cut **input**	Light Blue	(2100, 4100 only) Connects to key side of starter motor circuit. Also used for Antitheft mode. May be set as Active or Inactive in programming level 4. **Default: Inactive**
7	Power **input**	Red	+12V input which feeds "Ignition - Orange Wire" and the "Park Lights - Green Wire". Protected by a 30A fuse (F2).

P5 CONNECTOR (800, 1100, 2100, 4100)		
PIN	**NAME**	**PURPOSE**
1	COMMON - 30	Pin 30 of standard automotive Bosch type relay
2	NC - 87A	Pin 87A of standard automotive Bosch type relay
3	NO - 87	Pin 87 of standard automotive Bosch type relay

The **default** is set for **Ignition** (Level 13).
Feed for this circuit must **always** be protected by an appropriate size fuse; the 30A fuse supplied may not be appropriate for the application. Make sure you connect the fuse directly to the power source and not to the circuit that must be fed.

PLUG-IN ACCESSORIES CONNECTOR LIST			
CON-NECTOR	**NAME**	**APPLICABLE MODELS**	**PURPOSE**
P10	Dedicated timer control	ALL	Four-pin connector allowing an optional timer module to be interfaced with the remote starter (available from ASTROFLEX). Requires a negative pulse (0.7 sec.) to initialize remote start procedure.
P11	Valet switch	2100 4100	Three-pin connector allowing a switch to be installed for Valet functions. To neutralize the Antitheft output (Anti-start).
P13	Disable switch	ALL	Switch used to turn the remote start functions off. Controls "Ignition", "Accessories" and "Starter" relays.
P14	Doorlock interface DLA-1	800	Three-pin connector that plugs directly into DLA-1 interface module or low current negative outputs to feed relays. Default setting: Single 0.7 sec. pulse, no automatic lock, no confirmation. See programming options on page 11.
P15	Antenna / Receiver	ALL	Four-pin connector that plugs directly into the RF antenna / receiver module.
P16	Alarm / Immobilizer interface module	ALL	Eight-pin connector to connect directly to an ASTROFLEX alarm/immobilizer interface module. (See further details packaged with the module.)

P10	**Timer**
P11	**Valet switch**
P13	**Disable switch**
P14	**Doorlock interface DLA-1**
P15	**Receiver**
P16	**Immobilizer / Alarm interface (OM / IM)**



Quick Programming

You may believe that a product as versatile as the AstroStart would be a programming nightmare. In most cases, you will not need to change from the factory default programming. In addition, AstroStart's sophisticated processor allows direct entry into a multitude of programming options with little effort.

Programming is done using 9 DIP switches incorporated into the module or a programming console that communicates with the control module through the receiver plug. This console is called MultiTest II and is available under part no. 310-059-501-00.

Programming options for any feature are presented in the individual feature explanation, which means there is no need to refer to a long and often confusing master programming chart.

Will I Need to Reprogram a Feature?

Consult the following chart to determine if the defaults work for the installation. If this chart indicates no required changes, move to the testing phase of the installation on page 20.

TOPIC	DEFAULT FEATURES CONTROLLED	LEVEL
Transmitters	Remote Enable - not modified unless additional remotes need to be learned.	1
Tach/Engine	1 cylinder, 800 RPM idle speed	2
Engine configuration	Gas-powered engine, Ignition cut off between crank cycles, Hood switch closed contact when hood is opened.	3
Antitheft compatibility	No accessory delay after start-up, Rearming off, Antitheft off	4
Programmable output	Pulse before (programmable output #1)	5
Programmable output	Pulse after (programmable output #2)	6
Programmable output	Trunk (programmable output #3)	7
Programmable output	Dome light (programmable output #4)	8
Programmable relay	Ignition (programmable relay)	9
Door lock options	0.7 sec. pulse before ignition, 0.7 sec. lock/ unlock pulse, Autolock off, Unlock pulse = single, 2nd lock pulse confirmation off	10
Utility outputs	0.7 second utility pulse #1, 0.7 second utility pulse #2, 30 second Panic duration	11
Engine runtime	Gasoline = 8 min., Diesel =16 min. runtime, over-revving supervision = Enabled	12
Sentinel temp & runtime	Sentinel mode temperature = -15º C (5º F), Runtime sentinel = 8 min. gas, = 16 min. diesel	13
3-button remote configuration	Decoding of 3-button remotes (803 only) Start, Stop, Sentinel (ON/OFF)	15

If changes to the default programming are required, please read the following information in the programming charts.

Basic Programming Charts

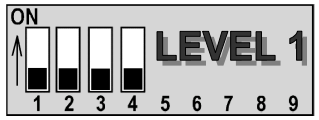
(LEVEL 1 and 2)

This information assumes that you understand how to program an AstroStart. If not, refer to Detailed Programming on next page.

In most cases you will need to program only the tachometer and cylinder settings, and occasionally an additional remote transmitter.

TRANSMITTER CODING

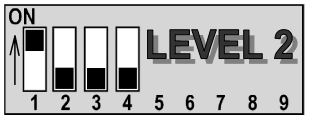
In the event that a transmitter needs to be re-coded, the following table shows the settings.



TRANSMITTER CODING					
LEVEL 1 DIP SWITCH	**5**	**6**	**7**	**8**	**9**
Initial Programming Reset	⇩	⇩	↑	⇩	⇩
Transmitter Learning	⇩	⇩	⇩	↑	⇩
Normal Operation	⇩	⇩	⇩	⇩	⇩

TACHOMETER & CYLINDER SETTINGS

Level 2 programming sets both IDLE SPEED and number of cylinders (per tach signal).



In almost all cases, it is best to start with the Auto Learn capability.
See procedure on page 15.

TACH & CYLINDERS					
LEVEL 2 DIP SWITCH	**5**	**6**	**7**	**8**	**9**
1 Cylinder	⇩	⇩	⇩		
2 Cylinders	↑	⇩	⇩		
3-4 Cylinders	⇩	↑	⇩		
5-6 Cylinders	↑	↑	⇩		
8 Cylinders	⇩	⇩	↑		
10 Cylinders	↑	⇩	↑		
12 Cylinders	⇩	↑	↑		
Auto Learn Tach	↑	↑	↑		
800 RPM				⇩	⇩
600 RPM				↑	⇩
500 RPM				⇩	↑

ONCE DIP SWITCHES ARE SET, PRESS BRAKE PEDAL TO "LEARN" THE FUNCTIONS.

PROCEED WITH NEXT LEVEL OR, IF ALL PROGRAMMING IS DONE, RETURN ALL DIP SWITCHES TO THE OFF POSITION.

Detailed Programming

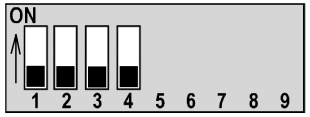
Programming is very simple once you have programmed your first AstroStart.

Programming parameters are divided into 14 groups called "levels" (see programming tables, pages 7 to 12). These parameters are selected by setting a series of 9 DIP switches.

DIP switches 1, 2, 3 and 4 are used to select programming levels.....

...while DIP switches 5 to 9 are used to select options in each level.

SELECTING LEVEL



SETTING OPTIONS

In each level, all parameters must be programmed in a single programming step.

Programming is done as follows:

1) Set DIP switches 1, 2, 3 and 4 to select the LEVEL of the desired feature.
2) Set DIP switches 5 to 9 to combine options you wish to select.
3) Apply brakes to lock in the selected parameters in memory. LED flashes same number of times as programming level selected, confirming that parameters have been memorized in that LEVEL.
4) Repeat steps 1 to 3 for each LEVEL that requires programming changes.
5) When programming is complete, put all DIP switches back to the "OFF" position, then apply brakes.

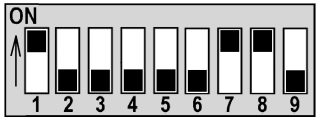
NOTE: IF YOU HAVE TO MAKE ANY PROGRAMMING CHANGES IN ONE LEVEL, THE ENTIRE LEVEL MUST BE PROGRAMMED.

EXAMPLE

Imagine you have to program the AstroStart for an eight cylinder engine, with an idle speed of 600 RPM.

1) Place DIP switches in following position:
   a) DIP switches 1 (On), 2, 3 and 4 (Off) for selecting level 2.
   b) DIP switches 5,6, (Off) & 7 (On) to set for 8 cylinders.
   c) DIP switch 8 (On) & 9 (Off) to set the idle speed of 600 RPM.

SETTING EXAMPLE

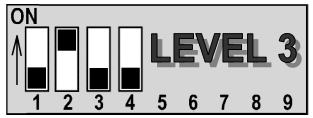


2) Apply brakes, the LED flashes twice to confirm level 2 settings have been memorized.
3) When you have finished programming, return all DIP switches to OFF, then apply brakes or select next level.

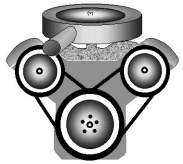
PROGRAMMING TABLES

(LEVEL 3 through 15)

The following programming tables show the settings for the remaining LEVELS. Note that if you are changing one feature on a LEVEL, all of the other features on that LEVEL need to be placed in the desired positions or they will be reset (also see levels 1 and 2 on page 7).

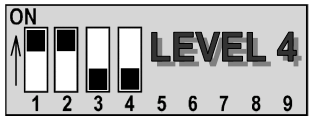


Default settings:
Engine = Gasoline
Glow plugs (duration) = 1 min.
Glow plugs (polarity) = Positive
Ignition = Turned off between 2 crank attempts
Hood pin switch = NC



ENGINE CONFIGURATION					
LEVEL 3 DIP SWITCH	**5**	**6**	**7**	**8**	**9**
Gasoline Engine	⇩				
Diesel Engine	↑				
Glow Plugs 1 minute (Diesel only)		⇩			
Glow Plugs 30 seconds (Diesel only)		↑			
Positive Glow Plugs circuit[1]			⇩		
Negative Glow Plugs circuit[1]			↑		
Ignition: Turn Off between crank attempts				⇩	
Ignition: Remain On between crank attempts				↑	
Normally Closed Hood Pin Switch[2]					⇩
Normally Open Hood Pin Switch[2]					↑

1- Diesel : the positive and negative settings for the glow plugs assume that their indicator light is on.
2- Hood : the normally open and normally closed settings for the hood pin switch assume that the hood is open.

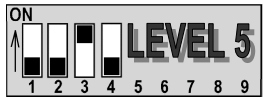


Default settings:
Rearming = Off
Type of rearming = Type 1
Accessories = No start-up delay
Antitheft = Inactive
Type of antitheft = Passive

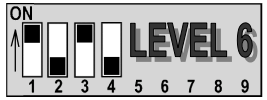
Type 1 rearming is suitable for North American vehicles, while Type 2 is suitable for Asian and European vehicles.

ANTITHEFT SYSTEM					
LEVEL 4 DIP SWITCH	**5**	**6**	**7**	**8**	**9**
Rearming Factory Security: Off	⇩				
Rearming Factory Security: On	↑				
Type 1 Rearming		⇩			
Type 2 Rearming		↑			
Accessory Start-up Delay - No delay			⇩		
Accessory Start-up Delay - 3 second delay			↑		
Antitheft System*: Inactive					⇩
Antitheft System*: Active					↑
Passive Type Antitheft*				⇩	
Active Type Antitheft*				↑	

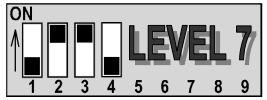
* See P2-7 on page 13.



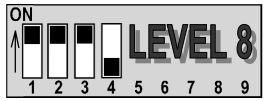
Output 1 :
Plug P2 Brown wire
Default setting:
Pulse before start



Output 2 :
Plug P2 White/Blue wire
Default setting:
Pulse after shutdown

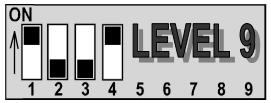


Output 3 :
Plug P2 White wire
Default setting:
Trunk release

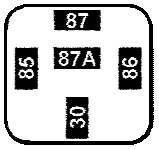


Output 4 :
Plug P2 Purple wire
Default setting:
Dome light

PROGRAMMABLE OUTPUTS 1, 2, 3 & 4					
LEVEL 5, 6, 7 & 8 DIP SWITCH	**DEFAULT LEVEL**	**6**	**7**	**8**	**9**
Pulse Before Start (Default Output #1)	**5**	⇩	⇩	⇩	⇩
Pulse After Shutdown (Default Output #2)	**6**	↑	⇩	⇩	⇩
Ground While Running		⇩	↑	⇩	⇩
Park Lights		↑	↑	⇩	⇩
Pulse After Startup		⇩	⇩	↑	⇩
Pulse on 2nd Unlock		↑	⇩	↑	⇩
Ignition		⇩	↑	↑	⇩
Accessory		↑	↑	↑	⇩
Starter		⇩	⇩	⇩	↑
Trunk Release (Default Output #3)	**7**	↑	⇩	⇩	↑
Pulse after Ignition Off (1 min. duration)		⇩	↑	⇩	↑
Dome Light (Default Output #4)	**8**	↑	↑	⇩	↑
Ground when locked		⇩	⇩	↑	↑
Utility 1		↑	⇩	↑	↑
Utility 2		⇩	↑	↑	↑

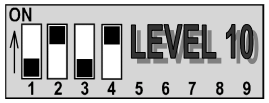


Plug P5
Default setting: Ignition

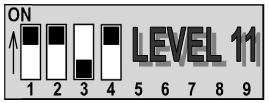


WIRING DETAILS	
P5 CONNECTOR PIN	RELAY TERMINAL
1	30
2	87A
3	87

PROGRAMMABLE RELAY					
LEVEL 9 DIP SWITCH	**5**	**6**	**7**	**8**	**9**
Pulse Before Start		⇩	⇩	⇩	⇩
Pulse After Shutdown		↑	⇩	⇩	⇩
Ground While Running		⇩	↑	⇩	⇩
Park Lights		↑	↑	⇩	⇩
Pulse After Startup		⇩	⇩	↑	⇩
Pulse on 2nd Unlock		↑	⇩	↑	⇩
Ignition		⇩	↑	↑	⇩
Accessory		↑	↑	↑	⇩
Starter		⇩	⇩	⇩	↑
Trunk Release		↑	⇩	⇩	↑
Pulse after Ignition Off (1 min. duration)		⇩	↑	⇩	↑
Dome Light		↑	↑	⇩	↑
Utility 1		↑	⇩	↑	↑
Utility 2		⇩	↑	↑	↑



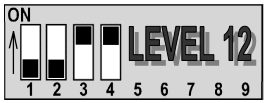
Default settings:
Pulse before ignition = 0.7 sec.
Unlock = 0.7 sec.
Autolock = OFF
Unlock Pulse = Single
Second Lock
Confirmation = OFF



UTIL.

Default settings:

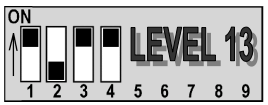
Utility 1 = 0.7 sec.
Utility 2 = 0.7 sec.
Panic cycle = 30 sec.



Default settings :

8 min. (Gas); 16 min. (Diesel)

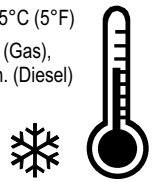
Over-revving supervision = Enabled (model 800 only)



Default settings :

Temperature = -15°C (5°F)

Runtime = 8 min. (Gas),
= 16 min. (Diesel)



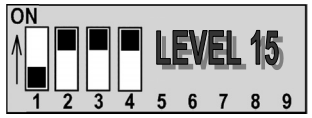
LOCK/UNLOCK OPTIONS					
LEVEL 10 DIP SWITCH	**5**	**6**	**7**	**8**	**9**
Pulse before Ignition duration = 0.7 sec.	⇩				
Pulse before Ignition duration = 0.35 sec.	↑				
Door Un/Lock Pulse = 0.7 seconds		⇩			
Door Un/Lock Pulse = 2.8 seconds		↑			
Autolock Off			⇩		
Autolock On			↑		
Single Unlock Pulse				⇩	
Double Unlock Pulse				↑	
Second Lock Confirmation OFF					⇩
Second Lock Confirmation ON					↑

DURATIONS: UTILITY 1 & 2 & PANIC					
LEVEL 11 DIP SWITCH	**5**	**6**	**7**	**8**	**9**
Utility 1 = 0.7 second	⇩	⇩			
Utility 1 = 1 minute	↑	⇩			
Utility 1 = 8 minutes	⇩	↑			
Utility 2 = 0.7 seconds			⇩	⇩	
Utility 2 = 1 minute			↑	⇩	
Utility 2 = 8 minutes			⇩	↑	
Panic Duration = 30 seconds					⇩
Panic Duration = 60 seconds					↑

ENGINE RUNTIME					
LEVEL 12 DIP SWITCH	**5**	**6**	**7**	**8**	**9**
Gas 2 minutes, Diesel 4 minutes				⇩	↑
Gas 4 minutes, Diesel 8 minutes				↑	↑
Gas 8 minutes, Diesel 16 minutes				⇩	⇩
Gas 18 minutes, Diesel 36 minutes				↑	⇩
Over-revving supervision : Enabled	⇩				
Over-revving supervision : Disabled	↑				

Diesel runtimes are based on LEVEL 3 being programmed to enable diesel options.

SENTINEL TEMPERATURE & RUNTIME					
LEVEL 13 DIP SWITCH	**5**	**6**	**7**	**8**	**9**
Sentinel Activation Temp					
-5°C (23°F)	↑	↑			
-15°C (5°F)	⇩	⇩			
-20°C (-7°F)	↑	⇩			
-30°C (-22°F)	⇩	↑			
Sentinel Runtime					
Gas 4 min., Diesel 8 min.				↑	↑
Gas 8 min., Diesel 16 min.				⇩	⇩
Gas 18 min., Diesel 36 min.				↑	⇩



3-BUTTON REMOTE CONTROL (803)					
LEVEL 15 DIP SWITCH	**5**	**6**	**7**	**8**	**9**
START - STOP - SENTINEL					⇩
START - LOCK - UNLOCK					⇧

Default settings :

803 - Start - Stop - Sentinel

Diagnostic Codes

When module is in operating mode (ready to start), LED may display different diagnostic codes for troubleshooting.

COMMAND RECEPTION

LED flashes rapidly when command is sent to confirm that control module is receiving remote control signals.

LED flashes a certain number of times (see table) after an unsuccessful attempt to remote start or runtime interruption. The number of flashes depends on the reason for shutdown.

Code	Reason for interruption
1	Stopped by remote control (trigger input - P10)
2	Stopped by applying brakes, (-) outputs are overloaded or faulty ground
4	No tach reading (rpm) **Note:** If the engine **does not crank** during a start cycle, it is normal that no tach signal is generated. This situation can happen when the vehicle is equipped with an immobilization system (Anti-start). Make sure this system is correctly interfaced.
5	Hood open
7	Ignition already in "ON" position
8	Disable switch in "OFF" position or thermal protection (P2-9 and/or P10 to P17 overloaded)
9	Runtime expired
10	Remote start failed after three attempts. **Note:** If the engine starts, then immediately stops for no apparent reason during a start cycle, vehicle may be equipped with an immobilization system (Anti-start). Make sure this system is correctly interfaced.
11	Tach signal already present
12	RPM above 3000
13	RPM below idle speed **Note:** Can be caused by incorrect setting of number of cylinders
17	Module programming is done through receiver plug (MultiTest II)

Detailed Features

P2 : INPUT/OUTPUT

P2-1&2 : Red

THESE PINS ARE NOT FOR INSTALLATION USE. DO NOT CONNECT TO ANYTHING!

P2-4 : White/green: POSITIVE BRAKE SWITCH INPUT

This is a safety circuit that tells the control module to abort the start cycle or to disengage the module: it must be connected according to instructions below.

- Connect White/Green wire to brake lights circuit at brake pedal switch (wire that provides +12 Vdc only when brakes are applied).
- Do not connect White/Green wire to cruise control cancel switch.

P2-5 : Orange/white: WAIT TO START (Glowplug)

This circuit is used to delay vehicle start until diesel engine is preheated. The crank cycle is delayed until the glow plugs go out.

Find the glow plug light circuit in the dashboard and connect this wire to that circuit.

Level 3 programming determines the type of engine, polarity of the glow plug wire, and the glow plug warm up time.

This connection is optional, but is highly recommended for optimum starting.

If not connected, start will occur after a 60-second delay (programmable at 30 sec. at level 3) when polarity is set on "negative" (-) in level 3 programming.

If this wire is not connected and the input is set in "Positive" polarity, start signal will be given without any wait period.

Polarity of the glow plug circuit is determined by testing the circuit while the glow plug light is on.

Refer to Level 3 programming on page 9 for details.

P2-6 : Dark green: NEGATIVE OUT WHEN RUNNING

Output (-) used to control original equipment antitheft devices. This output is activated during the START cycle and is powered up 1 second before ignition until 1 second after ignition. This could be used to disable a factory security system or an antitheft device.

ANTITHEFT OUTPUT

P2-7 : Orange: ANTITHEFT OUTPUT

Note : Do not use on model 800 if the module is not configured to receive the UNLOCK command.

Output (-) used to control a relay that neutralizes a vehicle circuit to prevent starting, or an LED to indicate antitheft status.

ACTIVE ANTITHEFT MODE

When this output is programmed in ACTIVE mode, it will be activated when the Lock command is received and deactivated when the Unlock command is received.

PASSIVE ANTITHEFT MODE

When the antitheft output is programmed in PASSIVE mode, the circuit is deactivated in the same manner as the active mode, and is activated 60 seconds after the ignition switch is turned off.

During this delay, if the ignition switch is turned back on, this mode is cancelled and the antitheft will wait for another transition from ON to OFF.

Once the antitheft is activated, turning the ignition back on will not affect the antitheft feature.

In addition, this output is deactivated for 60 seconds if an UNLOCK command is received.

During this delay, if the ignition has not been switched from OFF to ON, the antitheft will remain enabled.

VALET MODE

(2100, 4100 only)

The Valet input is used to permanently neutralize the antitheft output up to 10 cycles of the ignition switch being turned ON then OFF.

The antitheft Valet mode will be activated/deactivated by pressing the push button for 3 seconds while ignition is ON.

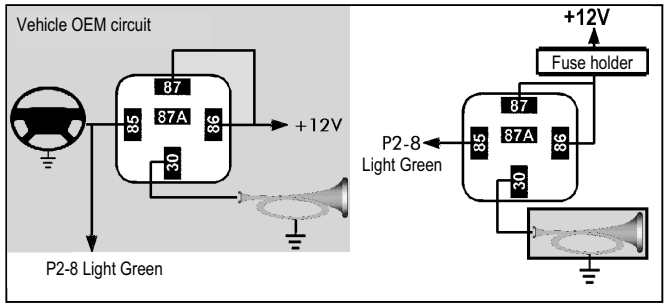
See P11 for switch connection on page 18.

It is possible to connect a toggle switch in series with the antitheft output (P2-7) to cancel the Antitheft function only.

P2-8 : Light green: HORN OUTPUT

Output (-) used to activate the factory horn circuit relay (low current) or an external relay.

Used to control the vehicle's horn to give additional audible confirmations.



P2-9 : Red/white: +12V OUTPUT

Output used to feed relays for external accessories. These outputs are protected by a 1A auto reset fuse (PTC).

P2-10 : Black/green: TACHOMETER INPUT

Input used to detect whether or not engine is running.

GAS-POWERED VEHICLES :

Connect Black/Green wire to negative terminal of ignition coil or to signal input on ignition module.

Run wire into engine compartment through a rubber grommet. Cover wire with plastic loom and secure with plastic ties, away from any heat source or sharp metal edges.

Note: For additional protection, it is recommended that a 0.5A fuse be added at the junction to ignition coil.

Astroflex has collected useful information on vehicle circuitry (wire colors) and made a CD ROM (AstroChart) available under P/N 193-018-001.

DIESEL-POWERED VEHICLES :

You may have to add a DTS-2 module if vehicle does not have a tach reference signal.

This module converts electromagnetic fields generated by the alternator into a tach signal.

Wiring instructions are supplied with kit (P/N 310-066-502).

CANNOT BE PROGRAMMED UNTIL INSTALLATION IS COMPLETE

AUTOMATIC TACH LEARNING

Note: Vehicle engine has to be warmed up before doing any programming.

Place DIP switches as illustrated;
start vehicle using key, then apply brakes.

The tach-learning function takes a little over 4 seconds to detect the number of cylinders. After this delay, the unit will exit tach learn mode.

When tach signal is detected, LED will flash same number of times as number of cylinders selected.

If tach learn mode fails, the control module accepts current settings for DIP switches 8 & 9 (idle speed) and the cylinder setting will remain the same as it was before programming started (see LEVEL 2 programming on page 7).

An installer can therefore change the parameters of DIP switches 8 & 9 without worrying about the number of cylinders previously programmed.

The technician would simply have to put DIP switches 5, 6 & 7 to automatic tach learn mode, without starting the vehicle.

This way, tach learn mode will fail, thereby maintaining the original cylinder setting but allowing you to program the new idle speed.

P2-11 : Black: GROUND

Input that provides a reference ground for the module.

ALWAYS ENSURE BLACK WIRE IS CONNECTED TO THE LEFT KICK PANEL OR THE FIREWALL.

P2-12 : Black/Red: HOOD INPUT

Programmable polarity input allowing the module to detect the hood being opened.

⚠ This circuit is a safety feature that ***must be connected***.

- Run Black/red wire into engine compartment through a rubber grommet. Cover wire with plastic loom and secure with plastic ties, away from any heat source or sharp metal edges.
- Install switch at the front of the engine compartment to ensure it activates the engine shut down feature when hood is lifted about 2 cm (1/2"). Use a 8mm (5/16") drill bit.
- Always make sure that the correct polarity is selected for the type of pin switch used.

Hood PIN switch polarity is programmed in LEVEL 3.

P2-13 : Brown: PROGRAMMABLE OUTPUT #1

Output (-) where the function can be determined during LEVEL 5 programming.
In this instance the factory setting is PULSE BEFORE.

P2-14 : White/blue: PROGRAMMABLE OUTPUT #2

Output (-) where the function can be determined during LEVEL 6 programming.
In this instance the factory setting is PULSE AFTER.

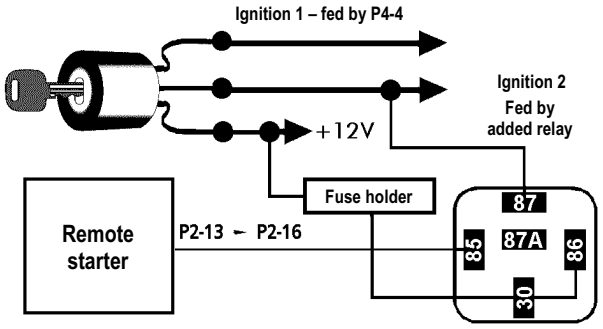
P2-15 : White: PROGRAMMABLE OUTPUT #3

Output (-) where the function can be determined during LEVEL 7 programming.
In this instance the factory setting is TRUNK RELEASE.

P2-16 : Purple: PROGRAMMABLE OUTPUT #4

Output (-) where the function can be determined during LEVEL 8 programming.
In this instance the factory setting is DOME LIGHT.

Wiring example for applications using programmable (-) outputs



P3 : POWER DOOR LOCKS

(1100, 2100, 4100)

This harness provides on-board relays for power door lock interfaces. Refer to the AstroChart CD for descriptions of door lock connections.

Programming for options related to this connector is done in LEVEL 10.

P4 : MAIN POWER

P4-1 : Red: POWER INPUT

30 Amp input that provides power to the yellow "accessory" wire and blue "starter" wire.

This wire should be connected to a circuit in the main ignition switch harness that is capable of providing 30 amps. When there is more than one feed circuit, use the circuit that supplies most power or has the largest gauge wire.

P4-2 : Yellow: ACCESSORY OUTPUT

Provides power to energize the vehicle's climate control circuit.

Climate control circuit will sometimes have 2 or more wires requiring power in order to turn on the air conditioning compressor and heater fan motor. If more than one circuit is required, additional relays must be added to ensure vehicle's circuits maintain their isolation.
(See Programmable outputs P2-13 to P2-16.)

P4-3 : Green: PARKING LIGHT OUTPUT

This wire provides an output to trigger the vehicle's parking light circuit to add a visual verification of the module's functions.

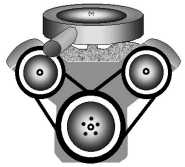
Locate the parking light circuit, making sure this circuit is a parking light circuit and not a dash light circuit, as a dash light circuit will have a voltage that varies depending on the position of the dash dimmer control. USE A DMM (Digital MultiMeter) instead of a test light to test this circuit!

If the circuit is controlled by a ground (-) signal, it is possible to use one of the 4 programmable outputs set in "Parking lights" mode (see Programmable outputs P2-13 to P2-16).

Parking lights give a visual confirmation when commands are received and remote starter is in operation.

P4-4 : Orange: IGNITION OUTPUT

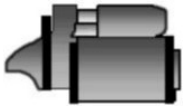
Provides power to the vehicle's ignition circuit (which is required to make the car run).



This circuit is part of a security device; it must be connected directly to the vehicle's main ignition circuit.

Newer vehicles can have multiple ignition wires in the main ignition switch harness and additional relays are required to maintain circuit isolation and provide enough outputs for all these circuits. (See Programmable outputs P2-13 to P2-16.)

P4-5 : Dark blue: STARTER OUTPUT



+12V output used to supply power to the starter motor in the vehicle. This is another circuit that can potentially hold multiple wires, so the need for additional relays is essential to maintain isolation in the vehicle. This wire must go to the starter motor side of the start circuit if using the starter cut relay option.
(See Programmable outputs P2-13 to P2-16.)

P4-6 : Light blue: STARTER CUT INPUT

(2100, 4100 only)

Input wired to a relay which allows the module to cut off the starter circuit when the vehicle is running on remote start or when the antitheft mode is active and the ignition switch is turned to the "ON" position. This relay is controlled by the “ignition” output, while the common contact is connected to the starter output. This wire can be programmed for use in antitheft applications as outlined in LEVEL 4 programming.

P4-7 : Red: POWER INPUT

Power input wire that is protected by a 30A in-line fuse that provides power for the “Ignition-Orange wire” and the “Park Lights-Green wire” outputs.

P5 : ON-BOARD PROGRAMMABLE RELAY

This is a three-pin connector connected to an internal standard automotive style relay, i.e. COMMON-30, NO (normally open)-87 and NC (normally closed)-87A.

Refer to page 10 for explanation of selectable features for this LEVEL 9 programmable output.

NOTE: Use adequate fuse rating for all 12 volt supply wiring.

P10 - P17 : CONNECTORS FOR PLUG-IN ACCESSORIES

P10 : TIMER CONTROL

This is a four-pin connector that allows an ASTROFLEX timer (or similar negative pulse device) to trigger the start up procedure of the remote start.

Use harness 310-903-271-01 to connect other negative pulse devices.

(-) TRIGGER INPUT P10-4

P11 : VALET SWITCH

(2100, 4100 only)

Three-pin connector allowing a push-button switch to be plugged into the module to control the Valet mode functions.

This switch should be mounted in a location accessible to the operator, yet out of plain view. Use a 7mm (9/32") drill bit.

P13 : DISABLE SWITCH

Three-pin connector designed for a plug-in ON/OFF switch.

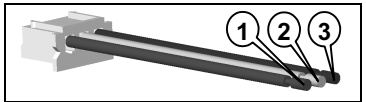
This switch overrides the remote start functions but maintains all other functions.

Switch should be mounted in a location easily accessible by the operator such as under dashboard where the driver can reach it.

P14 : DOORLOCK INTERFACE CONNECTOR

(800 only)

This three-pin connector is a low current, negative pulse output to control interface DLA-1 (P/N 310-062-505-00) or Bosch type relays.



PIN	CIRCUIT	COLOR
P14-1	+12Vdc	RED
P14-2	UNLOCK	BLUE
P14-3	LOCK	BROWN

P15 : RECEIVER CONNECTOR

A four-pin connector for direct connection to the supplied receiver. The receiver should usually be mounted in the windshield.

800, 1100, 2100

- Mount receiver below the tinted strip on the windshield, or if windshield has no tinted strip, install the antenna about 10 cm (3-1/2") from the roof line.
- Next, mount receiver on antenna ensuring that contacts are aligned and that connector faces up.
- Press on receiver module in a left-to-right motion to compress Velcro® strip and ensure positive contact between antenna and receiver.
- Connect harness to the receiver module, making sure you respect connector orientation.
- Connect other end of harness to P15 control module connector.

4100

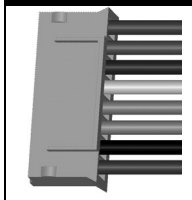
- Mount receiver module below the tinted strip on the windshield, or if windshield has no tinted strip, about 10 cm (3-1/2") from the roof line. Ensure that connector faces up.
- Connect harness to the receiver module, making sure you respect connector orientation.
- Connect other end of harness to P15 control module connector.

NOTE: If the windshield is heated, an alternative location must be selected as this type of windshield will impede reception of the remote control signal.

P16 : OEM ALARM INTERFACE CONNECTOR

This is an eight-pin connector designed to plug directly into an ASTROFLEX alarm/antitheft interface module.

All dedicated devices interfacing the remote start module to an OEM or immobilization alarm will be equipped with a connector allowing connection to this P16 location.

DESCRIPTION OF HARNESS 310-909-000-00	
	BROWN: OUTPUT (-) LOCK BLUE: OUTPUT (-) UNLOCK PURPLE: PROGRAMMABLE OUTPUT 1 (-) WHITE: PROGRAMMABLE OUTPUT 2 (-) ORANGE: OUTPUT ANTITHEFT (-) GREEN: OUTPUT (-) WHEN RUNNING BLACK: GROUND RED : +12VDC

You can purchase harness 310-909-000-00 to connect other types of interfaces to P16.

MAIN HARNESS TEST

STEP 1: ENGINE TAKEOVER TEST (CONTINUOUS MODE)

Programming should be completed before attempting to check the system since some outputs (e.g. immobilizer, additional ignitions) need to be configured properly to prevent error codes from being stored in the vehicle's ECM.

Check connections to the P4 harness by doing the following test:

Start engine using the key, then activate continuous mode. Remove key from ignition switch. The engine should keep running. Ensure all function operate properly:

- no warning indicators
- charging system
- climate controls
- parking lights

If any of these features fail to operate, additional relays may be required to activate additional circuits.

There is no need to attempt a remote start if this procedure fails.

STEP 2: FULL START TEST

Start vehicle using the remote transmitter. The vehicle should start and run normally with the circuits functioning correctly as in Step 1 above.

- If vehicle does not start or is difficult to start, it may need an additional start circuit (see P2-13 to P2-16 for adding additional relays).
- If engine still does not start or stalls shortly after starting, vehicle may be equipped with an immobilization system. If this is the case, you must interface with this system.
- Astroflex has several interface modules; please check with your dealer.

IF ENGINE CAN BE REMOTE STARTED WHILE GEARSHIFT LEVER IS IN GEAR, OR IF IT IS POSSIBLE TO MOVE GEARSHIFT LEVER OUT OF "PARK" POSITION WITHOUT APPLYING THE BRAKES, CALL 1-800-461-8223 FOR SPECIAL INSTRUCTIONS.

POST-INSTALLATION TESTS

When installation is complete, check all safety devices. Start vehicle with remote control (see User Guide for information on commands).

Ensure that engine does not start or that it stops when:

- Disable switch is in "OFF" position;
- Hood is opened;
- Engine speed exceeds 3000 rpm (only if over-revving supervision is "Enabled" in level 12 programming);
- Brakes are applied.

Also check that all functions/devices operate normally during a remote start.
Pay attention to the following points:

- vehicle charging system;
- heating and air-conditioning system;
- door-lock functions (remote control);
- runtime (programming);
- starter does not grind when engine starts;
- options (defroster, trunk release, etc.);
- remote control range;
- LED on main unit.

Code learning of additional transmitter(s)

Four different remote controls can be programmed for a given vehicle. If a fifth remote is added, the first remote is deleted.

NOTE: WHEN THE FIRST CODE LEARNING COMMAND IS SENT, ALL THE OLD CODES ARE CLEARED. THEREFORE IF YOU WANT TO ADD A NEW REMOTE, ALL THE OLD ONES MUST BE REPROGRAMMED AS WELL.

One or more remote transmitters can be added with no need to access the remote start control module. To do this, the programming is accessed as follows:

- Open hood
- Place key in the ignition and turn to the “RUN” position
- Apply the brakes once
- You now have 10 seconds to turn the key from “RUN” to the “STOP” position 3 times.
- If this sequence is correctly carried out, the control module flashes parking lights (4 flashes). You may then proceed to the next step.
- Press any button on the new remote control (except the “Panic” button).
  When access code of new remote control is memorized, the control module will confirm with flashing parking lights (1 flash).
- Repeat the above procedures for each remote control that has to be programmed (up to 4 remotes).
- Apply the brakes.
- New remote(s) is (are) now added to the system.

Notes: